

**ILLCIT DISCHARGE DETECTION AND ELIMINATION PLAN (IDDEP)
TOWN OF KINGSTON, NEW HAMPSHIRE
163 MAIN STREET
KINGSTON, NEW HAMPSHIRE**



Prepared for:



Prepared by:



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LIST OF REVISIONS

NUMBER	DATE	DESCRIPTION OF REVISION	COMPLETED BY
0.	2019	Development of written IDDEP	GeoInsight, Inc.
1.	June 30, 2021	Updates to IDDEP	GeoInsight, Inc.
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1.0 IDDEP IMPLEMENTATION TIMELINE

The 2017 NH Small MS4 general permit (the Permit) defines the Illicit Discharge Detection and Elimination Plan (IDDEP) requirements and timeline as shown in the Table below.

Table 1 1. IDDEP Implementation Timeline

IDDEP Requirement	Completion Date from Effective Date of Permit					
	1 Year	1.5 Years	2 Years	3 Years	7 Years	10 Years
IDDEP Regulatory Mechanism or By-law (if not already in place)	<i>X</i>					
Written IDDEP	<i>X</i>					
SSO Inventory	<i>Not applicable</i>					
Initial Outfall Ranking	<i>X</i>					
Written Catchment Investigation Procedure		<i>X</i>				
Phase I Mapping			<i>X</i>			
Phase II Mapping						<i>X</i>
Dry Weather Outfall Screening				<i>X</i>		
Follow-up Ranking of Outfalls and Interconnections				<i>X</i>		
Catchment Investigations – Problem Outfalls					<i>X</i>	
Catchment Investigations – all Problem, High and Low Priority Outfalls						<i>X</i>

2.0 AUTHORITY AND STATEMENT OF IDDEP RESPONSIBILITIES

2.1 LEGAL AUTHORITY

The Town of Kingston (the Town) has adopted ARTICLE 908: STORMWATER MANAGEMENT (Adopted December 15, 2009) with adequate legal authority to:

- prohibit illicit discharges;
- investigate suspected illicit discharges;
- eliminate illicit discharges, including discharges from properties not owned by or controlled by the town that discharge into the Town's MS4 systems; and
- implement appropriate enforcement procedures and actions.

The Town will review its current ARTICLE 908: STORMWATER MANAGEMENT and related land use regulations and policies for consistency with the Permit. A copy of the article is included in Appendix A.

2.2 STATEMENT OF RESPONSIBILITIES

The Highway Department is the lead town department responsible for implementing this IDDEP pursuant to the provisions of the ARTICLE 908: STORMWATER MANAGEMENT. Other departments with responsibility for related aspects of this IDDEP include:

DEPARTMENT	IDDEP RESPONSIBILITY
Highway Department	MS4 Program implementation oversight
Town Engineer	inspector for stormwater management ordinance
Building Inspector	inspector for site development and single-family homes
Planning Board	review and approval of applications from stormwater management ordinance
Conservation Commission	support with programs for TMDL and impaired waters communities
Board of Selectmen	enforcement, funding, program oversight and approval
Town Administrator	Recordkeeping

3.0 STORMWATER SYSTEM MAPPING

The Permit requires the storm system map to be updated in two phases as outlined below. The Highway Department is responsible for coordinating the updates to the stormwater system mapping pursuant to the Permit. The Town will report on the progress towards completion of the storm system map in each annual report. Updates to the stormwater mapping will be included in Appendix B.

A copy of the existing storm system maps are provided in Appendix B.

3.1 PHASE I MAPPING

Phase I mapping must be completed within two (2) years of the effective date of the permit (i.e., June 30, 2020) and include the minimum information per Part 2.3.4.5.a of the Permit:

- MS4 regulated outfalls and receiving waters;
- open channel conveyances (swales, ditches, etc.);
- interconnections with other MS4s (NHDOT);
- town-owned stormwater treatment structures (e.g., detention basins, infiltration systems, bioretention areas, grit/oil-water separators, etc.);
- waterbodies identified by name and indication of impairments as identified on the most recent EPA-approved NHDES 303(d) and 305(b) lists; and

Initial catchment delineations for each MS4 regulated outfall and interconnection.

3.2 PHASE II MAPPING

Phase II mapping must be completed within ten (10) years of the effective date of the permit (i.e., June 30, 2028) and include the minimum information per Part 2.3.4.5.b of the Permit:

- refined spatial location of MS4 regulated outfall (latitude and longitude with a minimum accuracy of +/-30 feet);
- MS4 piping;
- MS4 Manholes;
- MS4 Catch basins; and
- refined catchment delineations updated to reflect information collected during catchment investigations.

4.0 SANITARY SEWER OVERFLOWS (SSOS)

The Town has no municipally owned sewer and, therefore, no Sanitary Sewer Overflows (SSOs).

5.0 ASSESSMENT AND PRIORITY RANKING OF OUTFALLS

The Permit requires an assessment and priority ranking of MS4 regulated outfalls in terms of their potential to have illicit discharges. The ranking helps determine the priority order for performing IDDEP investigations and meeting permit milestones.

5.1 OUTFALL CATCHMENT DELINEATIONS

The catchments (individual watersheds) for each MS4 regulated outfall will be delineated to define contributing areas for investigations of potential sources of illicit discharges.

5.2 OUTFALL AND INTERCONNECTION INVENTORY AND INITIAL RANKING

An initial inventory and priority ranking of MS4 regulated outfalls and interconnections to assess illicit discharge potential was completed in Year 1 based upon existing information. The inventory will be updated annually to include data collected in connection with dry weather screening and catchment inspections. An inventory and ranking will be provided in each annual report with updates based on new information, as applicable.

Outfalls and interconnections that receive stormwater runoff from the MS4 regulated area are classified into one of the following categories:

1. Excluded outfalls;
 - outfalls/interconnections that do not discharge to a Water of the United States (WotUS) or wetland or are not listed in Section 4.0 of the Town's MS4 Stormwater Management Plan (SWMP).
 - outfalls/interconnections with no potential for illicit discharges including roadway drainage in undeveloped areas with no dwellings; drainage for unfertilized/untreated athletic fields, parks or undeveloped green spaces;; and cross-country drainage alignments through undeveloped land.
2. Problem Outfalls: outfalls/interconnections with known or suspected contributions of illicit discharges based on existing information shall be designated as Problem Outfalls. This shall include any outfalls/interconnections where previous screening has indicated likely septage input. No Problem outfalls have been identified for Kingston as of Year 3.

Indicators of potential septage inputs (e.g., failed septic systems or illegally connected sanitary sewer) include:

- olfactory or visual evidence of septage;
- ammonia samples in excess of 0.5 milligrams per liter (mg/L), surfactant

- samples greater than 0.25 mg/L, and bacteria levels greater than the water quality criteria applicable to the receiving water; or
 - ammonia samples in excess of 0.5 mg/L, surfactant samples in excess of 0.25 mg/L, and detectable levels of chlorine.
3. High Priority Outfalls: outfalls/interconnections that have not been classified as Problem Outfalls and that are:
- discharging to an impaired water per the most current EPA-approved NHDES 303(d) list;
 - discharging to an area of concern to public health due to proximity of public beaches, recreational areas, drinking water supplies, or shellfish beds; and/or
 - determined by the permittee as high priority based upon other characteristics discussed below and as listed in Appendix C.
4. Low Priority Outfalls: outfalls/interconnections not identified as Problem or High Priority or as determined by the permittee as low priority based on the characteristics listed below or other available information.

Outfalls have been ranked into the above priority categories (except for excluded outfalls) based upon the following characteristics where information was available. To prioritize initial mapping and outfall assessment work, the Town completed a desktop analysis of previously mapped Town MS4 structures spatially overlaid with available GIS data. Town MS4 mapping is included in Appendix B.

It is understood that not all currently excluded outfalls will remain excluded throughout the Permit's 10-year assessment period; however, for initial outfall ranking and catchment investigations, this approach is expected to target the areas of highest concern first. Ranking characteristics include the following criteria:

- previous screening/sampling results indicate likely septage input (see criteria above for Problem Outfalls).
- discharges to a water quality limited waterbody or water with approved TMDLs for Permit pollutants of concern (bacteria/pathogens, phosphorus, nitrogen) .
- discharges in proximity to an area of public health concern including:
 - public beaches;
 - recreational areas;
 - drinking water supplies;
 - shellfish beds.
- past discharge complaints and reports.

- density of generating sites: places including institutional, municipal, commercial, or industrial sites, with a potential to generate pollutants that could contribute to illicit discharges. Examples of these sites include, but are not limited to, car dealerships; car washes; gas stations; garden centers; and industrial manufacturing areas.
- age of development and infrastructure: industrial areas greater than 40 years old and areas where the sanitary sewer systems are more than 40 years old will have a high illicit discharge potential.
- sewer conversion: contributing catchment areas that were once serviced by septic systems but have been converted to sewer connections may have a high illicit discharge potential. (Not applicable to Kingston)
- historic combined sewer systems: contributing areas that were once serviced by a combined sewer system but have been separated may have a high illicit discharge potential. (Not applicable to Kingston)
- density of aging septic systems: septic systems 30 years or older are prone to have failures and may have a high illicit discharge potential.
- culverted streams: any river or stream that is culverted for distances greater than a simple roadway crossing may have a high illicit discharge potential.

In addition to the required Permit categories, the Year 3 ranking update compiled publicly available data sets related to potential pollutant sources and resources to be protected into the Town's MS4 GIS. The results of spatial overlay analyses between the additional data sets and the mapped town MS4 outfall locations were tabulated separately and combined into a single column in the ranking matrix.

For each GIS sub-category, scoring was assigned similar to the Permit categories, and based upon the level of likelihood that the data type has the potential to contribute to water quality-related pollution or is located in or adjacent to an area of environmental concern.

The GIS sub-categories included 8 data sets obtained from various sources including NH GRANIT¹ and NHDES OneStop Data Mapper². The sub-categories used for the additional GIS outfall ranking and related data is shown in the table below.

¹ <http://www.granit.unh.edu/>

² <http://nhdesonestop.sr.unh.edu/html5viewer/>

Dataset used in GIS sub-category for outfall ranking	Dataset type	Dataset levels used for scoring	Sub-category score	Buffer analysis applied
Potential Pollutant Sources (where data intersected)				
NHDES Registered Auto Salvage	point	-	3, high 2, med 1, low	300-feet
NHDES Registered Hazardous Waste Generators				
NHDES Registered Potential Contamination Sources				
NHDES Registered Remediation Sites				
NHDES Registered Solid Waste Facility				
Resources with Protection Concerns				
NHDES Public Water Supply	point	-	1	300-feet
NHDES Well Data	point	-	1	150-feet
NHDES Wellhead Protection Areas	polygon	-	3 2 1	within 150-feet 300-feet
NHDES Drinking Water Source Protection	polygon	-	1	within
GRANIT Class GA2 groundwater	polygon	-	1	within
NH Wildlife Action Plan Habitat Tiers	areal	1 2 3	3 2 1	100-feet
GRANIT Conserved Lands	polygon	-	2 1	within 100-feet

6.0 DRY-WEATHER OUTFALL SCREENING AND SAMPLING

Dry-weather flow is a common indicator of potential illicit connections. The Permit requires all MS4 regulated outfalls and interconnections (excluding Problem and Excluded Outfalls) to be inspected for the presence of dry-weather flow. The Highway Department is responsible for conducting dry-weather outfall screening by the end of Year 3, starting with High Priority outfalls, followed by Low Priority outfalls, based upon the initial priority rankings described in the previous section.

Initial dry-weather outfall screening and sampling, if applicable, was completed in the summer of 2020 in accordance with Part 2.3.4.7.b of the Permit. Documentation and procedures (SOPs) for such screening and sampling is provided in Appendix C and Appendix E, respectively.

7.0 CATCHMENT INVESTIGATIONS

For any MS4 regulated outfall with evidence of illicit discharges as identified during dry-weather or other report, various methods can be used to trace the source of the potential discharge within the outfall catchment area. Catchment investigation techniques include but are not limited to review of maps, historic plans, and records; manhole observation; dry and wet weather sampling; video inspection; smoke testing; and dye testing.

Catchment Investigations shall be completed in accordance with Part 2.3.4.8 of the Permit. A written catchment investigation procedure is included in Appendix F. Investigations of catchments associated with Problem Outfalls shall begin no later than two (2) years from the permit effective date and shall be completed within seven (7) years (none currently identified in Kingston). Associated field forms, sampling bottle labels, and chain of custody forms are included in Appendix D.

Appendix E includes copies of water quality analysis instructions, procedures, SOPs, for sample parameters, and meters or field test kits that can be used for water quality analysis and recordation.

7.1 ILLICIT DISCHARGE REMOVAL

When the specific source of an illicit discharge is identified, the Town will exercise its authority as necessary to require its removal. The annual report will include the status of IDDEP investigations and removal activities (if any) and should include the following information for each confirmed source:

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

8.0 TRAINING

Annual IDDEP training is made available to employees involved in the IDDEP. This training will at a minimum include information on how to identify illicit discharges and may also include additional training specific to particular personnel and their function within the framework of this IDDEP. Training records will be maintained in Appendix G. The frequency and type of training will be included in the annual report.

9.0 PROGRESS REPORTING

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

- number of illicit discharges identified and removed;
- number and percent of total MS4 regulated outfall catchments evaluated using the catchment investigation procedure;
- number of dry-weather outfalls screened;
- number of wet-weather outfall sampling events;
- number of employees trained annually.

The success of this IDDEP will be measured by the IDDEP activities completed within the required permit timelines.

APPENDIX A

IDDEP LEGAL AUTHORITY
(ARTICLE 908: STORMWATER MANAGEMENT)

ARTICLE 908: STORMWATER MANAGEMENT

(Adopted December 15, 2009)

908.1 GENERAL PURPOSE

The purpose of this regulation is to provide for the health, safety, and general welfare of the citizens of Kingston, NH through the regulation of non-storm water discharges to the storm drainage system to the maximum extent practicable as required by federal and state law. This regulation establishes methods for controlling the introduction of pollutants into the municipal separate storm sewer system (MS4) in order to comply with requirements of the National Pollutant Discharge Elimination System (NPDES) permit process.

The Town of Kingston's storm drainage system is designed and operated to handle stormwater runoff flows from public and private properties. In order to function effectively, this system requires all private connections to it to be properly constructed, maintained and operated.

Stormwater runoff flows from individual properties onto the streets, then through storm drains to local waterways. It is therefore in the public interest to ensure that both public and private drainage systems are properly maintained, in order to facilitate the proper functioning of the town's storm drainage system, and to prevent pollutants from entering local waterways.

The objectives of this regulation are:

- A.** To maintain and improve the quality of surface water and groundwater within the Town of Kingston, NH, the Great Bay Estuary, and the State of New Hampshire.
- B.** To prevent the discharge of contaminated stormwater runoff from industrial, commercial, residential, and construction sites into the municipal separate storm sewer system (MS4) and natural waters of the Town of Kingston, NH.
- C.** To promote public awareness of the hazards involved in the improper discharge of hazardous substances, petroleum products, household hazardous waste, industrial waste, sediment from construction sites, pesticides, herbicides, fertilizers, and other contaminants into the storm drainage system and natural waters of the Town of Kingston, NH.
- D.** To prohibit illicit connections and discharges to the MS4.

- E. To establish legal authority to carry out all inspection, surveillance, monitoring, and enforcement procedures necessary to ensure compliance with this regulation.

908.2 DEFINITIONS

For the purpose of this regulation, the following shall mean:

- A. **Authorized Enforcement Agency.** Employees or designees of the Town of Kingston, NH designated to enforce this regulation.
- B. **Best Management Practices (BMPs).** Schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the discharge of pollutants to waters of the United States. BMPs also include treatment requirements, operating procedures, and practices to control site runoff, spillage or leaks, sludge or water disposal, or drainage from raw materials storage.
- C. **Clean Water Act.** The Federal Water Pollution Control Act (33r S.C. 1251 et seq.), and any subsequent amendments thereto.
- D. **Construction Activity.** Activities subject to the NPDES Construction Permits. These include construction projects resulting in land disturbance of one acre or more. Such activities include but are not limited to clearing and grubbing, grading, excavating, and demolition.
- E. **Hazardous Materials.** Any material, including any substance, waste, or combination thereof which because of its quantity, concentration, or physical, chemical, or infectious characteristics may cause, or significantly contribute to, a substantial present or potential hazard to human health, safety, property, or the environment when improperly treated, stored, transported, disposed of, or otherwise managed.
- F. **Illicit Discharge.** Any discharge to a municipal separate storm sewer that is not composed entirely of storm water.
- G. **Illegal Connections.** An illegal connection is defined as: Any drain or conveyance, whether on the surface or subsurface that allows an illicit discharge to enter the storm drainage system including but not limited to any conveyances that allow any non stormwater discharge including sewerage, process wastewater, and wash water to enter the storm drainage system and any connections to the storm drain system from indoor drains and sinks, regardless of whether said drain or connection had been previously allowed, permitted, or approved by an authorized enforcement agency.
- H. **Industrial Activity.** Activities subject to NPDES Industrial Stormwater Permits as defined in 40 CFR, Section 122.26(b) (14).
- I. **Municipal Separate Storm Sewer System (MS4).** The system of conveyances (including sidewalks, roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains) owned and operated by the Town of Kingston, NH, and designated or used for collecting or conveying stormwater, and

that is not used for collecting or conveying sewerage, also known as storm drainage system.

- J. National Pollutant Discharge Elimination System (NPDES) Storm Water Discharge Permit.** A permit issued by the Environmental Protection Agency (EPA) that authorizes the discharge of pollutants to waters of the United States, whether the permit is applicable on an individual, group, or general area-wide basis.
- K. Non-Stormwater Discharge.** Any discharge to the storm drainage system that is not composed entirely of stormwater.
- L. Person.** Any individual, association, organization, partnership, firm, corporation, or other entity recognized by law and acting as either the owner or as the owner's agent.
- M. Pollutant.** Anything which causes or contributes to pollution (as defined in EPA 40CFR 122.2). Pollutants may include, but are not limited to: paints, varnishes, and solvents, oil and other automotive fluids; non-hazardous liquid and solid wastes and yard waste; refuse, rubbish, garbage, litter, or other discarded or abandoned objects, and accumulations, so that same may cause or contribute to pollution; floatables; pesticides, herbicides, fertilizers; detergents, grease, washwater; hazardous substances and wastes; sewage, fecal coliform and pathogens; dissolved and particulate metals; animal wastes; wastes and residues that result from constructing a building or structure; and noxious or offensive matter of any kind.
- N. Premises.** Any building, lot, parcel of land, or portion of land whether improved or unimproved including adjacent sidewalks and parking strips.
- O. Storm Drainage System.** Publicly-owned facilities by which stormwater is collected and/or conveyed, including but not limited to any roads with drainage systems, municipal streets, gutters, curbs, inlets, catch basins, piped storm drains, pumping facilities, retention and detention basins, natural and human made or altered drainage channels, reservoirs, and other drainage structures; also referred to as municipal separate storm sewer system (MS4).
- P. Stormwater.** Any surface flow, runoff, and drainage consisting entirely of water from any form of natural precipitation, and resulting from such precipitation.
- Q. Stormwater Management Plan.** A document which describes the Best Management Practices and activities to be implemented by a person or business to identify sources of pollution or contamination at a site and the actions to eliminate or reduce pollutant discharges to Stormwater, Stormwater Conveyance Systems, and/or receiving waters to the Maximum Extent Practicable also known as a Stormwater Pollution Prevention Plan (SWPPP).
- R. Wastewater.** Any water or other liquid, other than uncontaminated stormwater, discharged from a facility.

908.3 APPLICABILITY

This regulation shall apply to all water entering the storm drainage system generated on any developed and undeveloped lands unless explicitly exempted by the Town of Kingston, NH.

908.4 RESPONSIBILITY FOR ADMINISTRATION

The Town of Kingston, NH shall administer, implement, and enforce the provisions of this regulation. Any powers granted or duties imposed upon the Town of Kingston, NH may be delegated in writing by the Kingston Board of Selectmen to persons or entities acting in the beneficial interest of or in the employ of the agency.

908.5 COMPATIBILITY WITH OTHER REGULATIONS

This regulation is not intended to modify or repeal any other regulation, rule regulation, or other provision of law. The requirements of this regulation are in addition to the requirements of any other regulation, rule, regulation, or other provision of law, and where any provision of this regulation imposes restrictions different from those imposed by any other regulation, rule, regulation, or other provision of law, whichever provision is more restrictive or imposes higher protective standards for human health or the environment shall control.

908.6 SEVERABILITY

The provisions of this regulation are hereby declared to be severable. If any provision, clause, sentence, or paragraph of this regulation or the application thereof to any person, establishment, or circumstances shall be held invalid, such invalidity shall not affect the other provisions or application of this regulation.

908.7 ULTIMATE RESPONSIBILITY

The standards set forth herein and promulgated pursuant to this regulation are minimum standards; therefore this regulation does not intend or imply that compliance by any person will ensure that there will be no contamination, pollution, or unauthorized discharge of pollutants.

908.8 GENERAL DISCHARGE PROHIBITIONS

908.8.1 Prohibition of Illicit Discharges.

No person shall throw, drain, deposit, or otherwise discharge, cause, or allow others under its control to throw, drain, deposit or otherwise discharge into the MS4 any pollutants or waters containing pollutants, other than stormwater.

No person shall throw, deposit, leave or permit to be thrown, deposited, or left in or upon any public or private property, driveway, parking area, street, or sidewalk any refuse, rubbish, garbage, litter, or other discarded or abandoned objects articles and accumulations, so that the same may cause or contribute to pollution. Waste in proper waste receptacles for the purpose of collection are exempted from this prohibition.

The commencement or continuance of any illicit discharge to the storm drainage system is prohibited except as described as follows:

- A.** The following discharges are exempt from discharge prohibitions established by this regulation:
 - 1. Waterline flushing;
 - 2. Landscape irrigation;
 - 3. Diverted stream flows;
 - 4. Rising groundwaters;
 - 5. Uncontaminated groundwater infiltration;
 - 6. Uncontaminated pumped groundwater;
 - 7. Discharges from potable water source;
 - 8. Air conditioning condensation;
 - 9. Irrigation water;
 - 10. Springs;
 - 11. Water from crawl space pumps;
 - 12. Foundation drains;
 - 13. Footing drains;
 - 14. Lawn watering;
 - 15. Individual residential car washing;
 - 16. Flows from riparian habitats and wetlands;
 - 17. De-chlorinated swimming pool water;
 - 18. Residential building wash waters, without detergents;
 - 19. Street wash water.
- B.** Discharges or flow from firefighting.
- C.** Discharges associated with dye testing; however this activity requires a verbal notification to the Town of Kingston, NH prior to the time of the test.
- D.** The prohibition shall not apply to any non-stormwater discharge permitted under an NPDES permit, waiver, or waste discharge order issued to the discharger and administered under the authority of the United States Environmental Protection Agency (EPA), provided that

the discharger is in full compliance with all requirements of the permit, waiver, or waste discharge order and other applicable laws and regulations, and provided that written approval has been granted for any discharge to the storm drainage system.

- E. The Town of Kingston, NH has the right to remove any of the above exemptions if it is determined that they are causing an adverse impact.

908.8.2 Prohibition of Illegal Connections

- A. The construction, use, maintenance or continued existence of illegal connections to the storm drain system is prohibited.
- B. This prohibition expressly includes, without limitation, illegal connections made in the past, regardless of whether the connection was permissible under law or practices applicable or prevailing at the time of connection.
- C. A person is considered in violation of this regulation if the person connects a line conveying sewage to the MS4, or allows such a connection to continue.
- D. Improper connections in violation of this regulation must be disconnected and redirected, if necessary, to an approved onsite wastewater management system or the sanitary sewer system upon approval of the Town of Kingston, NH.
- E. Any drain or conveyance that has not been documented in plans, maps or equivalent, and which may be connected to the storm sewer system, shall be located by the owner or occupant of that property upon receipt of written notice of violation for the Town of Kingston, NH requiring that such locating be completed. Such notice will specify a reasonable time period within which the location of the drain or conveyance is to be determined, that the drain or conveyance be identified as storm sewer, sanitary sewer or other, and that the outfall location or point of connection to the storm drainage system, sanitary sewer system, or other discharge point be identified. Results of these investigations are to be documented and provided to the Town of Kingston, NH.

908.9 SPECIFIC PROHIBITIONS AND REQUIREMENTS

The specific prohibitions and requirements in this section are not (necessarily) inclusive of all discharges prohibited.

- A. No person shall introduce or cause to be introduced into the MS4 any discharge that causes or contributes to causing the Town of Kingston, NH to violate a water quality standard, the Town's NPDES permit, or any state-issued discharge permit for discharges from its MS4.

Stormwater Management Regulation

- B.** No person shall dump, spill, leak, pump, pour, emit, empty, discharge, leach, dispose, or otherwise introduce or cause, allow, or permit to be introduced any of the following substances into the MS4:
1. Any used motor oil, antifreeze, or any other motor vehicle fluid;
 2. Any industrial waste;
 3. Any hazardous waste;
 4. Any domestic sewage or septic tank waste, grease trap waste, or grit trap waste;
 5. Any garbage, rubbish, yard waste, or other discarded or abandoned objects;
 6. Any wastewater from a commercial carwash facility; from any vehicle washing, cleaning, or maintenance of any business or commercial or public service vehicle, including a truck, bus, or heavy equipment, by a business or public entity that operates more than 2 such vehicles;
 7. Any wastewater from the washing, cleaning, repair or other maintenance of any type of equipment including grease hoods, grills, exhaust fans;
 8. Any wastewater from a commercial mobile power washer or from the washing or other cleaning of a building exterior that contains any soap, detergent, degreaser, solvent, or any other harmful cleaning substance;
 9. Any wastewater from floor, rug, or carpet cleaning;
 10. Any wastewater from the wash down or other cleaning of pavement that contains any harmful quantity of soap, detergent, solvent, degreaser, emulsifier, dispersant, or any other harmful cleaning substance; or any wastewater from the wash down or other cleaning of pavement where any spill, leak, or other release of oil, motor fuel, or other petroleum or hazardous substance has occurred, unless all harmful quantities of such released material have been previously removed;
 11. Any wastewater resulting from hosing or cleaning of gas stations, auto repair garages, or other types of automotive services facilities;
 12. Any effluent from a cooling tower, condenser, compressor, emissions scrubber, emissions filter, or the blow down from a boiler;
 13. Any ready-mixed concrete, mortar, ceramic, or asphalt base material or hydro mulch material, or from the cleaning of commercial vehicles or equipment containing, or used in transporting or applying, such material;
 14. Any runoff or wash down water from any animal pen, kennel, or fowl or livestock containment area, or deposition of animal wastes to storm drain system;
 15. Any water from a water curtain in a spray room used for painting vehicles or equipment;

16. Any substance or material that will damage, block, or clog the MS4;
- C. Any person responsible for any release as described in Subsection A. above shall comply with all state, federal, and any other local law requiring reporting, cleanup, containment, and any other appropriate remedial action in response to the release.
 - D. Every person owning property through which a watercourse passes, or such person's lessee, shall keep and maintain that part of the watercourse within the property free of trash, debris, and other obstacles that would pollute, contaminate, or significantly retard the flow of water through the watercourse. In addition, the owner or lessee shall maintain existing privately owned structures within or adjacent to a watercourse, so that such structures will not become a hazard to the use, function, or physical integrity of the watercourse.

908.10 COMPLIANCE MONITORING

908.10.1 Right of Entry: Inspection and Sampling

The Town of Kingston, NH shall be permitted to enter and inspect facilities subject to regulation under this regulation as often as may be necessary to determine compliance with this regulation.

- A. If a discharger has security measures in force which require proper identification and clearance before entry into its premises, the discharger shall make the necessary arrangements to allow access to representatives of the Town of Kingston, NH.
- B. Facility operators shall allow the Town of Kingston, NH ready access to all parts of the premises for the purposes of inspection, sampling, examination and copying of records that must be kept under the conditions of the NPDES permit to discharge stormwater, and the performance of any additional duties as defined by state and federal law.
- C. The Town of Kingston, NH shall have the right to set up on any permitted facility such devices as necessary in the opinion of the Town of Kingston, NH to conduct monitoring and/or sampling of the facility's stormwater discharges.
- D. The Town of Kingston, NH has the right to require the discharger to install monitoring equipment as necessary. The facility's sampling and monitoring equipment shall be maintained at all times in a safe and proper operating condition by the discharger at its own expense. All devices used to measure stormwater flow and quality shall be calibrated to ensure their accuracy.
- E. Any temporary or permanent obstruction to safe and easy access to the facility to be inspected and/or sampled shall promptly be removed by the operator at the written or oral request of the Town of Kingston, NH and shall not be replaced.

- F. Unreasonable delays in allowing the Town of Kingston, NH access to a permitted facility is a violation of a stormwater discharge permit and of this regulation. A person who is the operator of a facility with an NPDES permit to discharge stormwater associated with industrial activity commits an offense if the person denies the Town of Kingston, NH reasonable access to the permitted facility for the purpose of conducting any activity authorized or required by this regulation.

908.10.2 Search Warrants

If the Town of Kingston, NH has been refused access to any part of the premises from which stormwater is discharged, and he/she is able to demonstrate probable cause to believe that there may be a violation of this regulation, or that there is a need to inspect and/or sample as part of a routine inspection and sampling program designed to verify compliance with this regulation or any order issued hereunder, or to protect the overall public health, safety, and welfare of the community, then the Town of Kingston, NH may seek issuance of a search warrant from any court of competent jurisdiction.

908.11 REQUIREMENT TO PREVENT, CONTROL, AND REDUCE STORMWATER POLLUTANTS BY THE USE OF BEST MANAGEMENT PRACTICES (BMPs)

Best Management Practices shall be implemented for any activity, operation, or facility which may cause or contribute to pollution or contamination of stormwater, the storm drainage system, or waters of the United States. The owner or operator of such activity, operation, or facility shall provide, at their own expense, reasonable protection from accidental discharge of prohibited materials or other wastes into the municipal storm drainage system or watercourses through the use of structural and non-structural BMPs. Further, any person responsible for a property or premise that is, or may be, the source of an illicit discharge, may be required to implement at said person's expense, additional structural and non-structural BMPs to prevent the further discharge of pollutants to the MS4. Compliance with all terms and conditions of a valid NPDES permit authorizing the discharge of stormwater associated with industrial activity, to the extent practicable, shall be deemed compliance with the provisions of this section. These BMPs shall be part of a stormwater management plan as necessary for compliance with requirements of the NPDES permit.

908.11.1 GOOD HOUSEKEEPING REQUIREMENTS FOR REDUCTION OF STORMWATER RUNOFF AT EXISTING COMMERCIAL/INDUSTRIAL/INSTITUTIONAL PROPERTIES

- A. All materials with the potential to pollute stormwater runoff shall be stored in a manner that either prevents contact with rainfall and stormwater, or contains contaminated runoff treatment and disposal.
- B. Cleaning and maintenance products may not be disposed of or rinsed into the parking lot, street, storm drainage system or receiving waters.
- C. Fertilizers, pesticides, and herbicides shall be used in accordance with label directions and may not be disposed of or rinsed into the parking lot, street, storm drainage system or receiving waters.
- D. All paved parking lots used for motor vehicle parking shall be swept to remove debris.
- E. Catch basins shall be inspected and cleaned.
- F. Structural stormwater controls must be inspected and maintained in accordance with their Stormwater Maintenance Manual.
- G. Fuel and chemical residue and garbage shall be removed immediately and disposed of properly.
- H. Automotive fuel, oil and other chemicals must be cleaned up and prevented from entering storm drainage system.
- I. Leaking machinery and equipment, including vehicles must be repaired.
- J. Vehicle washing other than individual residential motor vehicle washing is prohibited, unless all wash and rinse water is diverted to on contained and disposed to the sanitary sewer. (Some vehicles may be washed over a porous surface if approved by the NH Dept of Environmental Services).

908.12 NOTIFICATION OF SPILLS

Notwithstanding other requirements of law, as soon as any person responsible for a facility or operation, or responsible for emergency response for a facility or operation has information of any known or suspected release of materials which are resulting or may result in illegal discharges or pollutants discharging into stormwater, the storm drainage system, or waters of the United States, said person shall take all necessary steps to ensure the discovery, containment, and cleanup of such release. In the event of such a release of hazardous materials said person shall immediately notify emergency response agencies of the occurrence via emergency dispatch services, In the event of a release of non-hazardous materials, said person shall notify the Town of Kingston, NH in person or by phone or facsimile no later than the next business day. Notifications in person or by phone shall be confirmed by written notice addressed and mailed to the Town of Kingston, NH within 5 business days of the phone notice. If the discharge of prohibited materials emanates from a commercial or industrial establishment, the owner or operator of such establishment shall also retain an on-site written record of the discharge and the actions taken to prevent its recurrence. Such records shall be retained for at least 7 years.

Failure to provide notification of a release as provided above is a violation of this regulation.

908.13 CITIZEN PARTICIPATION

908.13.1 Citizen Reports of Violations

All citizens are encouraged to report to the Town of Kingston, NH any spills, releases, illicit connections, and other instances of anyone discharging pollutants into the street, parking lot, catch basin, inlet, gutter, ditch or local waterways, and any other violation of this Regulation of which they become aware.

908.14 VIOLATIONS, ENFORCEMENT, AND PENALTIES

908.14.1 Violations

It shall be unlawful for any person to violate any provision or fail to comply with any of the requirements of this regulation. Any person who has violated or continues to violate the provisions of this regulation, may be subject to the enforcement actions outlined in this section or may be restrained by injunction or otherwise abated in a manner provided by law.

In the event the violation constitutes an immediate danger to public health or public safety, the Town of Kingston, NH is authorized to enter upon the subject private property, without giving prior notice, to take any and all measures necessary to abate the violation and/or restore the property. The Town of Kingston, NH is authorized to seek costs of the abatement as outlined in “Cost of Abatement of the Violation”.

908.14.2 Warning Notice

When the Town of Kingston, NH finds that any person has violated, or continues to violate, any provision of this regulation, or any order issued hereunder, the Town of Kingston, NH may serve upon that person a written Warning Notice, specifying the particular violation believed to have occurred and requesting the discharger to immediately investigate the matter and seek a resolution whereby any offending discharge will cease. Investigation and/or resolution of the matter in response to the Warning Notice in no way relieves the alleged violator of liability for any violations occurring before or after receipt of the Warning Notice. Nothing in this subsection shall limit the authority of the Town of Kingston, NH to take any action, including emergency action or any other enforcement action, without first issuing a Warning Notice.

908.14.3 Notice of Violation

Whenever the Town of Kingston, NH finds that a person has violated a prohibition or failed to meet a requirement of this regulation, the Town of Kingston, NH, by certified mail, may order compliance by written notice of violation to the responsible person.

A. The Notice of Violation shall contain:

1. The name and address of the alleged violator;
2. The address when available or a description of the building, structure or land upon which the violation is occurring, or has occurred;
3. A statement specifying the nature of the violation;
4. A description of the remedial measures necessary to restore compliance with this regulation and a time schedule for the completion of such remedial action;
5. A statement of the penalty or penalties that shall or may be assessed against the person to whom the notice of violation is directed;
6. A statement that the determination of violation may be appealed to the Town of Kingston, NH by filing a written notice of appeal within 5 business days of service of notice of violation; said notice of appeal shall be sent by certified mail, and
7. A statement specifying that, should the violator fail to restore compliance within the established time schedule, the work will be done by a designated governmental agency or a contractor and the expense thereof shall be charged to the violator.

B. Such notice may require without limitation:

1. The performance of monitoring, analyses, and reporting;
2. The elimination of illicit connections or discharges;
3. That violating discharges, practices, or operations shall cease and desist;
4. The abatement or remediation of stormwater pollution or contamination hazards and the restoration of any affected property
5. Payment of a fine to cover administrative and remediation costs; and
6. The implementation of source control or treatment BMPs.

908.14.4 Compensatory Action

In lieu of enforcement proceedings, penalties, and remedies authorized by this regulation, the Town of Kingston, NH may impose upon a violator alternative compensatory actions, such as storm drain stenciling, attendance at compliance workshops, waterway cleanup, etc.

908.14.5 Suspension of MS4 Access

A. Emergency Cease and Desist Orders

When the Town of Kingston, NH finds that any person has violated, or continues to violate, any provision of this regulation, or any order issued hereunder, or that the person's past violations are likely to recur, and that the person's violation(s) has (have) caused or contributed to an actual or threatened discharge to the MS4 or waters of the United States which reasonably appears to present an imminent or substantial endangerment to the health or welfare of persons or to the environment, the Town of Kingston, NH may issue an order to the violator directing it immediately to cease and desist all such violations and directing the violator to:

1. Immediately comply with all regulation requirements; and
2. Take such appropriate preventative action as may be needed to properly address a continuing or threatened violation, including immediately halting operations and/or terminating the discharge.

Any person notified of an emergency order directed to it under this Subsection shall immediately comply and stop or eliminate its endangering discharge. In the event of a discharger's failure to immediately comply voluntarily with the emergency order, the Town of Kingston, NH may take such steps as deemed necessary to prevent or minimize harm to the MS4 or waters of the United States, and/or endangerment to persons or to the environment, including immediate termination of a facility's water supply, sewer connection, or other municipal utility services. The Town of Kingston, NH may allow the person to recommence its discharge when it has demonstrated to the satisfaction of the Town of Kingston, NH that the period of endangerment has passed, unless further termination proceedings are initiated against the discharger under this regulation. A person that is responsible, in whole or in part, for any discharge presenting imminent endangerment shall submit a detailed written statement, occurrence, to the Town of Kingston, NH within 5 business days of receipt of the emergency order. Issuance of an emergency cease and desist order shall not be a bar against, or a prerequisite for, taking any other action against the violator.

B. Suspension due to Illicit Discharges in Emergency Situations

The Town of Kingston, NH may, without prior notice, suspend MS4 discharge access to a person when such suspension is necessary to stop an actual or threatened discharge which presents or may present imminent and substantial danger to the environment, or to the health or welfare of persons, or to the MS4 or waters of the United States. If the violator fails to comply with a suspension order issued in an emergency, the Town of Kingston, NH may take such steps as deemed necessary to prevent or minimize damage to the MS4 or waters of the United States, or to minimize danger to persons.

C. Suspension due to the Detection of Illicit Discharge

Any person discharging to the MS4 in violation of this regulation may have their MS4 access terminated if such termination would abate or reduce an illicit discharge. The Town of Kingston, NH will notify a violator of the proposed termination of its MS4 access. The violator may petition the Town of Kingston, NH for a reconsideration and hearing.

908.14.6 Civil Penalties

In the event the alleged violator fails to take the remedial measures set forth in the notice of violation or otherwise fails to cure the violations described therein within 5 business days, or such greater period as the Town of Kingston, NH shall deem appropriate, after the Town of Kingston, NH has taken one or more of the actions described above, the Town of Kingston, NH may impose a penalty not to exceed \$275.00 (depending on the severity of the violation) for each day the violation remains unremedied after receipt of the notice of violation.

908.14.7 Appeal of Notice of Violation

Any person receiving a notice of violation may appeal the determination of the Town of Kingston, NH. The notice of appeal must be received within 5 business days from the date of the Notice of Violation. Hearing on the appeal before the appropriate authority or his/her designee shall take place within 14 business days from the receipt of the notice of appeal. The decision of the municipal authority or their designee shall be final.

908.14.8 Enforcement Measures After Appeal

If the violation has not been corrected pursuant to the requirements set forth in the Notice of Violation, or, in the event of an appeal, within 5 business days of the decision of the municipal authority upholding the decision of the Town of Kingston, NH, then representatives of the Town of Kingston, NH shall enter upon the subject private property and are authorized to take any and all measures necessary to abate the violation and/or restore the property. It shall be unlawful for any person, owner, agent or person in possession of any premises to refuse to allow the government agency or designated contractor to enter upon the premises for the purposes set forth above.

908.14.9 Cost of Abatement of The Violation

Within 30 days after abatement of the violation, the owner of the property will be notified of the cost of abatement, including administrative costs. The property owner may file a written protest objecting to the amount of the assessment within 5 business days. If the amount due is not paid within a timely manner as determined by the decision of the municipal authority or by the expiration of the time in which to file an appeal, the

charges shall become a special assessment against the property and shall constitute a lien on the property for the amount of the assessment.

Any person violating any of the provisions of this article shall become liable to the Town of Kingston, NH by reason of such violation. The liability shall be paid in full or through installments as determined by the Kingston Board of Selectmen.

908.14.10 Violations Deemed a Public Nuisance

In addition to the enforcement processes and penalties provided, any condition caused or permitted to exist in violation of any of the provisions of this regulation is a threat to public health, safety, and welfare, and is declared and deemed a nuisance, and may be summarily abated or restored at the violator's expense, and/or a civil action to abate, enjoin, or otherwise compel the cessation of such a nuisance may be taken.

908.15 REMEDIES NOT EXCLUSIVE

The remedies listed in this regulation are not exclusive of any other remedies available under any applicable federal, state, or local law and it is within the discretion of the Town of Kingston, NH to seek cumulative remedies

The Town of Kingston, NH may recover all attorneys' fees, court costs, and other expenses associated with enforcement of this regulation, including sampling and monitoring expenses.

908.16 CONSTRUCTION AND POST-CONSTRUCTION STORMWATER MANAGEMENT AND EROSION CONTROL

908.16.1 General

The purpose of this regulation is to control runoff and soil erosion and sedimentation resulting from site construction and development. Secondly, it is to comply with US Environmental Protection Agency (EPA) Stormwater Management legislation for Municipal Separate Storm Sewer Systems (MS4s, as amended). **Subdivisions and site plans shall include plans for managing stormwater and controlling erosion and sedimentation as provided below.** Any errors or omissions in these regulations shall not exempt applicants from complying with applicable state and federal statutes. In the event of conflicting requirements, the stricter standard applies as stated in the Conflict and Severability and Conflicting Provisions sections of Kingston's regulation and regulations.

908.16.2 Definitions

- A. Best Management Practice (BMP):** A proven or accepted structural, non-structural, or vegetative measure the application of which reduces erosion, sediment, or peak storm discharge, or improves the quality of stormwater runoff.
- B. Certified Soil Scientist:** A person qualified in soil classification and mapping who is certified by the State of New Hampshire Board of Natural Scientists.
- C. Critical Areas:** Disturbed areas of any size within 50 feet of a stream, bog, waterbody, or poorly or very poorly drained soils; disturbed areas exceeding 2,000 square feet in highly erodible soils; or, disturbed areas containing slope lengths exceeding 25 feet on slopes greater than 10 percent.
- D. Development:** Any construction or land construction or grading activities other than for agricultural and silvicultural practices.
- E. Disturbed Area:** An area where the natural vegetation has been removed exposing the underlying soil, or vegetation has been covered.
- F. Erosion:** The detachment and movement of soil or rock fragments by water, wind, ice, or gravity.
- G. Highly Erodible Soils:** Any soil with an erodibility class (K factor) greater than or equal to 0.43 in any layer as found in Table 3-1 of the “Stormwater Management and Erosion and Sediment Control Handbook for Urban and Developing Areas in New Hampshire.”
- H. Project Area:** The area within the subdivision or site plan boundaries
- I. Sediment:** Solid material, either mineral or organic, that is in suspension is transported or has been moved from its site of origin by erosion.
- J. Stabilized:** When the soil erosion rate approaches that of undisturbed soils. Soils which are disturbed will be considered protected when covered with a healthy, mature growth of grass or a good covering of straw mulch or other equivalent (seedless) mulch (2 tons/acre). Mulch is only a temporary measure; ultimately, the site needs vegetation.
- K. Stormwater Runoff:** The water from precipitation that is not absorbed, evaporated, or otherwise stored within the contributing drainage area.
- L. Stream:** Areas of flowing water occurring for sufficient time to develop and maintain defined channels but may not flow during dry portions of the year. Includes but is not limited to all perennial and intermittent streams located on U.S. Geological Survey Maps.

908.16.3 Applicability

The applicant shall submit a stormwater management and erosion control plan to the Planning Board for any tract of land being developed or subdivided, where one or more of the following conditions are proposed:

- A.** A cumulative disturbed area exceeding 15,000 square feet.
- B.** Construction or reconstruction of a street or road.
- C.** A subdivision of more than three building lots.

D. Disturbed critical areas. (See Definitions)

908.16.4 Minimum Requirements

The following minimum requirements apply to all projects, regardless of size. Additional requirements may be found in this and other sections of the Site Plan Review and Subdivision regulations.

- A. Site drawing of existing and proposed conditions:**
 - 1. Locus map showing property boundaries
 - 2. North arrow, scale, date
 - 3. Property lines
 - 4. Easements
 - 5. Structures, utilities, roads and other paved areas
 - 6. Topographic contours
 - 7. Critical areas
 - 8. Surface water and wetlands, drainage patterns, and watershed boundaries
 - 9. Vegetation
- B. Soils information for design purposes or for determining highly erodible soils shall be determined from a National Cooperative Soil Survey (NCSS) soil series map. A High Intensity Soil Map of the site, prepared in accordance with the Society of Soil Scientists of Northern New England (SSNNE) Special Publication No. 1, can only be used for design purposes and not for determining highly erodible soils.**
- C. Temporary and permanent stormwater management and erosion and sediment control BMPs**
- D. Areas and timing of soil disturbance**
- E. A schedule for the inspection and maintenance of all BMPs**
- F. A narrative section including discussion of each measure, its purpose, construction sequence, and installation timing as they apply to the site.**

908.16.5 Design Standards

The following standards shall be applied in planning for stormwater management and erosion control: Additional requirements may be found in this and other sections of the Site Plan Review and Subdivision regulations.

- A. All measures in the plan shall meet as a minimum the Best Management Practices set forth in the “New Hampshire Stormwater Manual”, NHDES, December, 2008, as amended, a copy of which is available in the planning board office.**

Additional BMP’s are available at the following locations:

- 1. <http://www.des.state.nh.us/factsheets/wqe/wqe-6.htm> - NHDES Environmental Fact Sheet WD-WQE-6, (Soil Erosion and Sediment control on Construction Sites, 1996)

2. <http://cfpub.epa.gov/npdes/stormwater/menuofbmps/menu.cfm> - EPA National Pollution Discharge Elimination System, (NPDES) (Stormwater Menu of Best Management Practices (BMPs)).
 3. http://cfpub.epa.gov/npdes/stormwater/menuofbmps/con_site.cfm - EPA NPDES (Construction Site Stormwater Runoff Control).
- B.** Whenever practical, natural vegetation shall be retained, protected or supplemented. The stripping of vegetation shall be done in a manner that minimizes soil erosion.
 - C.** Appropriate erosion and sediment control measures shall be installed prior to soil disturbance.
 - D.** The area of disturbance shall be kept to a minimum. Disturbed areas remaining idle for more than 30 days shall be stabilized.
 - E.** Measures shall be taken to control erosion within the project area. Sediment in runoff water shall be trapped and retained within the project area using approved measures. Wetland areas and surface waters shall be protected from sediment.
 - F.** Off-site surface water and runoff from undisturbed areas shall be diverted away from disturbed areas where feasible or carried non-erosively through the project area. Integrity of downstream drainage systems shall be maintained.
 - G.** Measures shall be taken to control the post-development peak rate of runoff so that it does not exceed pre-development runoff for the 2-year, 24-hour storm event and for additional storm event frequencies as specified in the design criteria of the “New Hampshire Stormwater Manual”.
 - H.** Priority should be given to preserving natural drainage systems including perennial and intermittent streams, wetlands, swales, and drainage ditches for conveyance of runoff leaving the project area.
 - I.** All temporary erosion and sediment control measures shall be removed after final site stabilization. Trapped sediment and other disturbed soil areas resulting from the removal of temporary measures shall be permanently stabilized within 30 days unless conditions dictate otherwise.

908.16.6 Completed Application Requirements

The Planning Board shall require each of the following in the final plan unless the project is deemed of sufficiently minimal impact to qualify for the minimum requirements specified in Section 908.16.4 of this regulation.

908.16.6.1 Construction drawings

- A.** Existing and proposed conditions:
 1. Locus map showing property boundaries
 2. North arrow, scale, date
 3. Property lines
 4. Structures, roads, utilities, earth stockpiles, equipment storage, and plan for stump and debris removal

5. Topographic contours at two-foot intervals
 6. Critical areas, stockpile and staging areas and snow storage areas
 7. Within the project area and within 400 feet of project boundary surface waters, wetlands, and drainage patterns and watershed boundaries
 8. Vegetation
 9. Extent of 100-year flood plain boundaries if published or determined
 10. Soils information for design purposes from a National Cooperative Soil Survey (NCSS) soil series map or a High Intensity Soil Map of the site, prepared in accordance with SSSNNE Special Publication No. 1. Highly erodible soils shall be determined by soil series.
 11. Easements
 12. Areas of soil disturbance
 13. Areas of cut and fill
 14. Areas of poorly or very poorly drained soils including any portion to be disturbed or filled
 15. Location of all structural, non-structural, and vegetative stormwater management and erosion control BMPs
 16. Identification of all permanent control BMPs
 17. Tabulated sequence of construction
- B. Other plan requirements:**
1. Construction schedule
 2. Earth movement schedule
 3. A proposed schedule for the inspection and maintenance of all BMPs
 4. Description of temporary and permanent vegetative BMPs including seeding specifications
 5. Description of all structural and non-structural BMPs with detailed drawings of each as appropriate

908.16.6.2 Report section including:

- A.** Design calculations for all temporary and permanent structural control BMP measures
- B.** A proposed schedule for the inspection and maintenance of all BMPs
- C.** Identification of all permanent control measures and responsibility for continued maintenance
- D.** Drainage report with calculations showing volume, peak discharge, and velocity of present and future runoff
- E.** When detention structures are planned to reduce future condition peak discharge, the soil cover complex method shall be used to compute the runoff volume and peak discharge for designing the structure. The design will conform to the criteria outlined for those types of structures given in the “New Hampshire Stormwater Manual”.

908.16.7 Responsibility For Installation/Construction

The applicant shall bear final responsibility for the installation, construction, inspection and disposition of all stormwater management and erosion control measures required by the provisions of this regulation.

The Planning Board shall require a bond or other security in an amount and with surety conditions satisfactory to the Board, providing for the actual construction and installation of such measures within a period specified by the Planning Board and expressed in the bond or the surety

Site development shall not begin before the stormwater management and erosion control plan receives conditional approval. Best Management Practices shall be installed as designed and scheduled as a condition of final approval of the plan.

908.16.8 Plan Approval And Review

The Planning Board shall indicate approval of the stormwater management and erosion control plan, as filed, if it complies with the requirements and objectives of this regulation. Such approval shall be a component of subdivision or site plan approval. If disapproved, a list of plan deficiencies and the procedure for filing a revised plan will be given to the applicant.

Technical review of any stormwater management and erosion control plan prepared under this regulation shall be reviewed by the Town's Engineer, at the expense of the applicant.

908.16.9 Maintenance And Inspection

A. A narrative description of on-going maintenance requirements for water quality measures required by stormwater management and erosion and sediment control plans after final planning board approval shall be recorded on the deed to the property on which such measures are located. The narrative shall be in the form of a typical site plan management, development agreement or as otherwise set forth by the planning board. The description so prepared shall comply with the requirements of RSA 478:4-a, as detailed below.

1. The register of deeds shall not accept a deed or instrument for filing/recording unless it recites the following information:
 - a. The latest mailing address of the grantees named in the deed or instrument;
 - b. In the first sentence of the first description paragraph, the names of all municipalities in which the property is located;

- c. The name of each person signing the deed or instrument as a party to the transaction printed or typewritten under the signature.
- B.** All documents shall be suitable for reproduction as determined by the register of deeds, who shall provide document standards as amended and adopted by the New Hampshire registers of deeds. The standards and any amendments thereto shall include a statement of their effective date, and shall be posted in and distributed by all registries of deeds for at least 60 days prior to such effective date.
- C.** The purpose of this article is to enact locally the administrative and enforcement procedures set forth in RSA 676 of the existing planning and land use statutes.
- D.** RSA 676 authorizes the following penalties and remedies for enforcement of the provisions of this regulation:
 1. Injunctive relief in accordance with RSA 676:15;
 2. Fines and penalties in accordance with RSA 676:17;
 3. Issuance of a cease and desist order in accordance with RSA 676:17-a;
 4. Pleas by mail for local land use citations in accordance with RSA 676:17-b.
- E.** The Planning Board shall require inspections to verify on-going maintenance of water quality protection measures. Such inspections shall be performed by the Town Engineer at reasonable times to the landowner. If permission to inspect is denied by the landowner, the Board of Selectmen shall secure an administrative inspection warrant from the district or superior court under RSA 595-B.
- F.** The Planning Board shall require a fee for inspections of water quality protection measures. See Article 905, Planning Board Fee Schedule for Subdivisions, Site Plans, Sign Permits and Plan Recording, found in Kingston's Subdivision Review Regulations. The owner of the property or site plan operator shall be responsible for fee payment on and into the future on an annual basis. Fee payments for site plans, regardless of approval date, shall be due on or before December 31 to cover inspections for the following year. A schedule of fees shall be adopted by the Planning Board, which represents the cost of performing routine inspections of various types of water quality protection measures. Inspections shall be performed by an inspector(s)/consultant(s) knowledgeable in water quality, storm water and erosion control devices and their maintenance. The procedure for adoption of the fee schedule shall be as provided for in RSA 676:4(l)(g), as detailed below.
 1. "Reasonable fees in addition to fees for notice under subparagraph (D) may be imposed by the board to cover its administrative expenses and costs of special investigative studies, review of documents and other matters which may be required by particular applications."

908.17 INDUSTRIAL OR CONSTRUCTION ACTIVITY DISCHARGES

A. Submission of NOI to the Town of Kingston, NH

1. All operators of (1) municipal landfills; (2) hazardous waste treatment, disposal, and recovery facilities; (3) industrial facilities that are subject to Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA) 42, USC § 11023; and (4) industrial facilities that the Town's Inspection Agent determines are contributing a substantial pollutant loading to the MS4, which are sources of storm water discharges associated with industrial activity, shall comply with the following requirements:
 - a. Any operator who intends to obtain coverage for storm water discharge associated with industrial activity under the NPDES General Permit for Storm Water Discharges Associated With Industrial Activity ("the Industrial General Permit") shall submit a signed copy of its Notice of Intent (NOI) to the Town's Inspection Agent at least 5 days prior to the commencement of the industrial activity at the facility. If industrial activity is already underway upon the effective date of this Regulation, the NOI shall be submitted within thirty (30) days. Where the operator of a facility with a storm water discharge associated with industrial activity which is covered by the Industrial General Permit changes, the new operator of the facility shall submit an NOI at least 5 days prior to the change.
 - b. A Storm Water Pollution Prevention Plan (SWPPP) shall be prepared and implemented in accordance with the requirements of the Industrial General Permit or any individual or group NPDES permit issued for storm water discharges from the industrial facility, and with any additional requirement imposed by or under this Regulation, and any other Town regulation.
 - c. The SWPPP shall be prepared, signed, and sealed by a Registered Professional Engineer. The signature and seal of the Registered Professional Engineer shall constitute his/her attestation that the SWPPP fully complies with the requirements of the Industrial General Permit, or with any applicable individual or group NPDES permit issued for storm water discharges from the industrial facility, and within any additional requirement imposed by or under this Regulation. The SWPPP shall contain the name, title, and business address of the Registered Professional Engineer signing it, and the date that he/she did so.
 - d. The SWPPP shall be completed prior to the submittal of the NOI to the Town's Inspection Agent and, for a new industrial operation, prior to the commencement of the industrial activity at

- the facility. The SWPPP shall be updated and modified as appropriate and as required by the Industrial General Permit and this Regulation. Any update or modification to the SWPPP shall be prepared, signed, and sealed by a Registered Professional Engineer.
- e. A copy of any NOI that is required by section 908.17 shall be submitted to the Town in conjunction with any application for a permit or any other Town approval necessary to commence or continue operation of the industrial facility.
2. The Town's Inspection Agent may require any operator who is required by section 907.17.A.1.b to prepare a SWPPP to submit the SWPPP, and any modifications thereto, to the Town's Inspection Agent for review. Such submittal and review of the SWPPP may be required by the Town's Inspection Agent prior to commencement of or during industrial activity at the facility.
 - a. Upon the Town Engineer's review of the SWPPP and any site inspection that he/she may conduct, the Town may deny approval of any application for a permit or any other Town approval necessary to commence or continue operation of the facility, on the grounds that the SWPPP does not comply with the requirements of the Industrial General Permit, any individual or group NPDES permit issued for storm water discharges from the industrial facility, or any additional requirement imposed by or under this Regulation. Also, if at any time the Town's Inspection Agent determines that the SWPPP is not being fully implemented, the Town may similarly deny approval of any application for a permit or other Town approval necessary to commence or continue operation of the industrial facility.
 - b. Any significant modification to the SWPPP shall be prepared, signed, and sealed by a Registered Professional Engineer, as required for the original SWPPP by section 908.17.A.1.d.
 - c. The SWPPP, with the Registered Professional Engineer's signature and seal affixed, and with any modifications attached, shall be retained at the industrial facility from the date of commencement of operations until all storm water discharges associated with industrial activity at the facility are eliminated and the required Notice of Termination (NOT) has been submitted.
 - d. The operator shall make the SWPPP and any modification thereto available to the Town's Inspection Agent upon request as well as to EPA and State inspectors.
 - e. The Town's Inspection Agent may notify the operator at any time that the SWPPP does not meet the requirements of the Industrial General Permit, any applicable individual or group NPDES permit issued for storm water discharges from the industrial facility, or any additional requirement imposed by or

under this Regulation. Such notification shall identify those provisions of the permit or Regulation which are not being met by the SWPPP, and identify which provisions of the SWPPP require modifications in order to meet such requirements. Within thirty (30) days of such notification from the Town's Inspection Agent, the operator shall make the required changes to the SWPPP and shall submit to the Town's Inspection Agent a written certification that the requested changes have been made.

- f. The operator shall amend the SWPPP whenever there is a change in design, construction, operation, or maintenance, which has a significant effect on the potential for the discharge of pollutants to the MS4 or to the waters of the United States, or if the SWPPP proves to be ineffective in eliminating or significantly minimizing pollutants, or in otherwise achieving the general objective of controlling pollutants in storm water discharges associated with industrial activity.
3. Qualified personnel (provided by the operator) shall inspect equipment and areas of the facility specified in the SWPPP at appropriate intervals. A set of tracking or follow-up procedures shall be used to ensure that appropriate actions are taken in response to the inspections. Records of inspection shall be maintained.
 - a. Qualified personnel (provided by the operator) shall conduct comprehensive site compliance evaluations as required by Part 908.10 of the Industrial General Permit at intervals of no less than once per year. Based on the results of the compliance evaluation, the description of potential pollutant sources and the pollution prevention measures and controls identified in the SWPPP shall be revised as appropriate within two weeks of such evaluation and shall provide for implementation of any changes to the SWPPP in a timely manner, but in no case more than twelve weeks after the compliance evaluation.

A report summarizing the scope of the comprehensive site compliance evaluation required by paragraph VI.A.14, personnel making the compliance inspection, the date(s) of the inspection, major observations relating to the implementation of the SWPPP, and actions taken in accordance with necessary and appropriate plan revisions shall be made and retained as part of the SWPPP for at least one year after all storm water discharges from the facility are eliminated and the required NOT has been submitted. The report shall identify any incidence of noncompliance; or, if the report does not identify any incidence of noncompliance, the report shall contain a certification that the facility is in compliance with the SWPPP, the applicable NPDES permit, and this Regulation. The report shall be signed by the

individual responsible for the comprehensive site compliance evaluation and it shall be submitted to the Town's Inspection Agent within ten days of its completion.

- b. If the industrial facility is required by Part 908.16.6 of the Industrial General Permit to conduct semi-annual monitoring, a signed copy of each semi-annual monitoring report prepared in accordance with Part 908.16.9. shall be submitted to the Town's Inspection Agent.
 - c. If the industrial facility is required by Part VI.B.3 of the Industrial General Permit to conduct annual monitoring, records of the monitoring results shall be retained at the facility and made available to the Town's Inspection Agent upon request. If expressly required by the Town's Inspection Agent, a written report of the annual monitoring shall be prepared and submitted to the Town's Inspection Agent.
4. By written notice, the Town's Inspection Agent may require any industrial facility identified in accordance with this Section VI to implement a monitoring program that includes the submission of quantitative data on the following constituents: any pollutants limited in effluent guidelines subcategories, where applicable; any pollutant listed in an existing NPDES permit for the facility; oil and grease, COD, pH, BOD5, TSS, total phosphorus, total Kjeldahl nitrogen, nitrate plus nitrite nitrogen, and any information on discharges required under 40 C.F.R. 122.21(g)(7)(iii) and (iv). The Town's Inspection Agent may require written reports of any such monitoring to be submitted to him/her.
 5. By written notice, the Town's Inspection Agent may require any industrial facility identified in this Section 908.17 to conduct semi-annual or annual monitoring of storm water discharges, or the Town's Inspection Agent may specify an alternative monitoring frequency and/or specify additional parameters to be analyzed. The Town's Inspection Agent may require written reports of any such additional monitoring to be submitted to him/her.
 6. The operator shall retain the SWPPP until at least one year after storm water discharges associated with industrial activity at the facility are eliminated, or that operator is no longer operating the facility, and a Notice of Termination (NOT) in compliance with paragraph 908.17.2.c has been submitted. The operator shall retain all records of all monitoring information, copies of all required reports, and records of all data used to complete the NOI, until at least one year after all storm water discharges associated with industrial activity at the facility are eliminated, or the operator ceases to operate that facility, and the required Notice of Termination (NOT) has been submitted.
 7. For discharges subject to the semi-annual or annual monitoring requirements of Part 908.17. of the Industrial General Permit, in

addition to the records-retention requirements of the paragraph above, operators are required to retain for a six year period from the date of sample collection, records of all monitoring information collected. Operators must submit such monitoring results, and/or a summary thereof, to the Town's Inspection Agent upon his/her request.

- a. **No** discharge shall exceed the maximum allowable concentrations as outlined in the New Hampshire Env-Ws 1700 Surface Water Quality Regulations.
 - b. Where all storm water discharges associated with industrial activity that are authorized by this Regulation, and by the NPDES permit for those discharges from industrial activities, are eliminated, or where the operator of storm water discharges associated with industrial activity at a facility changes, the operator of the facility shall submit to the Town's Inspection Agent a Notice of Termination (NOT) that includes the information required for Notices of Termination by Part 908.17 of the Industrial General Permit.
- B.** Any owner of a facility with a storm water discharge associated with industrial activity to which Subsection A applies, whether or not he/she is an operator of the facility, is jointly and severally responsible for compliance with the best management practices (BMP) measures required in the SWPPP for the facility and for compliance with the effluent limitations for coal pile runoff and hazardous metals specified in paragraphs VI.A.22 and VI.A.23 above.
- C.** Upon request by the Town's Inspection Agent, all owners and operators of any facility that experiences a problem complying with the requirements of this Regulation, the Industrial General Permit, or any applicable individual or group NPDES permit issued for storm water discharges from the industrial facility, shall consult with the Town's Inspection Agent, or any other representative of the Town, and any third-party designated by the Town in an attempt to achieve compliance as soon as practicable. If compliance is not achieved to the Town's satisfaction, the Town may, in its discretion, report the noncompliance to EPA and/or the State, and/or the Town may itself undertake any enforcement action authorized by Sections IX, XI, or XII of this Regulation. Exercise of the Town's option for consultation under this Subsection VI.C. shall not be a bar against, or prerequisite for, taking any other enforcement action against any owner or operator of the facility.

908.18 OTHER REQUIRED PERMITS

In addition to local approval, the following shall be required if applicable:

Stormwater Management Regulation

- A. RSA 485-A:17 requires a permit from the New Hampshire Water Supply and Pollution Control Division for “...any person proposing to significantly alter the characteristic of the terrain, in such a manner as to impede natural runoff or create an unnatural runoff ...”. Regulations require this permit for any project involving more than 100,000 contiguous square feet of disturbance or if such activity occurs in or on the border of the surface waters of the state.
- B. National Pollutant Discharge Elimination System (NPDES) Stormwater Discharge Permit. A permit issued by the EPA or by the State under authority delegated pursuant to 33 USC, section 1342 (b) that authorizes the discharge of pollutants to waters of the United States.
- C. For a cumulative disturbance of one acre of land that EPA considers “construction activity”, which includes, but is not limited to clearing, grading, excavation and other activities that expose soil typically related to landscaping, demolition and construction of structures and roads, a federal permit will be required. Consult EPA for specific rules. This EPA permit is in addition to any state or local permit required. To apply, the entity or individual responsible for construction site operations shall file a Notice of Intent (NOI) with the EPA postmarked at least 24 hours prior to work beginning. EPA will respond within two weeks with a written permit, provided the NOI meets their criteria.

908.19 ENFORCEMENT

Any violation of the requirements of this regulation shall be subject to the enforcement procedures detailed in RSA 676. The Board of Selectmen or their designee shall be responsible for enforcement of the provisions of this regulation.

- A. **Written Notice of Violation.** A written notice of violation shall be issued to the property owner by registered mail from the Board of Selectmen or their designee if the agent determines that conditions at the site are in violation of any of the requirements of this regulation or plans approved under this regulation and that the violation is not an immediate threat to public health and safety. The notice of violation shall:
 - 1. Specify the actions or conditions which violate the requirements of this regulation or plans approved under this regulation;
 - 2. Identify what needs to be done to correct the violation(s);
 - 3. Specify a reasonable time frame within which the violation will be corrected;
 - 4. Be provided to the property owner with a copy to be kept in the official records of the (local land use board or local administrator).
- B. **Cease and Desist Order.** In accordance with NH RSA 676:17-a, Cease and Desist Orders, A cease and desist order may be issued to the property owner by the Board of Selectmen or their designee if the

agent determines that conditions at the site are in violation of any of the requirements of this regulation and the violation is either:

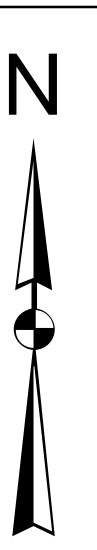
1. An immediate threat to public health and safety; or
2. The property owner has failed to take corrective action(s) identified in a written notice of violation issued under Section 908.14 of this regulation within the time frame specified therein.

908.20 ADOPTION OF REGULATION

This regulation shall be in full force and effect immediately upon passage and adoption. All prior regulations in conflict with this regulation are hereby repealed.

APPENDIX B

STORM SYSTEM MAPPING

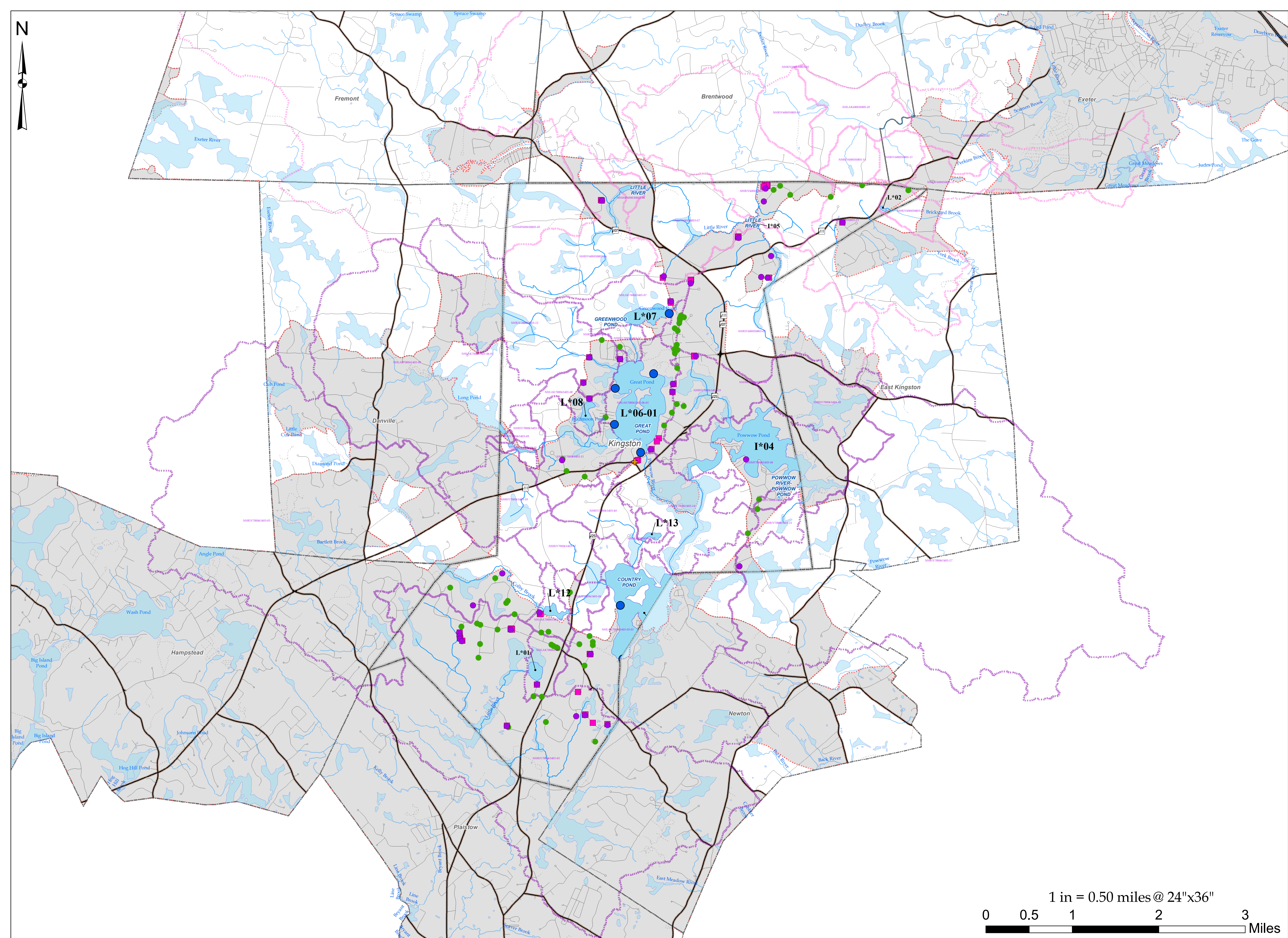


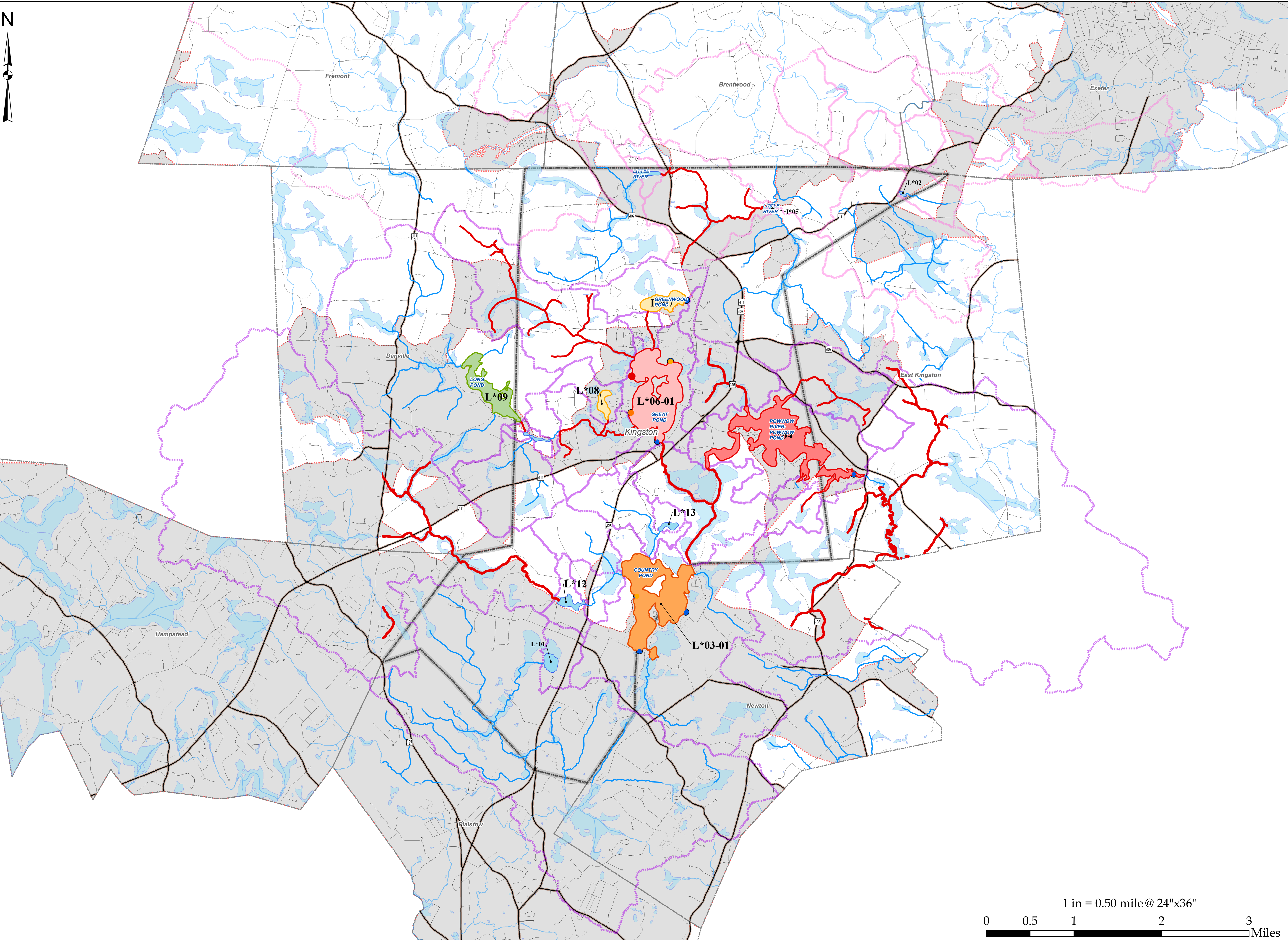
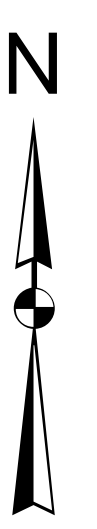
Legend

- MS4 Urbanized Area
- NHDES AUD Segment Watershed
- NHDES AUD Segment Watershed Tributary to Great Bay
- MS4 Outfall within 300' of Receiving Water or 150' of Wetland
- MS4 Catch Basins
- MS4 Outfall
- + Interconnection to NHDOT MS4




Abbrev. Label	HUC 12	Assessment Class ID, see derived from the BDC12 file made within. The labels have been shortened for this map for presentation purposes. Example: the label "L*07" (BDC12 = 010700060201) represents ASID = "NH LAK700060201-03". For any areas within an ASID outside beyond the boundary of a single BDC12, additional portions of the map of the BDC12 number have also been replaced.
L*03	010 700060201	
AUD = NH LAK700060201-03		

5/26/2021
TOWN OF KINGSTON NH
 MS4 MCM3 MAPPING
 MS4 INFRASTRUCTRE











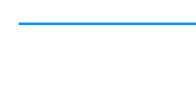
Legend

-  MS4 Urbanized Area
-  NHDES AUID Segment Watershed
-  NHDES AUID Segment Watershed Tributary to Great Bay







BEACH NHDES IMPAIRMENT (2018)

-  5-P
-  4A-P Bacteria TMDL
-  4A-M Bacteria TMDL
-  not impaired

STREAM NHDES IMPAIRMENT (2018)

-  5-P
-  5-M
-  not impaired

WATERBODY NHDES IMPAIRMENT (2018)

-  5-P
-  5-M Lake Phosphorus TMDL
-  5-M
-  4A-M Lake Phosphorus TMDL
-  4C-M non-pollutant
-  not impaired

Abbrev. Label | HUC 12 | Assessment Date (2018) are derived from the BEC12 data used in the assessment process. The labels have been shortened for brevity. Example: the Label "L*03" is BEC12 = 01070060201. In some cases where an AUID extends beyond the boundary of a single BEC12, additional portions of the rest of the HUC 12 number have also been reported.

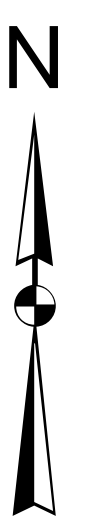
AUID = NH LAK70060201-01

5/26/2021

TOWN OF KINGSTON NH
MS4 MCM3 MAPPING
IMPAIRED WATERS BY NHDES
AUID IMPAIRMENT CATEGORY

1 in = 0.50 mile @ 24"x36"





Legend

- MS4 Urbanized Area
- NHDES AUID Segment Watershed
- NHDES AUID Segment Watershed Tributary to Great Bay

BEACH PRIMARY IMPAIRMENT (2018)

- Bacteria TMDL
- e.coli impaired
- not impaired

STREAM PRIMARY IMPAIRMENT (2018)

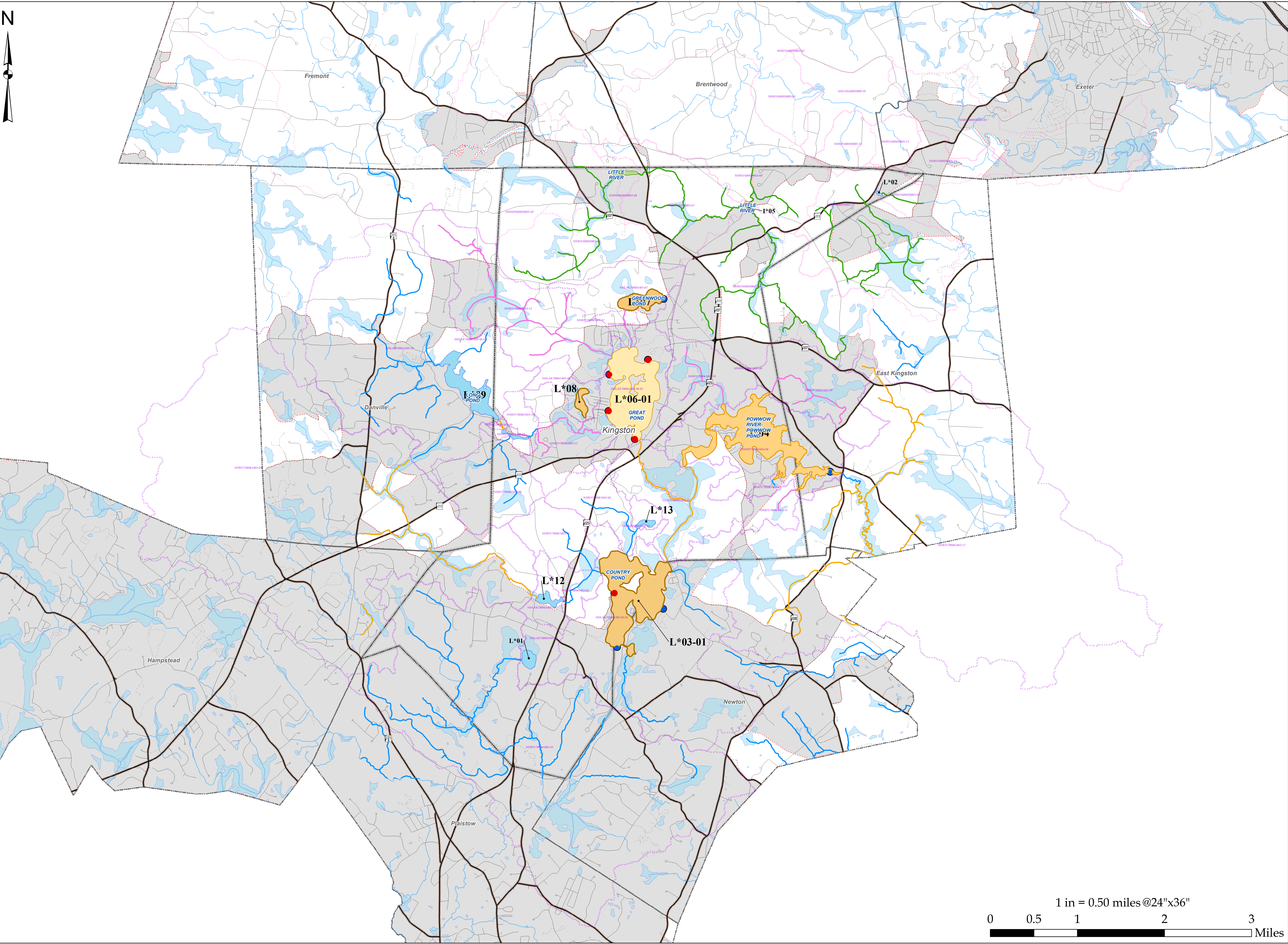
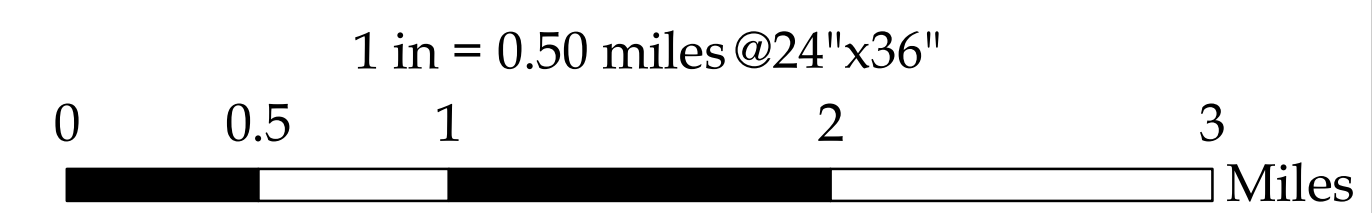
- Bacteria TMDL
- other phosphorus impaired
- pH impaired
- Great Bay tributary - nitrogen impaired
- not impaired

WATERBODY PRIMARY IMPAIRMENT (2018)

- Lake Phosphorus TMDL
- total phosphorus
- other phos impairment
- Great Bay Tributary - nitrogen
- not impaired

Abbrev. Label HUC 12
 L*01 010 70060201
 Assessment: CSDs are derived from the BEC12 data used within the data. The labels have been shortened for use in the presentation program.
 Example: the Label "L*01" in BEC12 = 01070060201
 Represents AUID = 70060201-01
 In rare cases where an AUID extends beyond the boundary of a single BEC12, additional portions of the end of the BEC12 number have a line been replaced.
 AUID = NHAK70060201-01

5/26/2021
 TOWN OF KINGSTON NH
 MS4 MCM3 MAPPING
 IMPAIRED WATERS BY
 PRIMARY IMPAIRMENT



APPENDIX C

OUTFALL INVENTORY AND PRIORITY RANKING MATRIX
INITIAL DRY-WEATHER SCREENING DOCUMENTATION

TOWN OF KINGSTON NH															
MS4 OUTFALL INVENTORY (2021)															
OUTFALLS WITH DISCHARGES WITHIN 300-FEET OF A REGULATED WATERBODY (NHDES AUID) OR 150' OF A WETLAND															
Scoring Category			Previous Screening Results Indicate Likely Septage Input? ¹	Receiving Waterbody Impairment? ²	Discharging to Area of Concern to Public Health? ³	Frequency of Past Discharge Complaints	Density of Generating Sites ⁴	Age of Development/ Infrastructure ⁵	Historic Combined Sewers or Septic? ⁶	Aging Septic? ⁷	Culverted Streams? ⁸	Additional Characteristics ⁹	Score	Priority Ranking	DRY-SCREEN COMPLETED Y N
Information Source			Outfall inspections and sample results	Impaired Waters List	Maps	Town Staff	Land Use/GIS Maps, Aerial Photography	Land Use Information, Visual Observation	Town Staff, GIS Maps	Land Use, Town Staff	GIS and Storm System Maps	GIS Desktop Analysis			
Scoring Criteria			Yes = 10 (Problem Outfall) No = 0	Yes = 10 No = 0	Yes = 10 No = 0	Frequent = 3 Occasional = 2 None = 0	High = 3 Medium = 2 Low = 1	High = 3 Medium = 2 Low = 1	Yes = 3 No = 0	Yes = 3 No = 0	Yes = 3 No = 0	See Notes			
OUTFALL ID	RECEIVING WATER ID	RECEIVING WATER NAME													
12	NHLAK700061403-08	HALFMOON POND	none known at time of analysis	10	none known at time of analysis	none known at time of analysis	1	2	NOT APPLICABLE TO KINGSTON NH	none known at time of analysis	none known at time of analysis	1	14	HIGH	Y
14	NHRIV700061403-12	UNNAMED BROOK-TO GREAT POND THRU NORTHWEST INLET		10			1	2				2	HIGH		
18	NHRIV700061403-12	UNNAMED BROOK-TO GREAT POND THRU NORTHWEST INLET		10			1	2				2	HIGH		
32	NHRIV700061403-11	POWWOW RIVER - UNNAMED BROOK		10			1	2				1	HIGH		
39	NHLAK700061403-06-01	GREAT POND		10			1	2				6	19	HIGH	Y
54	NHRIV700061403-29	POWWOW POND-RTE 125 INLET		10			1	2				4	17	HIGH	
64	NHRIV600030803-09	UNNAMED BROOK		10			1	2				2	15	HIGH	
80	NHRIV600030803-07	LITTLE RIVER - UNNAMED BROOK		10			1	2				8	21	HIGH	
106	NHLAK700061403-07	GREENWOOD POND		10			1	2				3	16	HIGH	
120	NHLAK700061403-06-01	GREAT POND		10			1	2				1	14	HIGH	Y
155	NHLAK700061403-12	BARTLETT MILL POND		10			1	2				0	13	HIGH	Y
159	NHRIV700061401-01	LITTLE RIVER - UNNAMED BROOK		0			1	2				3	6	low	
170	NHRIV700061403-05	BARTLETT BROOK-COLBY BROOK-UNNAMED BROOK		10			1	2				4	17	HIGH	
172	NHRIV700061403-05	BARTLETT BROOK-COLBY BROOK-UNNAMED BROOK		10			1	2				4	17	HIGH	
182	NHRIV700061401-01	LITTLE RIVER - UNNAMED BROOK		0			1	2				4	7	low	
183	NHRIV700061401-01	LITTLE RIVER - UNNAMED BROOK		0			1	2				4	7	low	
184	NHRIV700061401-01	LITTLE RIVER - UNNAMED BROOK		0			1	2				4	7	low	
185	NHRIV700061401-01	LITTLE RIVER - UNNAMED BROOK		0			1	2				5	8	low	
200	NHLAK700061401-01	BAYBERRY POND		0			1	2				2	5	low	Y
213	NHRIV700061401-01	LITTLE RIVER - UNNAMED BROOK		0			1	2				0	3	low	
243	NHRIV700061403-17	POWWOW RIVER - UNNAMED BROOK - GRASSY BROOK		10			1	2				5	18	HIGH	
248	NHIMP700061403-04	POWWOW RIVER - POWWOW POND		10			1	2				5	18	HIGH	
253	NHRIV600030803-09	UNNAMED BROOK		10			1	2				1	14	HIGH	
254	NHRIV600030803-09	UNNAMED BROOK		10			1	2				1	14	HIGH	
259	NHRIV600030803-09	UNNAMED BROOK		10			1	2				3	16	HIGH	
285	NHRIV600030803-08	LITTLE RIVER - UNNAMED BROOK		10			1	2				2	15	HIGH	
292	NHRIV600030803-09	UNNAMED BROOK		10			1	2				6	19	HIGH	
299	NHRIV600030803-06	LITTLE RIVER - UNNAMED BROOK		10			1	2				2	15	HIGH	Y
301	NHRIV700061401-01	LITTLE RIVER - UNNAMED BROOK		0			1	2				1	4	low	Y
305	NHLAK700061403-06-01	GREAT POND		10			1	2				1	14	HIGH	Y
307	NHLAK700061403-06-01	GREAT POND		10			1	2				5	18	HIGH	Y
311	NHRIV700061401-01	LITTLE RIVER - UNNAMED BROOK	0	1	2	0	3	low	Y						
312	NHRIV600030805-25	UNNAMED BROOK - YORK BROOK	10	1	2	4	17	HIGH	Y						
315	NHRIV700061401-01	LITTLE RIVER - UNNAMED BROOK	0	1	2	1	4	low	Y						
316	NHRIV600030803-08	LITTLE RIVER - UNNAMED BROOK	10	1	2	1	14	HIGH							
318	NHLAK700061403-03-01	COUNTRY POND	10	1	2	1	14	HIGH							
500	NHRIV700061403-14	POWWOW RIVER	0	1	2	2	5	low	Y						
												HIGH	26	13	
												low	11	35%	

TOWN OF KINGSTON NH

MS4 OUTFALL INVENTORY NOTES (2021)

Scoring Criteria:

¹ Outfalls/interconnections where previous screening results indicate possible septage input if any of the following are true shall be identified as "Problem Outfalls":

- olfactory or visual evidence of sewage, or
- ammonia \geq 0.5 mg/L, surfactants \geq 0.25 mg/L, and bacteria levels greater than the water quality criteria applicable to the receiving water, or
- ammonia \geq 0.5 mg/L, surfactants \geq 0.25 mg/L with detectable levels of chlorine

² Outfalls/interconnections discharging to any waterbody impaired for the following pollutants shall be designated as HIGH priority:

- bacteria or pathogens
- nitrogen
- phosphorus

³ Outfalls/interconnections that discharge to or in the vicinity of any of the following areas shall be designated as HIGH priority:

- public beaches
- recreational areas
- drinking water supplies
- shellfish beds

⁴ Generating sites are institutional, municipal, commercial, or industrial sites with a potential to contribute to illicit discharges:

(e.g., car dealers, car washes, gas stations, garden centers, industrial manufacturing, etc.)

⁵ Age of development and infrastructure:

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

⁶ Areas once served by combined sewers and but have been separated, or areas once served by septic systems but have been converted to sanitary sewers. (Not applicable to Kingston NH.)

⁷ Aging septic systems that are 30 years or older.

⁸ Any river or stream that is culverted for distance greater than a simple roadway crossing.

⁹ A desktop analysis of publically available data was completed to determine outfalls in proximity of sensitive environmental areas or potential pollutant sources. Data sets included:

- within 100-feet of conserved lands
- within a Class GA2 groundwater area
- within 100-feet of a NH FWS wildlife action plan area (Teir 1 = 3; Teir 2 = 2; Teir 3 =1)
- within 300-feet of a NHDES potential pollution source
- within 300-feet of a NHDES-listed public water well or user
- within 150-feet of a NHDES-listed private well
- within a source water protection area
- within a welhead protection area (within=3; 0-150 feet=2; 150-300 feet=1)

APPENDIX D

**SCREENING AND SAMPLING
SOPs AND FORMS**

SOP ID-1: DRY WEATHER OUTFALL INSPECTION

Introduction

Outfalls from an engineered storm drain system can be in the form of closed pipes or open channels. Under current regulations, it is important to inspect and document water quality from these outfalls in dry weather conditions, and when warranted, wet weather conditions. SOP ID-2, "*Wet Weather Outfall Inspection*", covers the objectives of wet weather inspection. This SOP discusses the dry weather inspection objectives, and how they differ from wet weather inspection objectives.

During a dry weather period, it is anticipated that no flow or minimal flow from stormwater outfalls will be observed. Therefore, dry weather inspections aim to characterize any flow observed during a dry weather period to identify potential source(s) of illicit discharge through qualitative testing, further described in SOP ID-4, "*Water Quality Screening in the Field*".

Definition of Dry Weather

A dry weather period is a time interval where less than 0.1-inch of rain observed over 24-hours. Unlike wet weather sampling, dry weather inspections are not intended to capture a "first flush" of stormwater discharge, rather they are intended to identify any discharges from a stormwater outfall during a period without recorded rainfall. The objective of inspections during a dry weather period is to characterize observed flows and facilitate detection of illicit discharges.

Visual Condition Assessment

The attached *Dry Weather Outfall Inspection Survey* is a tool to assist in documenting observations related to the qualitative characteristics of any flows conveyed by the system during a period of dry weather.

For any visually observed discharge from a stormwater outfall, an investigation into the potential source should occur, but the following are often true:

1. Foam: indicator of upstream vehicle washing activities, or an illicit discharge.
2. Oil sheen: result of a leak or spill.
3. Cloudiness: indicator of suspended solids such as dust, ash, powdered chemicals and ground up materials.
4. Color or odor: indicator of raw materials, chemicals, or sewage.
5. Excessive sediment: indicator of disturbed earth of other unpaved areas lacking adequate erosion control measures.

6. Sanitary waste and optical enhancers (fluorescent dyes added to laundry detergent): indicators of illicit discharge.
7. Orange staining: indicator of high mineral concentrations.

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

Many of these observations are indicators of an illicit discharge. Examples of illicit discharges include cross-connections to engineered storm drain systems; leaking or failing septic systems; intentional discharge of pollutants to catch basins; connected floor drains; and sump pumps connected to the system. Additional guidelines for illicit discharge investigations are included in SOP ID-5, "*Locating Illicit Discharges*". If dry weather flow is present at the outfall, and the flow does not appear to be an obvious illicit discharge (e.g., flow is clear, odorless, etc.), an attempt should be made to identify the source of flow (e.g., irrigation, intermittent stream, wetlands drainage, etc.) and document the discharge for future comparison.

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

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

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

The *Dry Weather Outfall Inspection Survey* form includes fields where these and other specific observations can be noted. The inspector shall indicate the presence of a specific water quality indicator or parameter by marking "Yes". If "Yes" is marked, provide additional descriptions and details in the comments section. If the indicator in question is not present, mark "No".

Within the comments section, provide additional information with regard to recorded precipitation totals, more detailed descriptions of observations made during the inspection, additional investigations (source location), and corrective actions taken or recommended, if any.

Measuring Water Quality

Based on the results of the *Visual Condition Assessment*, it may be necessary to collect additional data about water quality. Water quality samples can be in the form of screening using field test kits and instrumentation, or by discrete analytical samples processed by a laboratory.

Information on selecting and using field test kits and instrumentation is included in SOP ID-4, "*Water Quality Screening in the Field.*" The *Water Quality Screening Form* also provides values for what can be considered an appropriate benchmark for a variety of parameters that can be evaluated in the field.

If the results of screening using field test kits or initial laboratory results indicate that the outfall's water quality exceeds the benchmarks provided, collection of discrete analytical samples should be considered.

Analytical Sample Collection

Sample collection methods may vary based on specific outfall limitations but shall follow test procedures outlined in SOP ID-4 and 40 CFR 136. A discrete manual or grab sample can classify water at a distinct point in time. These samples are easily collected and used primarily when the water quality of the discharge is expected to be homogeneous, or unchanging, in nature. A flow-weighted composite sample will classify water quality over a measured period of time. These samples are used when the water quality of the discharge is expected to be heterogeneous, or fluctuating, in nature. Grab samples are more common for dry weather outfall inspections due to the time-sensitive nature of the process.

Protocols for collecting a grab sample shall include the following:

1. Do not eat, drink, or smoke during sample collection and processing.
2. Do not collect or process samples near a running vehicle.
3. Do not park vehicles in the immediate sample collection area, including both running and non-running vehicles.
4. Always wear clean, powder-free nitrile gloves when handling sample containers and lids.
5. Never touch the inside surface of a sample container or lid, even with gloved hands.
6. Never allow the inner surface of a sample container or lid to be contacted by any material other than the sample water.
7. Collect samples while facing upstream and so as not to disturb water or sediments in the outfall pipe or ditch.
8. Do not overfill sample containers, and do not dump out any liquid in them. Liquids are often added to sample containers intentionally by the analytical laboratory as a preservative or for pH adjustment.
9. Slowly lower the bottle into the water to avoid bottom disturbance or stirring up sediment.
10. Do not allow any object or material to fall into or contact the collected water sample.
11. Do not allow rainwater to drip from rain gear or other surfaces into sample containers.
12. Replace and tighten sample container lids immediately after sample collection.
13. Accurately label the sample with the date, time, and location.
14. Document on the Dry Weather Outfall Inspection Survey that analytical samples were collected, specify parameters, and note the sample time on the Inspection Survey. This creates a reference point for samples.

Analytical Sample Quality Control and Assurance

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

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

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

Chain of custody forms are designed to provide sample submittal information and document transfers of sample custody. The forms are typically provided by the laboratory and must be

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

Attachments

SOP ID-1 *Dry Weather Outfall Inspection Form*

Related Standard Operating Procedures

1. SOP ID-0 *Stormwater Sampling Quality Assurance Project Plan*
2. SOP ID-2 *Wet Weather Outfall Inspection*
3. SOP ID-3 *Catchment Investigations*
4. SOP ID-4 *Water Quality Screening in the Field*
5. SOP ID-5 *Locating Illicit Discharges*

Approval Date: June 30, 2021

Revisions:

Source: Central Massachusetts Regional Stormwater Coalition

Outfall ID: _____ **Date:** _____
Inspector: _____
Time of Inspection: _____
Street Name: _____
Last rainfall event: _____

SOP ID-1: DRY WEATHER OUTFALL INSPECTION SURVEY

Type of Outfall (check one):		Pipe Outfall <input type="checkbox"/>	Open Swale Outfall <input type="checkbox"/>	
Outfall Label:		Stencil <input type="checkbox"/>	Ground Inset <input type="checkbox"/> Sign <input type="checkbox"/> None <input type="checkbox"/> Other _____	
Pipe Material:	Concrete	<input type="checkbox"/>	Pipe Condition:	
	Corrugated metal	<input type="checkbox"/>		Good <input type="checkbox"/> Poor <input type="checkbox"/>
	Clay Tile	<input type="checkbox"/>		Fair <input type="checkbox"/> Crumbling <input type="checkbox"/>
	Plastic	<input type="checkbox"/>		
	Other:	<input type="checkbox"/>		
Swale Material:	Paved (asphalt)	<input type="checkbox"/>	Swale Condition:	
	Concrete	<input type="checkbox"/>		Good <input type="checkbox"/> Poor <input type="checkbox"/>
	Earthen	<input type="checkbox"/>		Fair <input type="checkbox"/> Crumbling <input type="checkbox"/>
	Stone	<input type="checkbox"/>		
	Other:	<input type="checkbox"/>		
Shape of Pipe/Swale (check one)				
 <input type="checkbox"/>		 <input type="checkbox"/>		
Rounded Pipe/Swale		Rectangular Pipe/Swale		
 <input type="checkbox"/>		 <input type="checkbox"/>		
Triangular Swale		Trapezoidal Swale		
Pipe Measurements:		Swale Measurements:		
Inner Dia. (in): d= _____	Swale Width (in): T= _____	Is there a headwall? Yes <input type="checkbox"/> No <input type="checkbox"/>		
Outer Dia. (in): D= _____	Flow Width (in): t= _____	Condition:		
Pipe Width (in): T= _____	Swale Height (in): H= _____	Good <input type="checkbox"/> Poor <input type="checkbox"/>		
Pipe Height (in): H= _____	Flow Height (in): h= _____*	Fair <input type="checkbox"/> Crumbling <input type="checkbox"/>		
Flow Width (in): h= _____*	Bottom Width (in): b= _____	Location Sketch		
Description of Flow: Heavy <input type="checkbox"/> Moderate <input type="checkbox"/> Trickling <input type="checkbox"/> (use reverse side of form for sampling) Dry <input type="checkbox"/>				
If the outlet is submerged check yes and indicate approximate height of water above the outlet invert. h above invert (in):		Circle All Materials Present:		
Odor:	Yes <input type="checkbox"/> No <input type="checkbox"/>	Rip rap	Sheen: Bacterial	
Optical enhancers suspected?	Yes <input type="checkbox"/> No <input type="checkbox"/>	Excessive sediment	Sheen: Petroleum	
Has channelization occurred?	Yes <input type="checkbox"/> No <input type="checkbox"/>	Foam	Floatables	
Has scouring occurred below the outlet?	Yes <input type="checkbox"/> No <input type="checkbox"/>	Sanitary Waste	Algae	
Required Maintenance:	Tree Work	Orange Staining	Excessive Vegetation	
	Ditch Work			
	Structural Corrosion			
	N/A			
Comments:				

Outfall ID: _____ **Date:** _____
Inspector: _____
Time of Inspection: _____
Street Name: _____
Last rainfall event: _____

SOP ID-1: DRY WEATHER OUTFALL INSPECTION SURVEY SAMPLING (if flow is observed)

Visual Inspection:	Yes	No	Comments (Include probable source of observed contamination):
Color	<input type="checkbox"/>	<input type="checkbox"/>	
Odor	<input type="checkbox"/>	<input type="checkbox"/>	
Turbidity	<input type="checkbox"/>	<input type="checkbox"/>	
Excessive Sediment	<input type="checkbox"/>	<input type="checkbox"/>	
Sanitary Waste	<input type="checkbox"/>	<input type="checkbox"/>	
Pet Waste	<input type="checkbox"/>	<input type="checkbox"/>	
Floatable Solids	<input type="checkbox"/>	<input type="checkbox"/>	
Oil Sheen	<input type="checkbox"/>	<input type="checkbox"/>	
Bacterial Sheen	<input type="checkbox"/>	<input type="checkbox"/>	
Foam	<input type="checkbox"/>	<input type="checkbox"/>	
Algae	<input type="checkbox"/>	<input type="checkbox"/>	
Orange Staining	<input type="checkbox"/>	<input type="checkbox"/>	
Excessive Vegetation	<input type="checkbox"/>	<input type="checkbox"/>	
Optical Enhancers	<input type="checkbox"/>	<input type="checkbox"/>	
Other:			

Sample Parameters	Test Method	Benchmark	Field Screening Result	Full Analytical?
Ammonia	Field Kit/Test Strips	< 0.5 mg/L		<input type="checkbox"/> Yes <input type="checkbox"/> No
Total Chlorine	Field Kit/Test Strips	detectable range < 0.02 mg/L		<input type="checkbox"/> Yes <input type="checkbox"/> No
Surfactants/Detergents	Field Kit	< 0.25 mg/L		<input type="checkbox"/> Yes <input type="checkbox"/> No
Conductivity	YSI	< 100 mS/cm		<input type="checkbox"/> Yes <input type="checkbox"/> No
Salinity	YSI	< 72.6 g/L		<input type="checkbox"/> Yes <input type="checkbox"/> No
Temperature	YSI	n/a		n/a
Bacteria (E. coli)	EPA-Certified Lab	406 count/100mL (non-beach) 88 count/100mL (beach)		REQ.
Total Nitrogen (TKN)	Test Strips/YSI	< 0.32 mg/L		<input type="checkbox"/> Yes <input type="checkbox"/> No
Total Phosphorus	Field Kit	< 50 ug/L (direct to waterbody) < 100 ug/L (indirect to waterbody)		<input type="checkbox"/> Yes <input type="checkbox"/> No

Comments: _____

SOP ID-2: WET WEATHER OUTFALL INSPECTION

Introduction

Outfalls from an engineered storm drain system can be in the form of closed pipes or open channels. Under current regulations, it is required to inspect and document water quality from these outfalls in dry weather for all ranked outfalls in the Town's MS4 regulated area, and in wet weather conditions for all outfalls having dry-weather discharge, any system vulnerability factors (SVF), or discharging directly to NHDES classified as impaired waters in the state's current EPA-approved 303(d) and 305(b) reports. SOP ID-1, "*Dry Weather Outfall Inspection*", covers the objectives of dry weather inspection. This SOP discusses wet weather inspection objectives and how they differ from dry weather inspection objectives. The primary difference is that wet weather inspection aims to describe and evaluate the first flush of stormwater discharged from an outfall during a storm, representing the maximum pollutant load at that discharge point.

Definition of Wet Weather

A storm is considered a representative wet weather event if greater than 0.1 inch of rain falls and occurs at least 24 hours after the previously measurable (greater than 0.1 inch of rainfall) storm event. In some watersheds, based on the amount of impervious surface present, increased discharge from an outfall may not result from 0.1 inch of rain. An understanding of how outfalls respond to different events will develop as the inspection process proceeds over time, allowing inspectors to refine an approach for future inspections and sampling.

Ideally, the evaluation and any samples collected should occur within the first 30 minutes of discharge to reflect the first flush or maximum pollutant load.

Typical practice is to prepare for a wet weather inspection event when weather forecasts show a 60% chance of rain or greater. If the inspector intends to collect analytical samples, coordination with the laboratory for bottles and sample drop-off needs to occur in advance.

Visual Condition Assessment

The attached *Wet Weather Outfall Inspection Survey* form should be used to document observations related to the quality of stormwater conveyed by the structure during a wet weather event. Observations such as the following can indicate sources of pollution within the storm drain system:

- oil sheen;
- discoloration; and/or
- trash and debris.

For any visual observation of potential pollutants in a stormwater outfall discharge, an investigation into the pollution source should be performed, but the following often occur at an outfall:

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

Many of these observations are indicators of an illicit discharge. Examples of illicit discharges include: cross-connections to engineered storm drain systems; leaking or failing septic systems; intentional discharge of pollutants to catch basins; and floor drains and sump pumps connected to the system (under some circumstances). Additional guidelines for illicit discharge investigations are included in SOP ID-5, "*Locating Illicit Discharges*".

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

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

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

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

The *Wet Weather Outfall Inspection Survey* form includes fields where these and other specific observations can be noted. The inspector shall indicate the presence of a specific water quality indicator or parameter by marking "Yes". If "Yes" is marked, provide additional details in the comments section. If the indicator in question is not present mark "No".

Within the comments section, provide additional information regarding recorded precipitation totals with the past 72-hours, more detailed descriptions of observations made during the inspection, and corrective actions taken or recommended.

Measuring Water Quality

Based on the results of the *Visual Condition Assessment*, it may be necessary to collect additional data about water quality. Water quality samples can be in the form of screening using field test kits or by discrete analytical samples processed by a laboratory.

Information on how to use field test kits is included in SOP ID-4, "*Water Quality Screening with Field Test Kits*", and the *Wet Weather Outfall Inspection Survey* form includes fields to document the results of such screening. The *Inspection Survey* forms also provide values for what can be considered an appropriate benchmark for a variety of parameters that can be evaluated with field test kits.

If the results of screening using field test kits indicate that the outfall's water quality exceeds the benchmarks provided, collection of discrete analytical samples should be considered.

Analytical Sample Collection

Sample collection methods may vary based on specific outfall limitations but shall follow test procedures outlined in these IDDEP SOPs (per 40 CFR 136). A discrete grab sample can classify water at a distinct point in time. These samples are easily collected and used primarily when the water quality of the discharge is expected to be homogeneous, or unchanging, in nature. A flow-weighted composite sample will classify water quality over a measured period of time. These samples are used when the water quality of the discharge is expected to be heterogeneous, or fluctuating, in nature. Grab samples are more common for wet weather outfall inspections due to the time-sensitive nature of the process.

Protocols for collecting a grab sample shall include the following:

1. Do not eat, drink, or smoke during sample collection and processing.
2. Do not collect or process samples near a running vehicle.
3. Do not park vehicles in the immediate sample collection area, including both running and non-running vehicles.
4. Always wear clean, powder-free nitrile gloves when handling sample containers and lids.
5. Never touch the inside surface of a sample container or lid, even with gloved hands.
6. Never allow the inner surface of a sample container or lid to be contacted by any material other than the sample water.
7. Collect samples while facing upstream and so as not to disturb water or sediments in the outfall pipe or ditch.
8. Do not overfill sample containers, and do not dump out any liquid in them. Liquids are often added to sample containers intentionally by the analytical laboratory as a preservative or for pH adjustment.
9. Slowly lower the bottle into the water to avoid bottom disturbance and stirring up sediment.
10. Do not allow any object or material to fall into or contact the collected water sample.
11. Do not allow rainwater to drip from rain gear or other surfaces into sample containers.
12. Replace and tighten sample container lids immediately after sample collection.
13. Accurately label the sample with the time and location.
14. Document on the Wet Weather Outfall Inspection Survey that analytical samples were collected, specify parameters, and note the sample time on the Inspection Survey. This creates a reference point for samples.

Analytical Sample Quality Control and Assurance

Upon completion of successful sample collection, the samples must be delivered to a NHDES-approved laboratory for analytical testing. Quality control and assurance are important to ensuring accurate analytical test results.

Sample preservation is required to prevent degradation between sampling and analysis and should be completed in accordance with these IDDEP SOPs.

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

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

Attachments

SOP ID-2 *Wet Weather Outfall Inspection Survey*

Related Standard Operating Procedures

1. SOP ID-0 *Stormwater Sampling Quality Assurance Project Plan*
2. SOP ID-1 *Dry Weather Outfall Inspection*
3. SOP ID-3 *Catchment Investigations*
4. SOP ID-4 *Water Quality Screening in the Field*
5. SOP ID-5 *Locating Illicit Discharges*

Approved Date: June 30, 2021

Revisions:

Source: Central Massachusetts Regional Stormwater Coalition

Outfall ID: _____ Date: _____

Inspector: _____

Time of Inspection: _____

Street Name: _____

Last rainfall event: _____

**Town of Kingston, NH
Highway Department**

SOP ID-2: WET WEATHER OUTFALL INSPECTION SURVEY

Visual Inspection:	Yes	No	Comments (Include probable source of observed contamination):
Color	<input type="checkbox"/>	<input type="checkbox"/>	
Odor	<input type="checkbox"/>	<input type="checkbox"/>	
Turbidity	<input type="checkbox"/>	<input type="checkbox"/>	
Excessive Sediment	<input type="checkbox"/>	<input type="checkbox"/>	
Sanitary Waste	<input type="checkbox"/>	<input type="checkbox"/>	
Pet Waste	<input type="checkbox"/>	<input type="checkbox"/>	
Floatable Solids	<input type="checkbox"/>	<input type="checkbox"/>	
Oil Sheen	<input type="checkbox"/>	<input type="checkbox"/>	
Bacterial Sheen	<input type="checkbox"/>	<input type="checkbox"/>	
Foam	<input type="checkbox"/>	<input type="checkbox"/>	
Algae	<input type="checkbox"/>	<input type="checkbox"/>	
Orange Staining	<input type="checkbox"/>	<input type="checkbox"/>	
Excessive Vegetation	<input type="checkbox"/>	<input type="checkbox"/>	
Optical Enhancers	<input type="checkbox"/>	<input type="checkbox"/>	
Other:			

Sample Parameters	Test Method	Benchmark	Field Screening Result	Full Analytical?
Ammonia	Field Kit/Test Strips	< 0.5 mg/L		<input type="checkbox"/> Yes <input type="checkbox"/> No
Total Chlorine	Field Kit/Test Strips	detectable range < 0.02 mg/L		<input type="checkbox"/> Yes <input type="checkbox"/> No
Surfactants/Detergents	Field Kit	< 0.25 mg/L		<input type="checkbox"/> Yes <input type="checkbox"/> No
Conductivity	YSI	< 100 mS/cm		<input type="checkbox"/> Yes <input type="checkbox"/> No
Salinity	YSI	< 72.6 g/L		<input type="checkbox"/> Yes <input type="checkbox"/> No
Temperature	YSI	n/a		n/a
Bacteria (E. coli)	EPA-Certified Lab	406 count/100mL(non-beach) 88 count/100mL (beach)		REQ.
Total Nitrogen (TKN)	Test Strips/YSI	< 0.32 mg/L		<input type="checkbox"/> Yes <input type="checkbox"/> No
Total Phosphorus	Field Kit	< 50 ug/L (direct to waterbody) < 100 ug/L (indirect to waterbody)		<input type="checkbox"/> Yes <input type="checkbox"/> No

Comments: _____

TOWN OF KINGSTON NH MS4 OUTFALL INVENTORY OUTFALLS WITH DISCHARGES WITHIN 300-FEET OF A REGULATED WATERBODY (NHDES AUID) OR 150' OF A WETLAND												
						Priority Ranking	Dry Weather Screening			Dry Weather Sampling		Comments
OUTFALL ID	RECEIVING WATER ID	Street Name	Latitude	Longitude	RECEIVING WATER NAME	Date	Dry/Flow	Maintenance/Poor Quality	Field Screening	Lab Sampling		
12	NHLAK700061403-08	10 Phoenix Dr	42°55'22.750	71°4'28.311	HALFMOON POND							
14	NHRIV700061403-12	64 Ball Rd	42°55'32.392	71°4'32.939	UNNAMED BROOK-TO GREAT POND THRU NORTHWEST INLET	HIGH	6/22/2022	Dry	Good	Not Required	Not Required	
18	NHRIV700061403-12	89 Ball Rd	42°55'47.777	71°4'27.867	UNNAMED BROOK-TO GREAT POND THRU NORTHWEST INLET	HIGH	6/22/2022	Dry	Good	Not Required	Not Required	
32	NHRIV700061403-11	1 Rellas Rdg	42°54'45.849	71°4'50.984	POWWOW RIVER - UNNAMED BROOK	HIGH	6/23/2022	Dry	Good	Not Required	Not Required	Swail Outfall
39	NHLAK700061403-06-01	116 Main St	42°55'31.420	71°3'19.529	GREAT POND	HIGH	6/23/2022	Dry	Good	Not Required	Not Required	Swale Outfall, Outfall location same as ID #307
54	NHRIV700061403-29	11 Scotland Rd	42°55'48.041	71°3'0.481	POWWOW POND-RTE 125 INLET	HIGH	6/22/2022	Dry	Good	Not Required	Not Required	
64	NHRIV600030803-09	37 Little River Rd	42°56'59.258	71°2'24.737	UNNAMED BROOK	HIGH	12/10/2021	Dry	Good	Not Required	Not Required	
80	NHRIV600030803-07	37 Church St	42°56'36.464	71°3'26.334	LITTLE RIVER - UNNAMED BROOK	HIGH	12/10/2021	Dry	Good	Not Required	Not Required	
106	NHLAK700061403-07	19 Church St	42°56'21.275	71°3'20.568	GREENWOOD POND	HIGH	12/10/2021	Dry	Fair	Not Required	Not Required	
120	NHLAK700061403-06-01	14 Beach Dr	42°55'46.652	71°4'2.611	GREAT POND	HIGH	12/10/2021	Dry	Good	Not Required	Not Required	
155	NHLAK700061403-12	28 Morning Dove Rd	42°53'14.129	71°5'10.404	BARTLETT MILL POND	HIGH	6/22/2022	Dry	Good	Not Required	Not Required	inlet needs to have debris dug out
159	NHRIV700061401-01	34 Hunt Rd	42°53'3.903	71°5'34.121	LITTLE RIVER - UNNAMED BROOK	low	6/22/2022	Dry	Good	Not Required	Not Required	
170	NHRIV700061403-05	7 Beaver Pond Rd	42°53'37.831	71°5'40.622	BARTLETT BROOK-COLBY BROOK-UNNAMED BROOK	HIGH	12/10/2021	Dry	Good	Not Required	Not Required	
172	NHRIV700061403-05	4 Rams Way	42°53'18.665	71°6'4.783	BARTLETT BROOK-COLBY BROOK-UNNAMED BROOK	HIGH	12/10/2021	Dry	Good	Not Required	Not Required	
182	NHRIV700061401-01	Valley Ln	42°53'2.302	71°6'16.313	LITTLE RIVER - UNNAMED BROOK	low	6/22/2022	Dry	Good	Not Required	Not Required	left side of road 80-100 yds from stop sign (address change)
183	NHRIV700061401-01	4 Valley Ln	42°53'0.154	71°6'16.150	LITTLE RIVER - UNNAMED BROOK	low	6/22/2022	Dry	Good	Not Required	Not Required	address change to #4
184	NHRIV700061401-01	8 Valley Ln	42°52'58.647	71°6'15.803	LITTLE RIVER - UNNAMED BROOK	low	6/22/2022	Dry	Good	Not Required	Not Required	address change to #8
185	NHRIV700061401-01	12 Valley Ln	42°52'57.153	71°6'14.196	LITTLE RIVER - UNNAMED BROOK	low	6/22/2022	Dry	Good	Not Required	Not Required	address change to #12
200	NHLAK700061401-01	6 Kimberly Rd	42°52'30.883	71°5'12.845	BAYBERRY POND	low	6/22/2022	Dry	Good	Not Required	Not Required	
213	NHRIV700061401-01	36 Hillside Rd	42°52'11.389	71°4'40.825	LITTLE RIVER - UNNAMED BROOK	low	6/23/2022	Dry	Good	Not Required	Not Required	address change to 32
243	NHRIV700061403-17	6 Horseshoe Ln	42°53'41.163	71°2'26.070	POWWOW RIVER - UNNAMED BROOK - GRASSY BROOK	HIGH	12/10/2021	Dry	Good	Not Required	Not Required	
248	NHIMP700061403-04	14 Babscott Ln	42°54'45.640	71°2'19.942	POWWOW RIVER - POWWOW POND	HIGH	12/10/2021	Dry	Fair	Not Required	Not Required	
253	NHRIV600030803-09	1 Lincoln Cir	42°56'35.036	71°2'1.128	UNNAMED BROOK	HIGH	12/10/2021	Dry	Good	Not Required	Not Required	
254	NHRIV600030803-09	7 Washington Way	42°56'35.554	71°2'6.350	UNNAMED BROOK	HIGH	12/10/2021	Dry	Good	Not Required	Not Required	Form 1 says Good, Form 2 says Poor pipe condition
259	NHRIV600030803-09	8 Clement Ave	42°56'48.125	71°1'58.161	UNNAMED BROOK	HIGH	12/10/2021	Dry	Good	Not Required	Not Required	
285	NHRIV600030803-08	14 King Pine Way	42°57'21.066	71°2'3.751	LITTLE RIVER - UNNAMED BROOK	HIGH	12/10/2021	N/A	Good	Not Required	Not Required	Not marked dry - no lab data
292	NHRIV600030803-09	189-191 Main St	42°56'32.011	71°3'4.405	UNNAMED BROOK	HIGH	12/10/2021	Dry	Good	Not Required	Not Required	
299	NHRIV600030803-06	11 Brookhaven Rd	42°57'22.322	71°4'16.680	LITTLE RIVER - UNNAMED BROOK	HIGH	12/10/2021	Dry	Fair	Not Required	Not Required	
301	NHRIV700061401-01	36 Dorre Rd	42°52'5.759	71°5'37.850	LITTLE RIVER - UNNAMED BROOK	low	6/22/2022	N/A	Good	Not Required	Not Required	swamp to swamp, no flow
305	NHLAK700061403-06-01	32 Main St	42°54'52.065	71°3'38.167	GREAT POND	HIGH	12/10/2021	Dry	Good	Not Required	Not Required	
307	NHLAK700061403-06-01	116 Main St	42°55'26.695	71°3'20.101	GREAT POND	HIGH	6/23/2022	Dry	Good	Not Required	Not Required	Swail outfall, Outfall location same as ID #39
311	NHRIV700061401-01	7 Ordway Ln	42°52'5.900	71°4'15.104	LITTLE RIVER - UNNAMED BROOK	low	6/22/2022	Dry	Good	Not Required	Not Required	address change to #7
312	NHRIV600030805-25	2 Pheasant Run	42°57'8.084	71°0'59.126	UNNAMED BROOK - YORK BROOK	HIGH	12/10/2021	Dry	Good	Not Required	Not Required	
315	NHRIV700061401-01	31 Pillsbury Pasture Rd	42°52'11.958	71°4'33.759	LITTLE RIVER - UNNAMED BROOK	low	6/22/2022	Dry	Good	Not Required	Not Required	
316	NHRIV600030803-08	12-14 Riverwood Rd	42°57'28.954	71°2'2.235	LITTLE RIVER - UNNAMED BROOK	HIGH	12/10/2021	Dry	Good	Not Required	Not Required	
318	NHLAK700061403-03-01	22 W Shore Park Rd	42°52'48.767	71°4'28.670	COUNTRY POND	HIGH	6/23/2022	Dry	Good	Not Required	Not Required	out in the woods, Rich will mark for future inspections
500	NHRIV700061403-14				POWWOW RIVER	low	6/22/2022	N/A				unknown specific location

APPENDIX E

**WATER QUALITY ANALYSIS INSTRUCTIONS, USER'S MANUALS AND
STANDARD OPERATING PROCEDURES (SOPs)**

**Stormwater Sampling Quality Assurance
Project Plan Acceptance**

Senior Project Manager Signature:	 Date:
Project Manager/Coordinator Signature:	 Date:
Town of Kingston Signature:	 Date:

SOP ID-0: STORMWATER SAMPLING QUALITY ASSURANCE PROJECT PLAN

1.0 Background

The EPA requires that *"all projects involving environmental monitoring performed by or for the EPA shall not be undertaken without an adequate Quality Assurance Project Plan (QAPP)"*. The purpose of this document is to describe the process used to develop, select, manage, and finalize stormwater monitoring projects. In describing this process, quality assurance goals and methods are to be established, thus ensuring that the overall program and each monitoring project will meet or exceed EPA requirements for quality assurance.

The objective of these projects will be to collect data that is usable by the town and the EPA. The primary focus of this project will be on urban stormwater outfalls in the Town of Kingston's MS4.

2.0 Sampling overview

Sampling, dry and wet, is to be performed on an as needed basis per requirements outlined in the current NH MS4 Permit and the Town's IDDEP. Samples will be collected from discharge at outfalls where dry-weather screening and sampling have indicated a potential source of pollution for the Permit required parameters or at areas that need further investigation. Sample sites will be located using existing GIS mapped outfall locations as completed previously by the town.

The primary focus of this sampling will be used to identify potential illegal discharges. Results from the sampling will be used by the town for MS4 Permit analyses and reporting. For this project, sampling will be conducted according to the Town's IDDEP. Town staff may assist in sampling. All procedures will be followed that are specified in Table 1. Parameters to be sampled will be predetermined based on data needs.

A. Locations

Sampling site locations will be determined using existing mapped outfall locations and dry-weather screening and sampling results by project staff. If subject outfalls are inaccessible, or for catchment investigations, sample may be taken from structures upstream of an outfall. Sample analyses will be predetermined prior to sampling based on conditions known about the sampling location. Any of the parameters listed in Table 2 may be analyzed.

B. Analytical Methods and Reporting limits

Sample analyses will be conducted by EPA-certified laboratories. This effort will test and compare the most appropriate analytical methods including, but not limited to; laboratory analysis, test kits, and field analysis to determine the most effective and cost-efficient outfall sampling approach. If bacteria are found to be present, multiple and repeated testing will occur at the location to compare different methods for identifying sewage contamination.

E. coli (bacteria) must be analyzed by an EPA-certified laboratory. Nitrogen and phosphorus may also need to be laboratory tested but are only required for outfalls that discharge directly to a waterbody with identified nitrogen or phosphorus impairments, respectively. Ammonia, total chlorine, and surfactants can be analyzed

with field test kits, but can be laboratory analyzed. Temperature and conductivity will be measured in the field with a YSI instrument. Depending on the YSI instrument used, salinity may be an available reading on the YSI, or a sample will be collected for lab analysis. Depending on severity of field results, additional laboratory analyses may be performed on any of the parameters. The laboratory used for each sampling event will be determined prior to sampling by the Project Manager based on the required analyses, laboratory availability, and costs.

All field equipment shall be calibrated for every 100 tests and per manufacturer’s recommendations.

Table 1: Field and Laboratory References

Parameter	Field Method Reference	Analytical Method Reference
Water sampling	IDDEP SOPs	n/a
Conductivity, Salinity, Temperature	YSI Manufacturer’s Guidance	SM 2510 B
Ammonia	Field Kit/Test Strips	ASTM D1426 EPA 350.1
Total Chlorine	Field Kit/Test Strips	EPA 330.5 ASTM D1253
Surfactants	Field Kit	EPA 425.1 ASTM D2330
Total Nitrogen (TKN)	Field Kit/YSI	ASTM D1426 EPA 350.1
Total Phosphorus	Field Kit	EPA 365.1
Bacteria (E. coli)	EPA-Certified Lab	EPA 1603
Chain of custody of samples	Per Laboratory Requirements	n/a

Table 2: Benchmark Field Measurements for Select Parameters

Analyte or Parameter	Benchmark
Ammonia	< 0.5 mg/L
Total Chlorine	detectable range to < 0.02 mg/L
Surfactants (Detergents)	< 0.25 mg/L
Conductivity	< 100 mS/cm
Salinity	< 72.6 g/L
Bacteria (E. coli)	TMDL < 406 count/100mL (non-beach) TMDL < 88 count/100mL (beach)
Total Nitrogen (TKN)	< 0.32 mg/L
Total Phosphorus	< 50 ug/L (direct input to water body) < 100 ug/L (indirect input to water body)

C. Quality Control

- Calibration: The project team will calibrate its equipment according to the manufacturer’s requirements.
- Field duplicate: One duplicate sample will be collected for each sampled outfall approximately for every ten samples.
- Trip Blank: One blank sample will be collected for approximately every ten bacteria samples. Reported data that is less than 5 times the trip (field) blank concentration will be flagged.
- QC Criteria: Benchmark data is specified in Table 2 above. Data not meeting these criteria will be reviewed by the Senior Project Manager. Data that does not meet laboratory QA/QC criteria will be flagged.
- Collection/Delivery For samples to be laboratory analyzed, collection specifications for holding times and sample preservation at shown in Table 3 and Table 4.

D. Chain of Custody

Chain of custody procedures will follow the laboratory’s requirements.

3.0 Data Review

All field data and draft data reports will be reviewed by the Project Manager. The Project Manager will prepare a summary of the data, noting any flagged data or results in exceedance of the thresholds for the Senior Project Manager review.

4.0 Data reports

Data reports will be reviewed by the Senior Project Manager and the Town before a final report is released for public reporting.

Table 3: Required Parameter Specifications for Lab Samples (minimum)*

Parameter	Preservation	Holding time
Bacteria - E. coli (lab required)	Sodium Thiosulfate	8 hours 6 hours to lab
Ammonia (field kit or test strips)	Sulfuric Acid	28 days
Total Chlorine (field kit or test strips)	None	Immediate
Surfactants (field kit)	Ice	48 hours
Temperature (YSI)	None	Immediate
Conductivity (YSI)	None	Immediate
Salinity (YSI or lab)	Ice	28 days
Total Nitrogen (TKN) (test strips or YSI or lab)	None Sulfuric Acid	Immediate 28 days
Total Phosphorus (field kit or lab)	Sulfuric Acid	28 days

*record additional YSI parameters that are not Permit required as available, including pH and DO.

**nitrogen and phosphorus testing is only required for outfalls that discharge directly to a waterbody with a nitrogen or phosphorus impairment, respectively.

Table 4: Bottle Sampling List (for lab samples)

Parameter	Bottle	Preservation
Primary analyses		
Bacteria (E. coli)	sterile 100 mL	Ice
Salinity (if not from YSI)	50mL amber glass	Ice
Optional analyses		
Total Nitrogen (TKN)*	125 mL	H ₂ SO ₄ (pH <2) + Ice
Total Phosphorus*	125 mL	H ₂ SO ₄ (pH <2) + Ice

* nitrogen and phosphorus testing is required for outfalls that discharge directly to a waterbody with a nitrogen or phosphorus impairment, respectively.

5.0 Field Equipment List (Minimum)

Waste Containers (5 total – clearly labeled)

- 1-liter plastic for general waste
- 1-liter amber plastic for ammonia kit waste
- 1-liter amber plastic for chlorine kit waste
- 1-liter amber plastic for surfactants/detergents kit waste
- 1-liter amber plastic for phosphorus kit waste

Sample Bottles (5 potential total for each sample location)

- 100mL sterile – E. coli
- 50mL amber glass – Salinity
- 125 mL – Total Nitrogen (TKN)
- 125 mL – Total Phosphorus
- 1 extra 120ml-250ml plastic – Field Kit Bottle
to be used on site for kits listed above as needed

***Fill out chain of custody

Field Gear

- Sampling plan & GPS locations
- GPS/digital field pad
- Logbook
- Digital camera
- YSI Multiparameter Meter
- Field test kits
- Extra sample bottles
- Bottle labels
- Chain of Custody forms
- Sharpies and/or Write-On-Rain pens
- Colored tape
- Squirt bottle of DI water
- Coolers with ice
- Measuring tape
- Flashlight
- Utility knife
- Sampling pole with cup
- Pry bar
- Small mallet or hammer
- Sandbags
- Safety cones
- Waders/boots
- Powder-free gloves
- Hand sanitizer
- Paper towels
- PPE

Attachments

SOP ID-1 *Dry Weather Outfall Inspection Form*

Related Standard Operating Procedures

1. SOP ID-1 *Dry Weather Outfall Inspection*
2. SOP ID-2 *Wet Weather Outfall Inspection*
3. SOP ID-3 *Catchment Investigations*
4. SOP ID-4 *Water Quality Screening in the Field*
5. SOP ID-5 *Locating Illicit Discharges*

Approved Date: June 30, 2021

Revisions:

Source:

"EPA New England Bacterial Source Tracking Protocol, Draft, January 2012"; Title 40: Part 136, Guidelines Establishing Test Procedures for The Analysis of Pollutants.

SOP ID-3: CATCHMENT INVESTIGATIONS

Introduction

Stormwater outfalls with evidence of illicit discharges may be identified. Various methods can be used to investigate the source of the discharge within each outfall catchment area. Common catchment investigation techniques include, but are not limited to:

- review of maps, historic plans, and records;
- manhole and catch basin inspection;
- dry and wet weather screening and sampling;
- video inspection;
- smoke testing; and
- dye testing.

This Standard Operation Procedure (SOP) outlines a systematic procedure to investigate outfall catchments and identify the source(s) of potential illicit discharges. Information and data collected as part of these catchment investigations is to be maintained and reported to the EPA annually.

Reference herein is also made to the 2017 New Hampshire Small MS4 General Permit (the Permit), the Town's Stormwater Management Plan (SWMP), and the Illicit Discharge and Detection Elimination Program (**IDDEP, Appendix D** of the SWMP).

Map and Record Review

The Town reviews relevant mapping and historic plans and records to identify areas in the municipal separate storm sewer system (MS4) with a higher potential for illicit connections. The following information is expected to be reviewed:

- plans related to the construction of drainage networks;
- prior work orders for storm drain system construction and repairs;
- Health Department or other municipal data on septic system failures or required upgrades; and
- records related to septic system breakouts.

From this review and other IDDEP required ranking criteria, catchments are prioritized for inspection through Year 10 of the Permit.

System Vulnerability Factors

The Town will identify and tabulate System Vulnerability Factors (SVFs). SVFs indicate a risk of potential sewage input to the MS4 under wet weather conditions, including the potential for failing septic systems.

The outfall/catchment inventory will be updated to include the following SVFs:

- storm drain infrastructure greater than 40 years old in medium and densely developed areas.
- areas of widespread code-required septic system upgrades due to inadequate soils, water table separation, or other physical constraints other than poor owner maintenance.

- sites with a history of multiple health department actions addressing septic system failures due to inadequate soils, water table separation, or other physical constraints other than poor owner maintenance.
- sites with a history of health department actions addressing septic system failures due to improper installation and/or poor owner maintenance.

Dry Weather Investigation (Manhole Inspections)

The Town will implement a dry weather storm drain network investigation that involves systematically and progressively observing, sampling (if applicable), and evaluating key junction manholes in the MS4 to identify potential or suspected illicit discharges.

The Town will be responsible for implementing the dry weather manhole inspection program and making updates to the mapping and inventories and ranking, as necessary. Updated infrastructure information will be incorporated into the storm system map, and catchment delineations will be refined, if needed, based on the field investigations. The outfall inventory with SVF data will also be updated based on information collected during field investigations, as applicable.

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

Junction Manhole is a manhole or structure with two or more inlets accepting flow from two or more MS4 alignments. Manholes with inlets solely from private storm drains, individual catch basins, or both are not considered junction manholes for these purposes.

Key Junction Manholes are those junction manholes that can represent one or more junction manholes without compromising adequate implementation of the illicit discharge program. Adequate implementation of the illicit discharge program would not be compromised if the exclusion of a particular junction manhole as a key junction manhole would not affect the permittee's ability to determine the possible presence of an upstream illicit discharge. A permittee may exclude a junction manhole located upstream from another located in the immediate vicinity or that is serving a drainage alignment with no potential for illicit connections.

For all catchments identified for investigation, during dry weather field crews will systematically inspect key junction manholes for evidence of illicit discharges and confirm or identify potential SVFs. This program involves progressive inspection and sampling (if required) at manholes in storm drain networks to isolate and eliminate illicit discharges.

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

- by working progressively upstream from the outfall and inspecting key junction manholes along the way; or
- by working progressively downstream from the upper areas of the catchment toward the outfall and inspecting key junction manholes along the way.

For most catchments, manhole inspections will proceed from the outfall moving upstream along the system. However, the decision to move upstream or downstream in the system depends on the nature of the drainage system, the surrounding land use, and the availability of information about the catchment and drainage system. Moving up the system can begin immediately when an illicit discharge is detected at an outfall and only a map of the storm drain system is usually required. Moving down the system requires more advance preparation and reliable drainage system information on the upstream segments of the storm drain system; however, may be more efficient if the sources of illicit discharges are suspected or known to be located in upstream portions of the catchment area. Once a manhole inspection methodology has been selected, investigations continue systematically through the catchment.

Dry-weather inspection of key junction manholes is to proceed as follows:

1. Dry weather screening and sampling shall proceed only when no more than 0.1-inches of rainfall has occurred in the previous 24-hour period and no significant snow melt is occurring.
2. A field inspection form is provided with this SOP. Tools required for investigations are outlined in the IDDEP, **Table D6-1 Field Equipment**. Opening structures for investigation is a two-person task and requires that all safety precautions be taken.
3. Manholes will be opened and inspected for visual or olfactory evidence of illicit connections. The following are often indicators of an illicit discharge from stormwater outfall:
 - Foam: indicator of upstream vehicle washing activities, or an illicit discharge.
 - Oil sheen: result of a leak or spill.
 - Cloudiness: indicator of suspended solids such as dust, ash, powdered chemicals and ground up materials.
 - Color or odor: indicator of raw materials, chemicals, or sewage.
 - Excessive sediment: indicator of disturbed earth of other unpaved areas lacking adequate erosion control measures.
 - Sanitary waste and optical enhancers (fluorescent dyes added to laundry detergent): indicator of the cross-connection of a sewer service.
 - Orange staining: indicator of high mineral concentrations.
4. If flow is observed, a sample will be collected and analyzed. At a minimum, field testing will be completed for the following pollutants:
 - ammonia;
 - chlorine;
 - surfactants; and
 - bacteria (e. Coli by laboratory analysis).

Field kits can be used for these analyses, except for bacteria sampling, provided they meet the minimum threshold indicator concentrations as outlined in *Section 2.3.4.7.b.iii.4.b* of

the Permit. **Appendix DE** of the SWMP contains tables for parameter thresholds, field test methods, field kit information, equipment and instrumentation, and suggested supplies.

5. Sampling and analysis will be in accordance with procedures outlined in the IDDEP and Appendices within the SWMP, as well as EPA updates as available. Additional indicator sampling may also be necessary to assist in determining other suspected pollutants and sources, or for areas identified in the SWMP (or NHDES) with impaired waters and/or TMDLs.
6. Where sampling results, or visual or olfactory evidence indicates potential illicit discharges, the area draining to the junction manhole will be flagged for further upstream manhole investigation and/or isolation and confirmation of source(s).
7. Subsequent key junction manhole inspections will proceed upstream until the location of suspected illicit discharge(s) can be isolated to a pipe segment between two manholes.
8. If after a complete investigation of the drainage network in the suspect catchment no evidence of an illicit discharge is found, catchment investigations will be considered concluded upon completion of key junction manhole sampling, with documentation of the sampling results below applicable benchmarks, and steps taken to investigate the source.

Wet Weather Investigation (Outfall Sampling)

Where a minimum of one (1) SVF is identified in the outfall inventory or based on previous information or the during the catchment investigation, a wet weather investigation must also be conducted at the associated outfall. The Town will be responsible for implementing the wet weather outfall sampling program as defined in SOPs ID-2 and ID-4 and making updates to the SWMP map and outfall inventory, as applicable.

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

Wet weather outfall sampling will proceed as follows:

1. At least one wet weather sample will be collected at the identified outfall for the same parameters required during dry weather sampling. Field kits can be used for these analyses except for bacteria, provided they meet the minimum threshold indicator concentrations as outlined in *Section 2.3.4.7.b.iii.4.b* of the Permit. **Appendix DE** of the SWMP contains tables for parameter thresholds, field test methods, field kits, equipment and instrumentation, and suggested supplies.
2. Wet weather sampling will occur during or after a storm event of sufficient depth or intensity to produce a stormwater discharge at the outfall.
 - a. To the extent feasible, sampling should occur during the spring (March through June) when groundwater levels are relatively higher.

- b. Sampling during the initial period of discharge ("first flush") is to be avoided. This initial period is generally through the first 0.5-inch to 1-inch of rainfall, or 15-minutes after the start of a steady rainfall.
3. If wet weather outfall sampling indicates a potential illicit discharge, then additional wet weather source sampling will be performed, as warranted, moving upstream through key junction manholes until the sampling results do not indicate the suspected pollutant.
4. Once an upstream manhole field test is found to fall below pollutant thresholds (SOP ID-4), source isolation and confirmation procedures are to be followed as described below.
5. If wet weather outfall sampling of a catchment does not identify evidence of illicit discharges, and no evidence of an illicit discharge is found during dry weather manhole inspections, that catchment investigation will be considered complete. All documentation of a complete investigation is required to be included in the town's annual MS4 report to the EPA.

Source Isolation and Confirmation

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

- sandbagging;
- CCTV/video inspections;
- smoke testing;
- dye testing;
- optical brightener monitoring; and/or
- illicit discharge canines.

These methods are described below. Public notification is an important aspect of a detailed source investigation program. Prior to video inspections, smoke testing, or dye testing, the Town will notify property owners in the affected area. Testing notification may include robocalls, hanging notifications on doors/mailboxes, in-person door-to-door, and/or email.

Sandbagging

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

Smoke Testing

Smoke testing involves injecting non-toxic smoke into drain lines and noting the emergence of smoke in illegally connected buildings or from cracks and leaks in the system itself. Smoke testing can also be effective in confirming and locating upstream or downstream structures within a drainage system. Typically, a smoke bomb or smoke generator is used to inject the smoke into the system at a catch basin or manhole and air is then forced through the system. A team of two or more people is needed to perform smoke testing (ideally, all with two-way radios). Test personnel are placed in areas where there are suspected illegal connections or cracks/leaks, noting any escape of smoke (indicating an illicit connection or damaged storm drain infrastructure). It is important when using this technique to make proper notifications to area residents and business owners as well as local police and fire departments.

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

Dye Testing

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

A team of two or more people is needed to perform dye testing (ideally, all with two-way radios). One person is located inside the building, while the others are stationed at the appropriate storm drain structures (which should be opened prior to adding dye) and/or outfalls. The person inside the building adds dye into a plumbing fixture (i.e., toilet or sink) and runs a sufficient amount of water to move the dye through the system. The person inside the building then radios to the outside crew that the dye has been added, and the outside crew watches for the dye in the storm drain system, recording the presence or absence of the dye over a set time.

This testing can be relatively quick (about 30 minutes per test), effective (results are usually definitive), and inexpensive. Dye testing is best used when the likely source of an illicit discharge has been narrowed down to a few specific buildings and the suspected dry-weather flow is perceptible.

Closed Circuit Television (CCTV)/Video Inspection

Another method of source isolation involves the use of mobile video cameras that are guided remotely through storm drain lines to observe possible illicit discharges or connections. IDDEP staff can review the videos and note any visible illicit discharges. While this tool is both effective and usually definitive, it can be costly and time consuming when compared to other source isolation techniques.

Optical Brightener Monitoring

Optical brighteners are fluorescent dyes that are used in detergents and paper products to enhance their appearance. The presence of optical brighteners in surface waters or dry weather discharges suggests there is a possible illicit discharge or insufficient removal by local septic systems or other wastewater treatment. Optical brightener monitoring can be done in two ways. The most common and least expensive methodology involves placing a cotton pad in a wire cage and securing it in a pipe, manhole, catch basin, or inlet to capture intermittent dry weather flows. The pad is retrieved at a later date and placed under UV light to determine the presence/absence of brighteners during the monitoring period. A second methodology uses handheld fluorometers to detect optical brighteners in a water sample collected from outfalls or ambient surface waters. Use of a fluorometer, while more quantitative, is typically more costly and is not as effective at isolating intermittent discharges as other source isolation techniques.

IDDE Canines

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

Illicit Discharge Removal

When the specific source of an illicit discharge is identified, the Town will exercise its authority as necessary to require its removal. The Permit annual report will include the status of all IDDEP investigations and removal activities including the following information for each confirmed source:

- the location of the discharge and its source(s);
- a description of the discharge;
- the method of discovery;
- date of discovery;
- date of elimination, mitigation, or enforcement action; and
- an estimate of the volume of flow removed.

Confirmatory Outfall Sampling

Within one (1) year of removal of an identified illicit discharge, confirmatory outfall sampling will be conducted. The confirmatory sampling will be conducted in dry weather unless SVFs have been identified, in which case both dry weather and wet weather confirmatory sampling will be conducted. If confirmatory sampling indicates continued evidence of or additional illicit discharges, the catchment will be scheduled for further investigations as described above. Confirmatory screening is not required in catchments where illicit discharges or SVFs have not been identified, or no previous screening indicated suspicious flows.

Follow-up Screening

Upon completion of each catchment investigation and illicit discharge removal and confirmation (as applicable), each outfall or interconnection will be scheduled for follow-up screening within five (5) years or sooner based on the catchment's illicit discharge priority. Ongoing screening will consist of dry weather screening and sampling consistent with the procedures described in the IDDEP and town SOPs. Ongoing wet weather sampling will also be conducted at outfalls where wet weather sampling was required due to SVFs and will be conducted in accordance with the procedures described in the IDDEP and town SOPs. All sampling results will be reported in the Permit annual reports.

Illicit Discharge Detection and Elimination Training

The Town will implement a training program for employees involved in the IDDEP, including how to recognize illicit discharges and the process related to illicit discharge investigation, removal, and enforcement. The permittee shall report on the frequency and type of employee training in the Permit annual report.

Attachments

SOP ID-3 *Drain Manhole Inspection Log*

Related Standard Operating Procedures

1. SOP ID-0 *Stormwater Sampling Quality Assurance Project Plan*
2. SOP ID-1 *Dry Weather Outfall Inspection*
3. SOP ID-2 *Wet Weather Outfall Inspection*
4. SOP ID-4 *Water Quality Screening in the Field*
5. SOP ID-5 *Locating Illicit Discharges*

Approved Date: June 30, 2021

Revisions:

Source: *New Hampshire Lower Merrimack Valley Stormwater Coalition*

Inspection Date: _____ Tributary Area: _____

Street: _____ Inspector: _____

Inspection Condition: Not Found _____ Surface _____ Internal _____ Follow Up Inspection Needed? _____

Time Since Last Rain: < 24 hours _____ 24 - 48 hours _____ 48 - 72 hours _____

Observations:

Standing Water in Manhole: Yes _No ___ Color of Water: Clear _ Cloudy _ Other _____

Flow in Manhole: Yes _No ___ Velocity: Slow _ Medium _ Fast _ Depth of Flow: _____

in. Color of Flow: No Flow: _ Clear _ Cloudy _ Suspended Solids _ Other _____

Blockages: Yes ___No ___ Sediment in Manhole: Yes ___No___ If Yes: Percent of Pipe Filled: ___

% Floatables: None ___ Sewage _ Oily Sheen _ Foam _ Other _____

Odor: None _____ Sewage _____ Oil _____ Soap _____ Other _____

Field Testing:

Temp _____ Conductivity _____ Salinity _____ Ammonia: Yes/No Chlorine Yes/No Surfactants: Yes/No

Lab analysis:

E. coli _____ Pollutants of Concern* _____

*Total Nitrogen (TKN) / Total Phosphorus

MH DETAILS

Location:		Material:		MH Cover size:		MH Diameter:		Invert/Flow Channel:	
Roadway		Brick		24"		48"		Present Y/N	
Gutter		Block		26"		60"		Material:	
Grass		Concrete		30"		Other (describe below)		Concrete	
Easement		Lined		36"			Brick/mortar		
Other (describe below)		Other (describe below)		Other (describe below)				Other (describe below)	

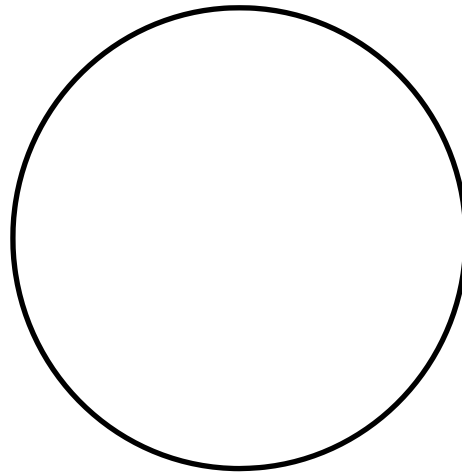
CONDITION

Cover:		Ring &Frame		Chimney:		Wall:		Rungs:	
Serviceable		Serviceable		Serviceable		Serviceable		Serviceable	
Loose		Loose		Cracked/Broken		Cracked/Broken		Unsafe	
Below Grade		Displaced		Corroded		Corroded		Missing any	
Damaged		Missing Grout		Misaligned		Misaligned		Corroded	
Sealed		Raise		Infiltration		Infiltration		N/A - no rungs	
Holes (# of holes)		Lower		Roots at Joints		Roots at Joints			

Include any pertinent notes regarding component conditions below:

MANHOLE DIAGRAM

(Outflow should be at the 6:00 position. Label all pipes with size/type and flow direction)



FLOW MEASUREMENTS

Field Data for Flowing Outfalls				
Method / Parameter		Result	Unit	Equipment
□ #1	Volume		Liter	Bottle
	Time to fill		Sec	Stopwatch
□ #2	Flow Depth		In	Tape measure
	Flow Width		Ft, In	Tape measure
	Measured length		Ft, In	Tape measure
	Time of travel		Sec	Stopwatch

SOP ID-4: WATER QUALITY SCREENING IN THE FIELD

Introduction

Outfalls from an engineered storm drain system can be in the form of pipes or swales/ditches. Under current regulations, it is important to inspect and document water quality within the MS4 system under both dry weather and wet weather conditions as required. SOP ID-1, "Dry Weather Outfall Inspection" and SOP ID-2, "Wet Weather Outfall Inspection", cover the objectives of these activities and how water quality parameters can be collected during both types of inspections. SOP HW-1, "Catch Basin Inspection and Cleaning", also describes how this operations and maintenance activity can serve as an additional opportunity to collect water quality data.

SOP ID-2 included detailed information on how to collect discrete analytical samples to be processed by a laboratory. In contrast, this SOP addresses screening-level measurements than can be collected at outfalls, catch basins, receiving waters, or other water bodies. The measurements can be collected with field test kits or with portable meters.

Water quality screening data collected in this manner can assist in the illicit discharge detection and elimination investigations, as described in SOP ID-5, "Locating Illicit Discharges".

Visual Condition Assessment

SOPs ID-1 through ID-3 describe a *Visual Condition Assessment* to collect observations related to the quality of stormwater conveyed by an engineered storm drain system. These observations may include such visual evidence and/or potential pollutants as:

- foaming (detergents);
- discoloration/staining;
- odor;
- evidence of sanitary waste;
- optical enhancers (fluorescent dyes added to laundry detergent); and
- turbidity.

If a *Visual Condition Assessment* indicates the presence of these potential pollutants, it may be necessary to quantify the extent of each and gather data on other parameters that cannot be visually observed but can be measured using field kits or meters. These parameters include:

- ammonia;
- chlorine;
- conductivity;
- salinity;
- bacteria (E. coli);
- surfactants;
- temperature;
- total nitrogen (TKN)*; and
- total phosphorus*.

*nitrogen and phosphorus testing is only required for outfalls that discharge directly to a waterbody with a nitrogen or phosphorus impairment, respectively.

Field Kits and Sampling Methods Available

The Table 1 shows field test kits and portable meters that can be used for field screening parameters. Each field test kit should include instructions specific to that test kit, and most kits are available in configurations that detect different ranges of the parameter.

**Table 1
Field Measurements, Test Kits, and Instrumentation**

Analyte or Parameter	Field Test Kit	Field Test Consumables*
Ammonia	Hanna Instruments H1700 Freshwater Low Range Ammonia Colorimeter-Checker HC	Hanna Instruments Ammonia Reagent H1700-25 (25 tests) and H1700-11 Calibration set (1/100 tests) AND/OR Hach #2755325 Ammonia (Nitrogen) Test Strips 0-6.0 mg/L (25 tests)
Total Chlorine	Hanna Instruments H1761 Ultra-Low Range Total Chlorine Colorimeter-Checker HC	Hanna Instruments Total Chlorine Ultra-Low Range Reagent H1761-25 (25 tests) and H1761-11 Calibration set (1/100 tests) AND/OR LaMotte 2963LR-G Insta-Test Analytic Total Chlorine Test Strips (25 tests)
Surfactants (Detergents)	CHEMetrics Detergents CHEMets Visual Kit K-9400 AND/OR UV Light	CHEMetrics Detergents Refill R-9400 (20 tests) AND/OR absorbent material placed in flow
Conductivity	YSI PROplus (or other device capable of these measurements)	N/A
Salinity		
Temperature		
Bacteria	Bacteria field test kits require 24-hour window for Laboratory analysis field samples must be to lab within 6-hours of collection.	
Total Nitrogen (TKN)	YSI PROplus AND/OR Grab Sample for Lab Analysis	Hach # 2745425 Nitrate and Nitrite Test Strips (25 tests) AND/OR
Total Phosphorus	Hanna Instruments H1713 Low Range Phosphate Colorimeter-Checker HC AND/OR CHEMetrics Phosphate, ortho CHEMets Visual Kit K-8510 AND/OR Grab Sample for Lab Analysis	Hanna Instruments Phosphate Low-Range Reagent H1713-25 (25 tests) and H1713-11 Calibration set (1/100 tests) AND/OR CHEMetrics Phosphate, ortho Refill R-8510 (30 tests) and Activator Solution A-8500 (200 tests)

* waste products from some tests may be considered hazardous materials and must be disposed in accordance with all regulations.

The Table 2 shows benchmark values identified in the Permit and other related guidance. These represent the concentration (or value) of each parameter where when found or exceeded in stormwater, may be indicative of pollution and/or illicit discharges and requires further sampling and catchment investigation.

Table 2
Benchmark Field Measurements for Select Parameters

Analyte or Parameter	Benchmark
Ammonia	< 0.5 mg/L
Total Chlorine	detectable range < 0.02 mg/L
Surfactants (Detergents)	< 0.25 mg/L
Conductivity	< 100 mS/cm
Salinity	< 72.6 g/L
E. coli (bacteria)	TMDL < 406/100mL (non-beach) TMDL < 88/100mL (beach)
Total Nitrogen (TKN)	< 0.32 mg/L
Total Phosphorus	< 50 ug/L (direct to waterbody) < 100 ug/L (indirect to waterbody)

Whether using laboratory analyses, field test kits, or portable meters, if and when water quality screening samples exceed benchmark concentrations, the inspector may also consider collecting analytical samples for laboratory analysis depending on severity.

Advantages and Disadvantages of Field Testing

Field test kits can be convenient for use as a screening tool, initial purchase costs are lower, and the costs are far less than full analyses at a laboratory. However, some disadvantages of this screening method include:

- generation of wastes, including glass vials and used reagent;
- some spent kits may require hazardous waste handling;
- labor cost associated with inspector's time;
- steps and processes for each kit can vary widely, and can result in errors;
- limited detection ranges.
- not all kits are accepted by all regulatory agencies; and
- limited shelf life;

Portable instrumentation such as the colorimeters shown in Table 1 have the benefit of providing accurate readings, measure to low detection limits, and can be purchased pre-

programmed to measure concentrations of most parameters required. Disadvantages of portable instrumentation include:

- higher initial purchase costs;
- requirement for ongoing calibration and maintenance;
- individual probes require periodic replacement;
- specific storage requirements to maintain calibration; and
- trained staff are required in order to effectively utilize.

Attachments

1. Attachment 1 Field Sampling Kits
2. Sample Bottle Labels
3. Chain-of-Custody Record Example
4. SOP ID-4 *Water Quality Screening Form*

Related Standard Operating Procedures

1. SOP ID-0 *Stormwater Sampling Quality Assurance Project Plan*
2. SOP ID-1 *Dry Weather Outfall Inspection*
3. SOP ID-2 *Wet Weather Outfall Inspection*
4. SOP ID-3 *Catchment Investigations*
5. SOP ID-5 *Locating Illicit Discharges*

Approved Date: June 30, 2021

Revisions:

Source: Central Massachusetts Regional Stormwater Coalition, NH Stormwater Coalitions, EPA 2017 New Hampshire Small MS4 General Permit, 2020 NPDES Great Bay Total Nitrogen General Permit for Wastewater Treatment Facilities In New Hampshire (NHG58A000), Calculation of Total Phosphorus Limits for NPDES Permits in New Hampshire, EPA New England Bacterial Source Tracking Protocol 2014, New Hampshire Statewide Total Maximum Daily Load (TMDL) for Bacteria Impaired Waters, 2010.

SOP-ID-4 ATTACHMENT 1 FIELD SAMPLING KIT DATA AND ALTERNATIVES

05.01.2021

Analyte or Parameter	Threshold	Manufacturer	Descriptor	Product #	Instrumentation (portable meter)	Field Kit Type	Reagent	Range	#Tests	Method	Initial Cost (assumes 100 tests)	Cost Reagent	Cost per Test	EPA OK	Notes	100 TESTS	100 TESTS	
Ammonia	0.5 mg/L ⁽¹⁾	Hanna Instruments	Low Range Ammonia Colorimeter-Checker HC*	H1700	Colorimeter	Colorimeter/Reagent	H1700-25 H1700-11	0.00-3.00 mg/L NH ₃ -N	25	Nessler Method ASTM D1426-92	\$58.95	\$19.00	\$1.35		includes one set of cuvettes and calibration set (\$20) for every 100 tests appears simple to use in the field		\$134.95	
		Hach	Ammonia (Nitrogen) Test Strips	2755325	n/a	Test Strips	n/a	0-6.0 mg/L NH ₃ -N	25	n/a		\$26.39	\$1.06		As recommended by Town of Merrimack/Coalition simple to use in the field	\$105.56		
Total Chlorine	detectable range includes 0.02 mg/L ⁽¹⁾	Hanna Instruments	Ultra Low Range Total Chlorine Colorimeter-Checker HC	H1761	Colorimeter	Colorimeter/Reagent	H1761-25 H1761-11	0-0.5 mg/L Cl ₂	25	DPD method EPA 330.5	\$58.95	\$11.00	\$1.03	Y	includes one set of cuvettes and calibration set (\$20) for every 100 tests appears simple to use in the field		\$102.95	
		LaMotte	Insta-Test Analytic Total Chlorine Test Strips	2963LR-G	n/a	Test Strips	n/a	0-10 mg/L Cl ₂	25	n/a		\$15.82	\$0.63		simple to use in the field	\$63.28		
		Hach	CN-66T Total Chlorine Color Disc Test Kit with DPD Total Chlorine Reagent, 5mL Powder Pillows	223103	Color Disc	Color Disc/Reagent	1407699	0-3.4 mg/L Cl ₂	100	DPD EPA 330.5	\$67.85	\$22.75	\$0.91	Y	As recommended by Town of Merrimack/Coalition			
Surfactants (Detergents)	0.25 mg/L ⁽¹⁾	CHEMetrics	CHEMets Visual Kit for Detergents*	K-9400	n/a	Visual Kit/Reagent	R-9400	0-3 ppm	20	Methylene Blue (MBA), EPA 425.1	\$94.90	\$72.20	\$4.56		As recommended by UNH		\$455.90	
			UV 'Black' Light				cotton balls				\$25.00	\$5.00	\$0.08		cheap but takes additional time and does not provide a 'value'	\$7.50		
		CHEMetrics	Detergents SAM Kit anionic surfactants, MBAS*	I-2017	Colorimeter	Single Analyte Photometer/Reagent	R-9423	0-2.50 mg/L	20	Methylene Blue (MBA), EPA 425.1	\$443.25	\$80.60	\$8.46		As recommended by UNH requires purchase of single analyte meter, somewhat expensive			
Total Nitrogen (TKN)	0.32 mg/L ⁽²⁾	HACH	Nitrate and Nitrite Test Strips	2745425	n/a	Test Strips	n/a	Nitrate: 0-50 mg/L NO ₃ -N Nitrite: 0-3.0 mg/L NO ₂ -N	25	n/a		\$24.55	\$0.98		simple to use in the field	\$98.20	\$98.20	
		YSI	Multiparameter		Proplus	instrument/probe									Y	As recommended by UNH, requires conversion from field data		
Total Phosphorus	50 ug/L ⁽³⁾ (direct into waterbody)	Hanna Instruments	Low Range Phosphate Colorimeter-Checker HC	H1713	Colorimeter	Colorimeter/Reagent	H1713-25 H1713-11	0.00-2.50 mg/L PO ₄	25	Asorbic Acid method EPA 365.1	\$58.95	\$12.00	\$1.07	Y	includes one set of cuvettes and calibration set (\$20) for every 100 tests appears simple to use in the field	\$106.95		
	100 ug/L ⁽³⁾ (indirect into waterbody)	CHEMetrics	CHEMets Reactive Phosphate, ortho Visual Kit	K-8510	n/a	Visual Kit/Reagent	R-8510	0 - 1 mg/L 1 - 10 mg/L PO ₄	30	Stannous Chloride APHA 4500-P	\$70.90	\$28.80	\$1.67	?	As recommended by UNH		\$166.90	
		Hach	PO-19 Phosphorus, OrthoPhosphate (Reactive) Test Kit with PhosVer3 Reagent, 5mL Powder Pillows*	224800	Color Disc	Color Disc/Reagent	220999	0-0.08 mg/L PO ₄	100	Asorbic Acid method EPA 365.1	\$116.00	\$33.15	\$1.49	Y	As recommended by UNH appears to be too complicated for field, many pieces			
Conductivity	100 mS/cm ⁽⁴⁾																	
Salinity	72.6 g/L (calculated)	YSI	Multiparameter		Proplus	instrument/probe					\$2,900.00			Y	As recommended by UNH cost per UNH presentation	\$2,900	\$2,900	
Temperature	n/a																	
Bacteria (E. coli)	406/100mL ⁽⁵⁾ (NHDES TMDL instantaneous non-beach) 88/100mL ⁽⁵⁾ (NHDES TMDL instantaneous non-beach)	Bacteria field test kits require 24-hour window for Laboratory Analysis (EPA-compliant)									EPA 1603				Y	cost estimate from Nelson Lab + markup	\$3,000	\$3,000

Threshold Sources:

- ⁽¹⁾ MS4 PERMIT EPA 2017 New Hampshire Small MS4 General Permit
<https://www3.epa.gov/region1/npdes/stormwater/nh/2017-small-ms4-general-permit-nh.pdf>
- ⁽²⁾ GB Nitrogen Permit NPDES Great Bay Total Nitrogen General Permit for Wastewater Treatment Facilities In New Hampshire (NHG58A000)
<https://www3.epa.gov/region1/npdes/gb/nhg58a000-gb-n-gp.pdf>
- ⁽³⁾ EPA (2018) Calculation of Total Phosphorus Limits for NPDES Permits in New Hampshire
<https://www.des.nh.gov/sites/g/files/ehbemt341/files/documents/2020-01/20180111-2-nh-tp-lim-calcs.pdf>
- ⁽⁴⁾ EPA (2012) EPA New England Bacterial Source Tracking Protocol
<https://www3.epa.gov/region1/npdes/stormwater/ma/2014Appendix.pdf>
- ⁽⁵⁾ NHDES TMDL New Hampshire Statewide Total Maximum Daily Load (TMDL) for Bacteria Impaired Waters, 2010
<https://www.des.nh.gov/sites/g/files/ehbemt341/files/documents/final-bacteria-tmdl-report-statewide-379.pdf>

Notes:

1. Thresholds indicate an exceedance in water quality standards.
2. Unless otherwise noted, an exceedance of a threshold indicates an impairment/pollutant.

\$6,281	\$6,859
\$62.81	\$68.59

SAMPLE BOTTLE LABELS



If discharge is observed during the dry weather screening, a sample of the discharge must be collected for analytical testing in accordance with the Permit. Dry weather discharge kits from a laboratory will include sample bottles, with or without preservative depending on the type of analysis. Sample bottles should be labeled with the following information:

Sampler: _____	Date: _____	Time: _____
Field ID: _____		
Analysis: _____	Preservative: _____	



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EXAMPLE

PAGE OF

**CHAIN-OF-CUSTODY RECORD
AND ANALYSIS REQUEST**

ANALYSIS REQUEST

Company Name:	Project Name:
Company Address:	Project #:
Report To:	Project Location: NH MA ME VT _____
Phone #:	Accreditation Required? N/Y: _____
Invoice to: _____	Protocol: RCRA SDWA NPDES MCP NHDES DOD
Email: _____	Reporting QAPP GW-1 S-1
PO #: _____	Limits: EPA DW Other _____
	Quote # _____
	<input type="checkbox"/> NH Reimbursement Pricing

<input type="checkbox"/> VOC 8260	<input type="checkbox"/> VOC 8260 NHDES	<input type="checkbox"/> VOC 8260 MADEP
<input type="checkbox"/> VOC 624	<input type="checkbox"/> VOC BTEX MBE, only	<input type="checkbox"/> VOC 802-IVT
<input type="checkbox"/> VPH MADEP	<input type="checkbox"/> GRO 8015	<input type="checkbox"/> 1,4-Dioxane
<input type="checkbox"/> VOC 524.2	<input type="checkbox"/> VOC 524.2 NH List	<input type="checkbox"/> Gases-List:
<input type="checkbox"/> TPH	<input type="checkbox"/> DRO 8015	<input type="checkbox"/> EPH MADEP
<input type="checkbox"/> 8270PAH	<input type="checkbox"/> 8270ABN	<input type="checkbox"/> 625
<input type="checkbox"/> 8082 PCB	<input type="checkbox"/> 8081 Pesticides	<input type="checkbox"/> 608 Pest/PCB
<input type="checkbox"/> O&G 1664	<input type="checkbox"/> Mineral O&G SM6520F	
<input type="checkbox"/> pH	<input type="checkbox"/> BOD	<input type="checkbox"/> Conductivity
<input type="checkbox"/> TSS	<input type="checkbox"/> TDS	<input type="checkbox"/> TS
<input type="checkbox"/> RCRA Metals	<input type="checkbox"/> Priority Pollutant Metals	<input type="checkbox"/> TAL Metals
<input type="checkbox"/> Total Metals-list:		
<input type="checkbox"/> Dissolved Metals-list:		
<input type="checkbox"/> Ammonia	<input type="checkbox"/> COD	<input type="checkbox"/> TKN
<input type="checkbox"/> T-P Phosphorus	<input type="checkbox"/> Phenols	<input type="checkbox"/> Bacteria P/A
<input type="checkbox"/> Cyanide	<input type="checkbox"/> Sulfide	<input type="checkbox"/> Nitrate + Nitrite
<input type="checkbox"/> Nitrate	<input type="checkbox"/> Nitrite	<input type="checkbox"/> Chloride
<input type="checkbox"/> Corrosivity	<input type="checkbox"/> Reactive CN	<input type="checkbox"/> Reactive S-
<input type="checkbox"/> TCLP Metals	<input type="checkbox"/> TCLP VOC	<input type="checkbox"/> TCLP SVOC
<input type="checkbox"/> Subcontract:	<input type="checkbox"/> Grain Size	<input type="checkbox"/> Herbicides
	<input type="checkbox"/> Formaldehyde	<input type="checkbox"/> PFC
		<input type="checkbox"/> Grab (G) or Composite (C)

Lab Sample ID (Lab Use Only)	Field ID	# CONTAINERS	Matrix			Preservation Method					Sampling			
			WATER	SOLID	OTHER	HCl	HNO ₃	H ₂ SO ₄	NaOH	MeOH	DATE	TIME	SAMPLER	

TAT REQUESTED Priority (24 hr)* <input type="checkbox"/> Expedited (48 hr)* <input type="checkbox"/> Standard (10 Business Days) <input type="checkbox"/> *Date Needed _____	See absoluteresourceassociates.com for sample acceptance policy and current accreditation lists.	SPECIAL INSTRUCTIONS	RECEIVED ON ICE <input type="checkbox"/> YES <input type="checkbox"/> NO TEMPERATURE _____ °C
	REPORTING INSTRUCTIONS <input type="checkbox"/> PDF (e-mail address) _____ <input type="checkbox"/> HARD COPY REQUIRED <input type="checkbox"/> EDD _____		

CUSTODY RECORD QSD-01 Revision 10/04/17	Relinquished by Sampler:	Date	Time	Received by:	Date	Time
	Relinquished by:	Date	Time	Received by:	Date	Time
	Relinquished by:	Date	Time	Received by Laboratory:	Date	Time

SOP ID-4 WATER QUALITY SCREENING FORM

Outfall I.D.			
Outfall Location			
Inspector's Name			
Date of Inspection		Date of Last Inspection	
Start Time		End Time	
Type of Inspection:	Regular <input type="checkbox"/>	Pre-Storm Event <input type="checkbox"/>	During Storm Event <input type="checkbox"/> Post-Storm Event <input type="checkbox"/>
Most Recent Storm Event			

FIELD WATER QUALITY SCREENING RESULTS

Sample Parameter	Field Test Kit or Portable Instrument	Benchmark	Field Screening Result	Full Analytical Required?
Ammonia		< 0.5 mg/L		<input type="checkbox"/> Yes <input type="checkbox"/> No
Total Chlorine		detectable range < 0.02 mg/L		<input type="checkbox"/> Yes <input type="checkbox"/> No
Surfactants/Detergents		< 0.25 mg/L		<input type="checkbox"/> Yes <input type="checkbox"/> No
Conductivity		< 100 mS/cm		<input type="checkbox"/> Yes <input type="checkbox"/> No
Salinity		< 72.6 g/L		<input type="checkbox"/> Yes <input type="checkbox"/> No
Temperature		n/a		n/a
Total Nitrogen (TKN)		< 0.32 mg/L		<input type="checkbox"/> Yes <input type="checkbox"/> No
Total Phosphorus		< 50 ug/L (direct to waterbody) < 100 ug/L (indirect to waterbody)		<input type="checkbox"/> Yes <input type="checkbox"/> No

FULL ANALYTICAL TESTING WATER QUALITY RESULTS

Sample Parameter	Analytical Test Method	Sample Collection (Time/Date)	Testing Lab	Analytical Testing Result
Bacteria (E. coli, required)	EPA 1603			
Salinity	SM 2510 B			
Total Nitrogen (TKN)*	ASTM D1426 EPA 350.1			
Total Phosphorus*	EPA 365.1			

*nitrogen and phosphorus testing is only required for outfalls that discharge directly to a waterbody with a nitrogen or phosphorus impairment, respectively.

APPENDIX F

**SOURCE ISOLATION AND CONFIRMATION METHODS:
INSTRUCTIONS, MANUALS AND SOPs**

APPENDIX G

IDDEP EMPLOYEE TRAINING RECORD

SOP ID-5: LOCATING ILLICIT DISCHARGES

Introduction

An “illicit discharge” is any discharge to an engineered storm drain system that is not composed entirely of stormwater unless the discharge is defined as an allowable non-stormwater discharge under the current New Hampshire MS4 Permit. Illicit discharges may enter the engineered storm drain system through direct or indirect connections, such as: cross-connections to engineered storm drain systems; leaking or failing septic systems; intentional discharge of pollutants to catch basins; connected floor drains; and sump pumps connected to the system (under some circumstances). Illicit discharges can contribute high levels of pollutants, such as heavy metals, toxics, oil, grease, solvents, nutrients, and pathogens to receiving waterbodies.

Illicit discharges can be located by several methods, including routine dry weather outfall inspections and catch basin inspections, which are described in detail in SOP ID-1, “*Dry Weather Outfall Inspection*”, SOP ID-3 *Catchment Investigations*, and SOP HW-1 “*Catch Basin Inspection and Cleaning*”, as well as from citizen reports.

This SOP has legal authority from the Town code Article 908, Stormwater Management, to prohibit the connection of non-stormwater discharges into any town storm drain system. The authority or department for addressing illicit discharge reports is identified in the Town’s legal authority.

The town’s inspector has legal authority to enter the site. However, if denied permission to enter the site, the inspector should never force entry but instead should notify the Health Inspector.

Identifying Illicit Discharges

The following are often indicators of an illicit discharge from stormwater outfall:

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

Both bacteria and petroleum can create a sheen on the water surface. The source of the sheen can be differentiated by disturbing it, such as with a pole. A sheen caused by oil will remain intact and move in a swirl pattern; a sheen caused by bacteria will separate and appear "blocky". Bacterial sheen is not a pollutant but should be noted.

Citizen Call in Reports

Reports by residents and other users of waterbodies can be effective tools in identifying the presence of illicit discharges. The Town has set up phone hotlines for this purpose and has provided guidance to local police departments and dispatch centers to manage data reported in this manner. Town staff employees and the general public receive education to help identify the signs of illicit discharges and are informed how to report such incidents.

When a call is received about a suspected illicit discharge, the attached IDDE Incident Tracking Sheet shall be used to document appropriate information. Subsequent steps for taking action to trace, document, and eliminate the illicit discharge are described in the following sections.

Potential illicit discharges reported by citizens should be reviewed on an annual basis to locate patterns of illicit discharges, identify high-priority catchment areas, and evaluate the call-in inspection program.

Tracing Illicit Discharges

Whenever an illicit discharge is suspected, regardless of how it was identified, the attached IDDE Incident Tracking Sheet must be utilized. The Incident Tracking Sheet shall be provided to the appropriate authority [identify responsible department], and the discharge shall be promptly investigated.

If the presence of an illicit discharge is confirmed, but its source is unidentified, additional procedures to determine the source of the illicit discharge should be completed.

1. Review and consider information collected when illicit discharge was initially identified, for example, the time of day and the weather conditions for the previous 72-hours. Also consider and review past reports or investigations of similar illicit discharges in the area.
2. Obtain storm drain mapping for the area of the reported illicit discharge.
3. Document current conditions at the location of the observed illicit discharge point, including odors, water appearance, estimated flow, presence of floatables, and other pertinent information. Photograph relevant evidence.
4. If there continues to be evidence of the illicit discharge, collect water quality data using the methods described in SOP ID-4, "*Water Quality Screening in the Field*". This may

include using field test kits or instrumentation or collecting analytical samples for full laboratory analysis.

5. Move upstream from the point of observation to identify the source of the discharge, using the system mapping to determine infrastructure, tributary pipes, and drainage areas that contribute. At each point, survey the general area and surrounding properties to identify potential sources of the illicit discharge. Document observations at each point on the *IDDE Incident Tracking Sheet* as well as with photographs.
6. Continue this process until the illicit discharge is no longer observed, which will define the boundaries of the likely source. For example, if the illicit discharge is present in catch basin X but not the next upstream catch basin Y, the source of the illicit discharge is between these two structures.

If the source of the illicit discharge could not be determined by visual survey, consider using dye testing, smoke testing, or closed-circuit television inspection (CCTV) to locate the illicit discharge. During dry weather or for intermittent flows, use sandbags and/or weirs to pool and collect flow for sampling, if applicable. At a minimum, sample suspected discharge for bacteria.

[Dye Testing](#)

Dye testing is used to confirm a suspected illicit connection to a storm drain system. Prior to testing, permission to access the site should be obtained. Dye is discharged into the suspected fixture, and nearby storm drain structures and sanitary sewer manholes observed for presence of the dye. Each fixture, such as sinks, toilets, and sump pumps, should be tested separately. A third-party contractor may be required to perform this testing activity.

[Smoke Testing](#)

Smoke testing is a useful method of locating the source of illicit discharges when there is no obvious potential source. Smoke testing is an appropriate tracing technique for short sections of pipe and for pipes with small diameters. Smoke added to the storm drain system will emerge in connected locations. A third-party contractor may be required to perform this testing activity.

[Closed Circuit Television Inspection \(CCTV\)](#)

Televised video inspection can be used to locate illicit connections. In CCTV, cameras are used to record the interior of the storm drainpipes. They can be manually pushed with a stiff cable or guided remotely on treads or wheels. A third-party contractor may be required to perform this testing activity.

If the source is located, follow steps for removing the illicit discharge. Document repairs, new connections, and other corrective actions required to accomplish this objective. If the source still cannot be located, add the pipe segment to a future inspection program.

A process flow chart is provided on the last page of this SOP.

Removing Illicit Discharges

Proper removal of an illicit discharge will ensure it does not recur. Refer to SOP ID-7 *IDDEP Enforcement* for detailed notification and enforcement procedures. In general, removal of confirmed illicit discharges will include:

- determination of who is financially responsible.
- suspension of access to the storm drain system if an “imminent and substantial danger” exists or if there is a threat of serious physical harm to humans or the environment.
- issuance of a Notice of Violation.
- repair/correct/remediation of the cause of the discharge by the property owner.
- a follow-up inspection to confirm that the illicit discharge has been removed.
- collection of a confirmatory bacteria sample (or other pollutant of concern) after the removal.

Attachments

1. SOP ID-5 *Illicit Discharge Incident Tracking Sheet*
2. Example *IDDEP Notice of Violation Letter*

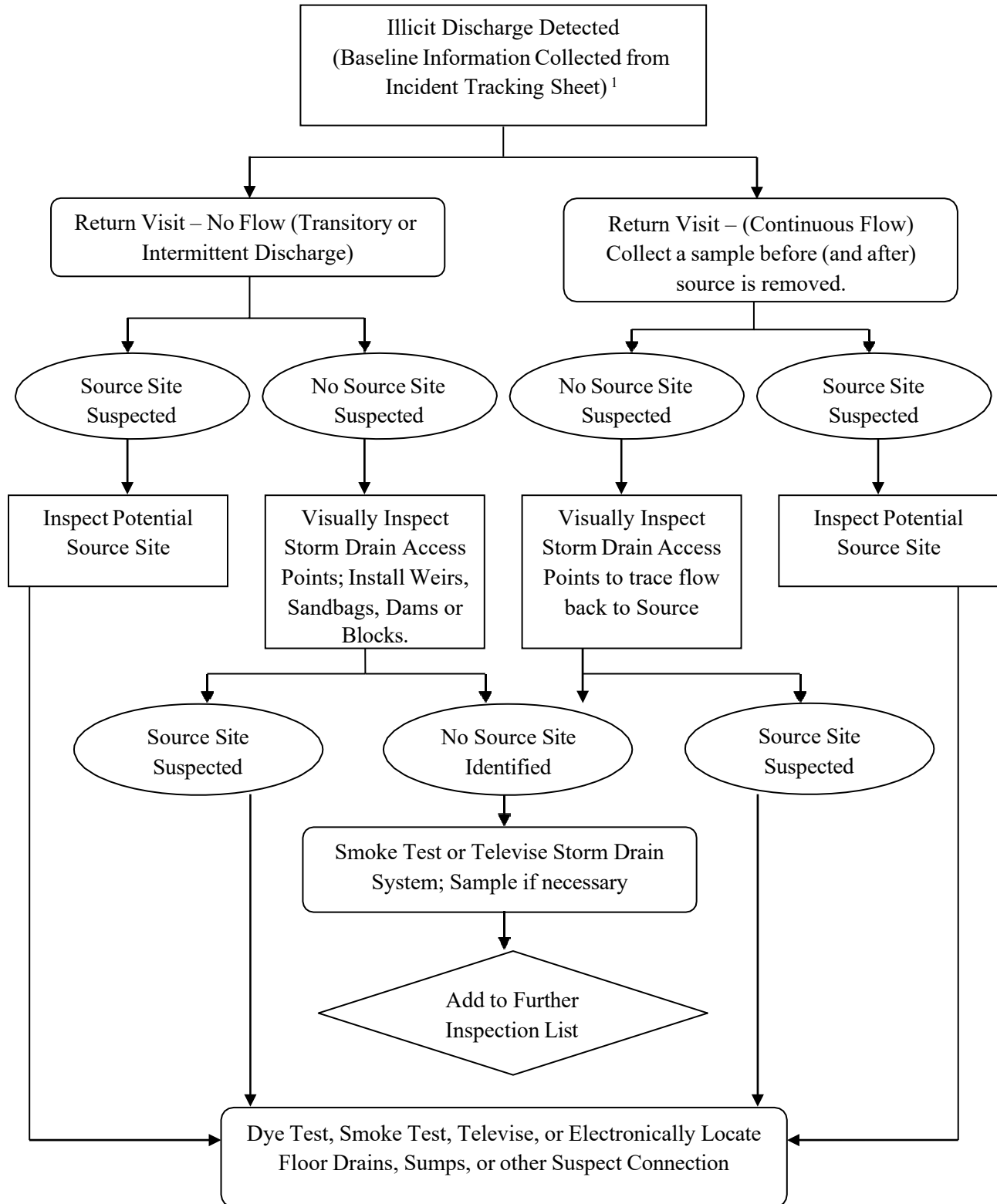
Related Standard Operating Procedures

1. SOP ID-0 *Stormwater Sampling Quality Assurance Project Plan*
2. SOP ID-3 *Catchment Investigations*
3. SOP ID-6 *Private Drainage Connection Inspection*
4. SOP ID-7 *IDDEP Enforcement*

Approved Date: June 30, 2021

Revised:

Source: Central Massachusetts Regional Stormwater Coalition; Guidelines and Standard Operating Procedures, Illicit Discharge Detection and Elimination and Pollution Prevention/Good Housekeeping, for Stormwater Phase II Communities in New Hampshire, New Hampshire Estuaries Project and NHDES, November 2006.



¹ – Guidelines and Standard Operating Procedures: Illicit Discharge Detection and Elimination and Pollution Prevention/Good Housekeeping for Stormwater Phase II Communities in New Hampshire, New Hampshire Estuary Project, 2006, p. 25, Figure 2-1.

SOP ID-5 Illicit Discharge Incident Tracking Sheet

Incident ID:				
Responder Information (for Citizen-Reported issues)				
Call Taken By:		Call Date:		
Call Time:		Precipitation (inches) in past 24-48 hours:		
Observer Information				
Date and Time of Observation:		Observed During Regular Maintenance or Inspections? <input type="checkbox"/> Yes <input type="checkbox"/> No		
Caller Contact Information (optional) or Town Employee Information:				
Observation Location: (complete one or more below)				
Latitude and Longitude:				
Stream Address or Outfall #:				
Closest Street Address:				
Nearby Landmark:				
Primary Location Description		Secondary Location Description:		
<input type="checkbox"/> Stream Corridor (In or adjacent to stream)	<input type="checkbox"/> Outfall	<input type="checkbox"/> In-stream Flow	<input type="checkbox"/> Along Banks	
<input type="checkbox"/> Upland Area (Land not adjacent to stream)	<input type="checkbox"/> Near Storm Drain	<input type="checkbox"/> Near other water source (stormwater pond, wetland, etc.):		
Narrative description of location:				
Upland Problem Indicator Description				
<input type="checkbox"/> Dumping	<input type="checkbox"/> Oil/Solvents/Chemicals	<input type="checkbox"/> Sewage		
<input type="checkbox"/> Detergent, suds, etc.	<input type="checkbox"/> Other:			
Stream Corridor Problem Indicator Description				
Odor	<input type="checkbox"/> None	<input type="checkbox"/> Sewage	<input type="checkbox"/> Rancid / Sour	<input type="checkbox"/> Petroleum (gas)
	<input type="checkbox"/> Sulfide (rotten eggs); natural gas	<input type="checkbox"/> Other: describe in "Narrative" section		
Appearance	<input type="checkbox"/> "Normal"	<input type="checkbox"/> Oil Sheen	<input type="checkbox"/> Cloudy	<input type="checkbox"/> Foam
	<input type="checkbox"/> Optical enhancers	<input type="checkbox"/> Discolored		
	<input type="checkbox"/> Other: Describe in "Narrative" section			
Floatables	<input type="checkbox"/> None	<input type="checkbox"/> Sewage (toilet paper, etc.)	<input type="checkbox"/> Algae	<input type="checkbox"/> Trash or debris
	<input type="checkbox"/> Other: Describe in "Narrative" section			
Narrative description of problem indicators:				
Suspected Source (name, personal or vehicle description, license plate #, address, etc.):				

---EXAMPLE---

**ILLICIT DISCHARGE DETECTION and ELIMINATION PROGRAM
NOTICE OF VIOLATION**

***Town of Kingston, NH
Department
163 Main Street
Kingston NH 03848
(603) 642-3342***

DATE

Property Owner
Address
TOWN, NH ZIP

RE: Kingston Parcel #: MAP XX LOT XX

Dear Property Owner:

On [DATE OF ID CONFORMATION], the Town's Inspector responded to a report of a discharge to a storm drain system as connected from property owned by you at [PROPERTY ADDRESS] in Kingston, NH. On this date, we confirmed the presence of [POLLUTANT FOUND] in the discharge.

This letter is to notify you that the discharge from your property has been determined to be illicit as prohibited by the Town code in Article 908, Stormwater Management and the US EPA Clean Water Act, and that you, as the property owner, are in violation of Town and federal regulation. Enclosed is a copy of the Ordinance for your review.

Under the Town's regulations, you are required to remove all connections from your property to the Town's stormwater system within 30-days and keep the Town informed as to the progress your remedial work. Relocation of the illicit discharge to local surface waters is also prohibited and such action will constitute an additional violation.

If we can be of further assistance, please do not hesitate to contact our office.

Sincerely,

Name
Title

SOP ID-6: PRIVATE DRAINAGE CONNECTION INSPECTION

The EPA's New Hampshire MS4 Permit describes a number of non-stormwater discharges to an engineered storm drain system that are considered "allowable", as long as an individual community has not prohibited the discharge. EPA allowable non-stormwater discharges can include the following:

- water line flushing
- diverted stream flows
- rising ground water
- uncontaminated ground water infiltration (as defined at 40 CFR § 35.2005(20))
- uncontaminated pumped ground water
- discharge from potable water sources
- foundation drains
- air conditioning condensation
- water from crawl space pumps
- footing drains
- flows from riparian habitats and wetlands

The inspector has the right to enter and inspect the premises where a private drainage connection to a town system is located, including tanks, storage areas, or rooms that may discharge or be caused to discharge to a town storm system. The inspector also has the right to sample or monitor any substances or parameters at such a location for purposes of assuring compliance with the EPA Clean Water Act. In addition, the inspector shall be given access to any records kept relative to the discharge connection.

When inspecting private drainage connections to a storm drain system, this form should be used by the inspector to ensure that the connection remains in compliance with the town's regulations.

Prior to the Inspection

The inspector shall review the following form prior to completing an on-site inspection. The inspector should inform the owner of the property where the private connection exists of the inspection in advance.

GENERAL INFORMATION

Address of Connection			
Private Drainage Description			
Inspector's Name			
Date of Inspection		Date of Last Inspection	
Start Time		End Time	

Compliance Review

Each of the following conditions should be evaluated as "True" during the on-site inspection to demonstrate compliance. If any of the following conditions, as recorded during the inspection, are not satisfied (i.e., if the evaluation is "False"), if existing, the drainage connection could be considered an Illicit Discharge.

Condition	Evaluation	Comment
There is a covenant for the property to reflect the drainage connection that has been recorded at the Registry of Deeds.	True <input type="checkbox"/> False <input type="checkbox"/>	
Record drawings documenting the location of the discharge were supplied to the town after construction.	True <input type="checkbox"/> False <input type="checkbox"/>	
If property has an oil/water separator: documentation of annual maintenance of the separator was provided to town.	True <input type="checkbox"/> False <input type="checkbox"/>	
If property was required to complete analytical monitoring: results of analytical testing of the discharge was provided to town.	True <input type="checkbox"/> False <input type="checkbox"/>	
Other:		

During the On-Site Inspection

The inspector shall make the following observations during the on-site inspection and note the results in the table.

Condition	Evaluation	Comment
The drainage connection is used for allowed discharges only.	True <input type="checkbox"/> False <input type="checkbox"/>	
The discharge is visibly free of oil or other pollutants.	True <input type="checkbox"/> False <input type="checkbox"/>	
Grey water/black water is not visibly present in the discharge or similar source evident.	True <input type="checkbox"/> False <input type="checkbox"/>	
Sediment-laden surface water is not visibly present in the discharge.	True <input type="checkbox"/> False <input type="checkbox"/>	
Flow from the connection does not exceed approved flow, as applicable.	True <input type="checkbox"/> False <input type="checkbox"/>	
No prohibited fixtures are connected to a town system from the property.	True <input type="checkbox"/> False <input type="checkbox"/>	
If a pump has been approved: the pump presently utilized is the same as the pump approved by the town.	True <input type="checkbox"/> False <input type="checkbox"/>	
If required in original application: backflow preventer, cleanout, and shutoff device remain operational and easily accessible to the town.	True <input type="checkbox"/> False <input type="checkbox"/>	
Other:		

Review of Compliance with Private Drainage Connection Policy

If any of the following conditions is applicable, as recorded during the inspection, the Town shall have the right request improvements at or upstream of the discharge connection, or the Town may revoke the approval of the private drainage connection.

<input type="checkbox"/>	There is an increase above the approved flow.
<input type="checkbox"/>	The private drainage includes flow from town users or non-approved sources.
<input type="checkbox"/>	The stormwater outfall that includes the private property discharges to a waterbody identified as impaired in the most current Integrated List of Impaired Waters (303(d) list) or has become subject to additional controls.
<input type="checkbox"/>	The connection is located within 100-feet of a subsurface wastewater disposal system, such as a septic system.
<input type="checkbox"/>	The connection is located within a public drinking water protection area.
<input type="checkbox"/>	Flow conveyed to the discharge creates a safety hazard (such as ponding or freezing) to vehicular, pedestrian, bicycle, or other transportation or creates erosion or the potential for erosion.
<input type="checkbox"/>	The connection is deemed to jeopardize public health, safety, or natural resources.
<input type="checkbox"/>	The connection fails to meet the terms and conditions of this SOP.

Non-Compliance Actions

The Town shall provide the property owner with written notice of any violation with the required corrective action(s) that must be taken. The property owner shall have thirty (30) days from the receipt of the notice to commence remedy action of the violations.

Attachments

Related Standard Operating Procedures

1. SOP ID-0 Stormwater Sampling Quality Assurance Project Plan
2. SOP ID-3 Catchment Investigations
3. SOP ID-5 Locating Illicit Discharges
4. SOP ID-7 IDDEP Enforcement

Approval Date: June 30, 2021

Revisions:

Source: Central Massachusetts Regional Stormwater Coalition

SOP ID-7: IDDEP ENFORCEMENT

Introduction

Article 908, *Stormwater Management* of the Town Code prohibits the discharge of pollutants to town stormwater systems by illicit discharges, illicit connections, or illegal dumping activities. Specifically, Article 908.8.1, *Prohibition of Illicit Discharges*:

No person shall throw, drain, deposit, or otherwise discharge, cause, or allow others under its control to throw, drain, deposit or otherwise discharge into the MS4 any pollutants or waters containing pollutants, other than stormwater.

The Town performs comprehensive stormwater system outfall and catchment investigations to identify direct and indirect illicit discharges to town drainage systems. In addition, town staff are trained annually, and public education is used to increase overall awareness of illicit discharges. town staff and the public are encouraged to help to identify illegal dumping activities, especially those that results in the discharge of pollutants to town stormwater systems or local waterbodies.

If potential illicit stormwater system discharges (or illegal dumping into catch basins or drain manholes) are identified, the Town will determine whether the illicit discharge is a result of town work or private activities and if enforcement is necessary.

The Town shall enforce the Stormwater Management Regulations through progressive actions starting with written orders. The Town may issue a written order to enforce the provisions of these regulations which may include:

1. elimination of illicit connections or discharges to the MS4;
2. performance of monitoring, analyses, and reporting;
3. that unlawful discharges, practices, or operations shall cease and desist; and/or
4. remediation of contamination in connection therewith.

Escalation of non-compliance following repeated notices will result in escalation of penalties including fines, and/or civil or criminal remedies for violations.

Applicability

This Standard Operating Procedure (SOP) describes the enforcement actions that will be used by the Town to address identified illicit discharges. These actions are intended to be progressive aiming to first educate the public and to eliminate the illicit discharge. Corrective actions will focus first on education to promote voluntary compliance and escalate to increasingly severe enforcement actions if voluntary compliance is not obtained.

The Town will use judgment in exercising the right mix of compliance assistance and enforcement to correct identified problems. The Town may immediately levy fines if the violation is found to be willful, intentional, or egregious.

Discharge Prohibitions and Restrictions Applicable to the Stormwater System

1. Prohibited Activities

- a. Illicit Discharges. No person shall dump, discharge, cause or allow to be discharged any pollutant or non-stormwater discharge into a town stormwater system or into any waterbody.
- b. Illicit Connections. No person shall construct, use, allow, maintain, or continue any illicit connection to a town stormwater system, regardless of whether the connection was at one time permissible under applicable law, regulation, or custom at the time of connection.

2. Exempted Activities

The Town regulation identifies the following stormwater system discharges, if occurring, that are exempted from enforcement action as listed in Table 1. The Town may modify this list if it is determined that any of these discharges contribute an adverse level of pollution that must be curtailed to protect public health, safety, welfare, and/or the environment.

1. water line flushing	10. irrigation water, springs
2. landscape irrigation	11. water from crawl space pumps
3. diverted stream flows	12. footing drains
4. rising ground water	13. lawn watering
5. uncontaminated groundwater infiltration (as defined at 40 CFR § 35.2005(20))	14. individual resident car washing
	15. flows from riparian habitats and wetlands
6. uncontaminated pumped ground water	16. de-chlorinated swimming pool discharges
7. discharge from potable water sources	17. street wash waters
8. foundation drains	18. residential building wash waters without detergents
9. air conditioning condensation	19. firefighting activities

† As defined in the EPA 2017 NH MS4 Permit.

3. Potential Pollutants

Examples of potential pollutants, include, but are not limited to those listed below in Table 2. Discharge or dumping of pollutants is prohibited under the Town regulation and the US Clean Water Act.

Table 2 Potential Pollutants	
1. sewage, fecal coliform, and pathogens	7. paints, varnishes, and solvents
2. oil and other automotive fluids	8. dissolved and particulate metals
3. non-hazardous liquid and solid wastes and yard wastes	9. animal wastes
4. pesticides, herbicides, and fertilizers	10. rock, sand, salt, soils
5. refuse, rubbish, garbage, litter, or other discarded or abandoned objects, ordnances, accumulations, and floatables	11. construction wastes and residues
6. hazardous materials and wastes, including medical wastes, chemical wastes, biological materials, radioactive materials	12. certain characteristics of wastewater (e.g., pH, temperature, TSS, turbidity, color, BOD, COD, toxicity, or odor)
	13. noxious or offensive matter of any kind

Notification and Compliance

1. Notification

Whenever the Town finds that an entity has violated a prohibition or failed to meet a requirement of the Town’s regulation, the Town may order compliance by written notice of the violation to the responsible person and/or property owner. If the Town determines that abatement or remediation of contamination or adverse impacts is required, the notice shall set forth a deadline by which such abatement or remediation must be completed. The order shall further advise that, should the violator or property owner fail to abate or perform remediation within the specified deadline, the Town may, at its option, undertake such work, and expenses which will be charged to the violator.

2. Voluntary Compliance

The Town's preferred approach to address illicit discharge problems is to pursue voluntary compliance through property owner or responsible party education. Often, business operators and property owners are not aware of the existence of illicit connections or activities on their properties that may constitute an illegal discharge. In these cases, providing the responsible party with information about the connection or operation, the environmental consequences, and suggestions on how to remedy the problem may be enough to secure voluntary compliance.

Education begins during the site investigation when the operation or connection is first confirmed. Property owners and operators should be notified that the problems must be corrected in a timely manner and that the Town will be conducting a follow-up site visit to verify compliance. Field staff should also provide the property operator with educational materials describing illicit discharge violations and a copy of the regulations prohibiting the

discharge. Field staff should also remind property owners of their obligation to report discharges to the proper agencies.

When voluntary compliance does not produce the desired result, the Town shall pursue follow-up non-criminal enforcement action. Table 4 outlines the enforcement steps. More serious violations or continued non-compliance may warrant a more aggressive, enforcement-oriented approach that may include additional civil or criminal penalties.

3. Compliance Approach Operational Problems/Illegal Dumping

Property owners are responsible for correcting operational problems that are leading to illegal discharges to the storm drainage system. This could include moving washing activities indoor or undercover, covering material storage areas, locating an appropriate discharge location for liquid wastes, or other operational modifications. Through site visits and education (such as informing the property owner or person of the town 's hazardous waste collection days), the Town can provide technical assistance to aid property owners in identifying the required modifications to eliminate the illegal discharges.

Persons illegally dumping potential pollutants into the stormwater system will be notified. Once notified, the illegal activity should be discontinued immediately. If the activity continues, the Town is authorized to send subsequent violation letters and fines until the illegal activity ceases. If unresolved or egregious, and in non-compliance, the Town may seek civil or criminal penalties.

Table 3 Non-Criminal Illicit Discharge Enforcement Steps		
Enforcement Step	Details	Compliance Schedule
Step 1 First Violation	<ul style="list-style-type: none"> • Encourage voluntary compliance and provide educational materials. • Provide written warning letter identifying issues and setting expected compliance date for the elimination of the illicit activity. • If resolved, require evidence of corrected problem (if applicable). • Site visit to verify compliance via dye testing. 	<ul style="list-style-type: none"> • Town will send a letter within one week of identification of violation(s). • Property owner and/or violator will be given a maximum of 30-days to eliminate the discharge.
Step 2 Follow-up Actions	<ul style="list-style-type: none"> • Send "Second Violation" letter to property owner regarding unresolved issues and assign a fine of \$100. • "Third Violation" Letter to property owner has a fine of \$200 and "Fourth Violation" Letter and subsequent letters have a fine of \$300 each. 	<ul style="list-style-type: none"> • If after 30-days the property owner is still in noncompliance, a second violation letter will be sent out and the property owner will have a 10-day compliance period. • Subsequent violations letters will be sent out for each 10-day non-compliance.
Step 3 Final Actions	<ul style="list-style-type: none"> • The Town may physically correct problems and/or remove access to the town stormwater system. A bill for the cost to complete the work will be sent to the property owner. • The Town may refer the issue for criminal prosecution. 	<ul style="list-style-type: none"> • After 60-days of non-compliance, the Town will follow-up with additional violation letters or resolve the violation at the property owner's expense.

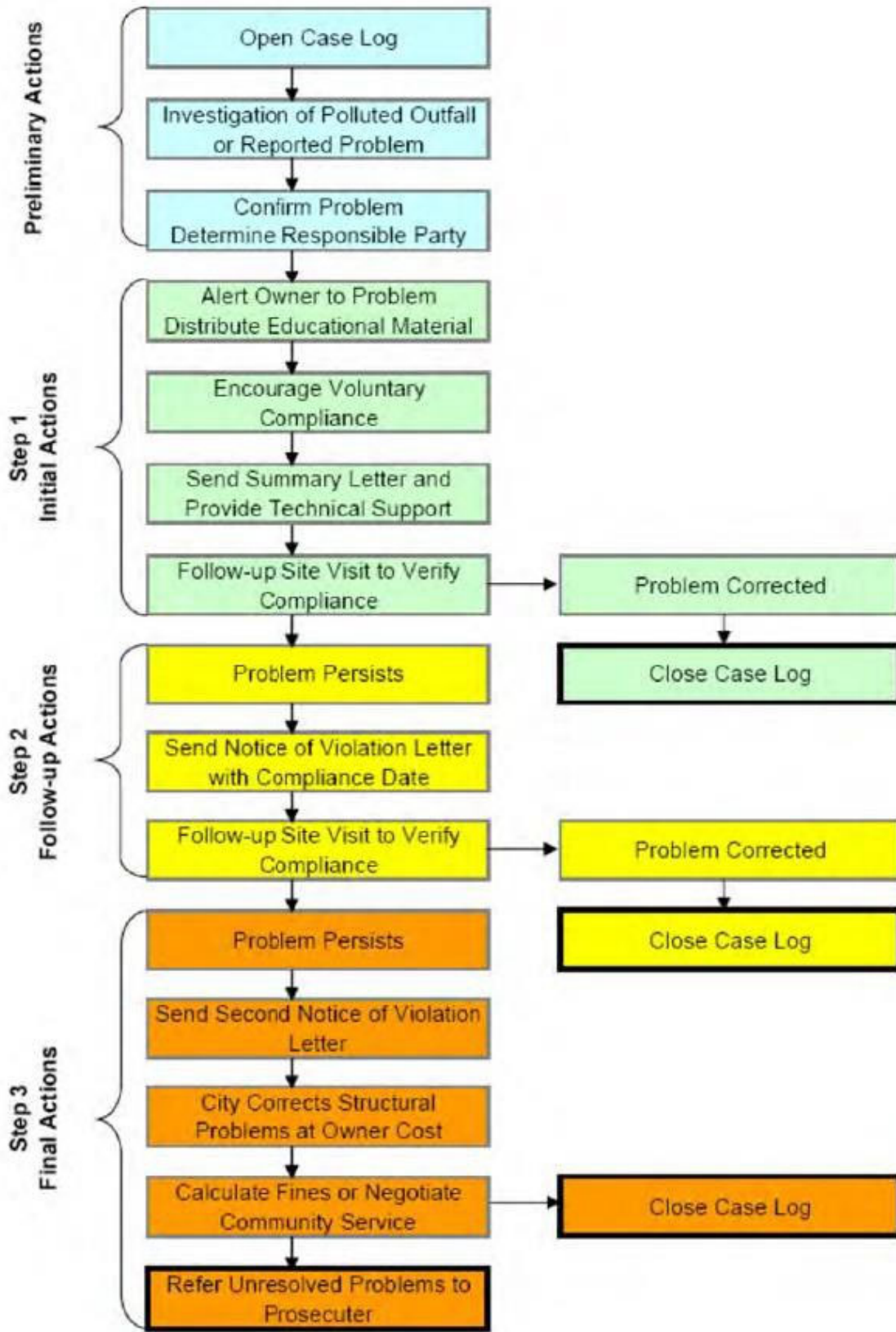


Figure 1

4. Structural Illicit Discharges

Many illicit connection problems will require the property owner to complete a structural repair to correct the problem. Structural repairs may consist of new pipe connections to redirect pipe discharges from sewage, industrial, and commercial cross-connections. Such cross-connections must be re-routed to an approved sanitary sewer system.

The private property owner is responsible for correcting any structural connection problems contributing to an illicit discharge if there is no past town permit authorizing the connection. When an illicit connection is discovered, the Town shall notify the property owner if the property owner is primarily responsible for removing the illicit connection. Upon notification, the property shall have 60-days to remove the documented illicit.

The Town understands that the property owner's work to remove a structural connection to the stormwater system requires a more significant level of effort and cost to eliminate the illicit discharge. The Town intends to work cooperatively with the property owner to allow a reasonable time period to complete the structural repair. However, if the property owner is unresponsive or purposefully delays, the Town may assign fines payable by the property owner, and if the situation continues to be unresolved or openly egregious, the Town may seek civil or criminal penalties.

5. Confirmation by the Town

Upon notification by the property owner, the Town will confirm that modifications were made to eliminate the illicit discharge. The Town will inspect the property to confirm that the modification was made by the property owner to eliminate the illicit discharge. This confirmation may be made by direct observation, CCTV inspection, or dye testing.

6. Non-Performance by the Property Owner

During the notification process, the property owner will be duly notified that if the illicit discharge is not eliminated within the specified deadline, and/or that sufficient progress is not made by the property owner within that time frame, that the Town may, at its option, undertake to complete such work that is necessary to eliminate the illicit discharge. If the Town completes such work, the expenses undertaken by the Town to eliminate the illicit discharge shall be charged to the property owner. Within 30-days after completion by the Town of all measures necessary to abate the violation and/or perform remediation, the property owner will be notified of the costs incurred by the town, including administrative costs.

The property owner may file a written protest objecting to the amount or basis of costs with the town within 30-days of receipt of the town notification of costs incurred. If the amount due is not received by the expiration of the time in which to file a protest or within 30-days following a decision of the town affirming or reducing the costs, or from a final decision of a court of competent jurisdiction, the costs shall become a special assessment against the property owner and shall constitute a lien on the property for the amount of said costs.

Interest of 18% annually shall begin to accrue on any unpaid costs starting on the 31st day at which the costs first become due.

Penalties

The Town Code identifies the different penalties that may be incurred by private property owners if found to be the cause of an illicit discharge to town stormwater systems and may include, but not limit to:

1. Non-Criminal Disposition

The Town prefers to use the voluntary compliance and non-criminal actions procedure set forth in this SOP and as adopted by the town in which case the Town shall be the enforcing entity. The penalty for the first violation notice shall be a written warning. The penalty for the second violation notice shall be \$100. The penalty for the third violation notice shall be \$200. The penalty for the fourth and subsequent notices shall be \$300.

2. Emergency Suspension of Storm Drainage System Access

The Authorized Enforcement Agency may suspend municipal storm drain system access to any person or property without prior written notice when such suspension is necessary to stop an actual or threatened discharge of pollutants that presents imminent risk of harm to the public health, safety, welfare, or the environment. In the event any person fails to comply with an emergency suspension order, the Town may take all reasonable steps to prevent or minimize harm to the public health, safety, welfare, or the environment.

3. Civil Relief

If a person violates the provisions of the Town's regulation, or any permit, notice, or order issued thereunder, the Town may seek injunctive relief in a court of competent jurisdiction restraining the person from activities that would create further violations or compel the person to perform abatement or remediation of the violation. The Town may also levy civil penalties of not more than \$5,000 per violation. Each day or part thereof that such violation occurs or continues shall constitute a separate offense.

4. Criminal Penalty

Any person who violates any provision of the Town's regulation, its resulting regulations, or any permit, notice, or order issued thereunder, may be punished by a fine of not more than \$5,000. Each day or part thereof that such violation occurs or continues shall constitute a separate offense.

Appeals

The decisions or orders shall be final. Further relief shall be to a court of competent jurisdiction. The remedies listed in this SOP are not exclusive of any other remedies available under any applicable federal, state, or local law.

Record Keeping

Effective enforcement procedures require comprehensive recordkeeping and documentation to show that all program steps have been followed. Throughout the problem investigation and corrective action activities, all information related to the incident or property in question must be documented by the town in the case log.

Attachments

Related Standard Operating Procedures

1. SOP ID-5 *Locating Illicit Discharges*
2. SOP ID-6 *Private Drainage Connection Inspection*

Approval Date: June 30, 2021

Revisions:

Source: Camas WA IDDE Manual; Haverhill MA IDDE Manual; and Weston MA Illicit Discharge Regulations.

TOWN OF KINGSTON

MAY 19, 2022

STORMWATER POLLUTION PREVENTION PLAN
(SWPPP)

AND

ILLICIT DISCHARGE DETECTION AND ELIMINATION
(IDDE)

TRAINING

TRAINING ROSTER

TRAINING PRESENTATION

Stormwater is not filtered
or treated in any way



4



- "MS4 General Permit" (the Permit)
- Authorizes municipalities to discharge stormwater under the
 - Clean Water Act
 - National Pollutant Discharge Elimination System (NPDES)



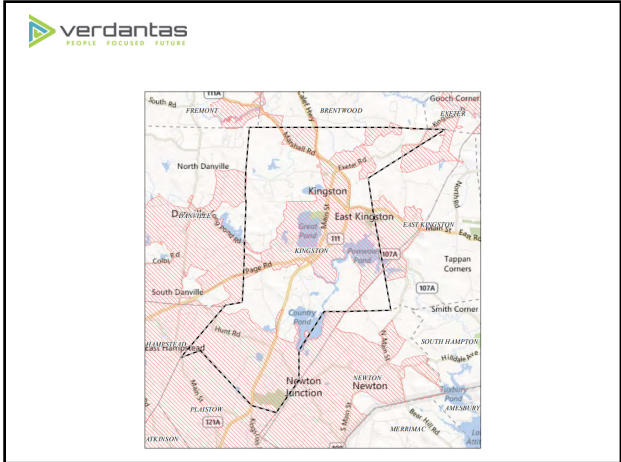
5

A **Municipal Separate Storm Sewer System (MS4)** includes the stormwater collection, conveyance, and outfall structures, such as:


- Catch basins
- Storm drains
- Drain manholes
- Culverts
- Stormwater basins
- Swales



6




7




Illicit Discharge Detection and Elimination (IDDE)

8



Pollutants in stormwater is a major cause of:

1. Impairment of water quality and flow in local waters
2. Contamination of drinking water supplies
3. Alteration or destruction of aquatic and wildlife habitat



9



An "illicit discharge" is a discharge to a drainage system that is not composed entirely of stormwater

*Exceptions

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

10



Everyone should be able to:

1. Correctly **IDENTIFY**
2. And **REPORT** an illicit discharge



11



What is not an illicit discharge?

Non-stormwater discharges include:

- Landscape irrigation
- Building foundation drains
- Air conditioning condensation
- Water line flushing
- Diverted stream flows
- Rising ground water
- Uncontaminated ground water infiltration
- Uncontaminated pumped ground water
- Discharge from potable water sources
- Irrigation water, springs
- Water from crawl space pumps
- Footing drains
- Individual resident car washing
- Flows from riparian habitats and wetlands
- De-chlorinated swimming pool discharges
- Street wash waters
- Residential building wash waters without detergents

12

If the allowable non-stormwater discharges are significant contributors to the MS4, they must be considered an "illicit discharge" and investigated and addressed in the IDDEP

13

What is an illicit discharge?

Typical Pollutants include:

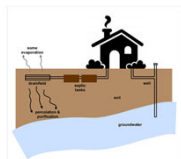
- Sand, salt & soils
- Pesticides, herbicides & fertilizers
- Oil and automotive fluids
- Paints, varnishes & solvents
- Garbage, litter & floatables
- Sewage, fecal coliform, & pathogens
- Animal waste
- Non-hazardous liquid, solid waste & yard waste
- Hazardous materials & waste
- Dissolved and particulate metals
- Noxious or offensive matter of any kind

14

Direct connections may be relatively obvious, such as connections from non-stormwater sources found in a piped drain system.



Indirect illicit discharges may be more difficult to detect or address, such as failing septic systems that discharge untreated sewage to a ditch within the MS4.



15

- **Intentional** - dumping used oil into catch basins or yard wastes into surface waters
- **Unsuitability of original infrastructure** - floor drains in old buildings connected to the storm drain system
- **Obstruction of the municipal storm drain system** - a resident or contractor may not obstruct or interfere with the storm drain system without permission



16

- Addressing discharges may be accomplished by outreach and education
 - Improving self-policing of dog waste management installing dog waste bins and providing educational material
- Elimination of some discharges may require substantial costs and efforts
 - Floor drains connected to stormwater system

17

When an illicit discharge is identified, collect the following information:

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


18




- The Town of Kingston is the lead municipal agency responsible for implementing the IDDEP
- Legal authority:
 - Prohibit illicit discharges;
 - Investigate suspected illicit discharges;
 - Eliminate illicit discharges; and
 - Implement appropriate enforcement procedures and actions.
- Illicit Discharge Detection and Elimination (IDDE) Ordinance



19





Conduct the outfall inspection during dry weather:

- Mark and photograph the outfall;
- Record the inspection information and outfall characteristics (digital form using a tablet); and
- Look for and record visual/olfactory evidence of pollutants in flowing outfalls including odor, color, turbidity, and floatable matter (suds, bubbles, excrement, toilet paper or sanitary products). Also observe outfalls for deposits and stains, vegetation, and damage to outfall structures.

If flow is observed, sample and test the flow

If no flow is observed, but evidence of illicit flow exists per above observations (illicit discharges are often intermittent or transitory), revisit the outfall during dry weather within one week of the initial observation

20



Questions?



21

Practice Scenarios

22

During lunch on a summer day, you observe a garden hose discharging water onto the street. A catch basin is located downgradient.

23

During lunch on a summer day, you observe a garden hose discharging water onto the street. A catch basin is located downgradient.

Assess

- Is there an outfall, storm drain or receiving waterbody near the spill?
- Is this an allowable non-stormwater discharge?

24

Initiate

During lunch on a summer day, you observe a garden hose discharging water onto the street. A catch basin is located downgradient.

- What is the first response in this situation?
- Is there a concern that the discharged water is an illicit discharge?

25

Notify

During lunch on a summer day, you observe a garden hose discharging water onto the street. A catch basin is located downgradient.

- Who should be notified?

Signal

- Should legal action be initiated?

26

Stormwater Pollution Prevention
Plan (SWPPP)

27



Components of your Facility's SWPPP:

- Stormwater Pollution Prevention Team
- Potential Pollutant Sources
- Implementation of Controls and Best Management Practices (BMPs)
- Inspection Requirements
- Record Keeping Requirements
- Staff Training

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Highway Department

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SWPPP TEAM ROLE	NAME	TITLE	DEPARTMENT	PHONE NUMBER	EMAIL
Stormwater Coordinator	Richard St. Hilaire	Road Agent	Highway Department	(603) 642-8042	highway@kingstonnh.org
Authorized Representative	Philip Coombs	Chairman of the Board of Selectmen	Selectmen's Office	(603) 642-3342	admin@kingstonnh.org
Website Administrator	Susan Ayer	Permitting & Assessing	Selectmen's Office	(603) 642-3342	admin@kingstonnh.org
Recordkeeper	Lori Dowd	Administrative Assistant	Highway Department	(603) 642-3342	admin@kingstonnh.org
Conservation Commission	Evelyn Nathan	Conservation Chairman	Conservation Commission	(603) 642-5290	evynathan@comcast.net
Planning Board	Glenn G. Cappelman	Planning Board Chairman	Planning Board	(603) 770-5355	pb@kingstonnh.org
Assistant Stormwater Coordinator	Brian Martin	Assistant Road Agent	Highway Department	(603) 642-8042	highway@kingstonnh.org

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Description	Potential Pollutants
Lawn Care/Landscaping (i.e. Chain Saws, Pole Saws, Weed Wackers, Blowers, Gas Compactors)	Fertilizer, Herbicides, Pesticide, Residual Oil
Mobile Vehicles (i.e. Dump Trucks with Plows & Sanders, Pickups with Plows, JCB Backhoes, Loader, Town Car, Compactor Roller)	Metal, Residual Oil, and Total Suspended Solids
Two 100-gallon Propane Tanks for Heaters	Metal
One Woodchipper	Woodchips, Metal, Residual Oil
Asphalt Paved Roads and Parking Lot	Sand, Salt, Oil
Salt Shed	Salt
Sand Pile	Sand
Vehicle Washing	Total Suspended Solids, Residual Oil
Equipment/Vehicle Maintenance	Residual Oil
1,000-gallon waste oil tank within secondary containment	Oil

31



32

Controls and Best Management Practices

33

- Equipment maintenance and repairs are performed off-site or indoors



34

- Sweep impervious exterior areas at least annually, or as-needed
- Outdoor storage areas will be regularly swept and kept free of leaking or damaged containers
- Drip pans are used when changing fluids, and spigots/funnels are used to minimize drips/leaks

35

- Spills of chemicals will be promptly cleaned and reported as required
- Substances requiring secondary containment will be handled as such
- Lawn care materials will be stored indoors when not in use

36

- Drainage swales are kept maintained and clear of obstructions
- Hydraulic mechanical equipment is kept in good repair to minimize leaks
- Materials, drains, tanks, and containers are properly stored and labeled

37

- Contain spills as close to the source as possible with a dike of absorbent materials from the emergency spill kit, and a cover or dike will protect catch basins or other stormwater intake structures
- The Stormwater Coordinator will be advised immediately of hazardous or regulated material spills, regardless of quantity



38

- Spills will be evaluated to determine the necessary response
- Spill response equipment is located at potential spill areas
- Outdoor storage tank containment areas are checked regularly for leaks
- Aboveground storage tanks are inspected regularly for signs of corrosion or leaks

39

- Control measures will be maintained in operating condition
- SWPPP will be supplemented by on-site documentation describing maintenance procedures and a schedule outlining preventative maintenance
- The Town will work to develop backup procedures and practices in case a runoff event occurs while a control measure is offline

40

Potential areas for erosion were not identified at the Facilities

41

- Runoff from the site discharges to a catch basins
- Impervious areas are uncurbed where practical to encourage sheet flow runoff to vegetated areas




42




Inspections

43



- Conduct quarterly inspections (Jan-Mar, Apr-Jun, Jul-Sep, Oct-Dec) of the Facility that will cover areas exposed to stormwater and related stormwater control measures
- At least one of the inspections will occur during a period of active stormwater discharge
- Conduct additional inspections as needed if significant activities are exposed to stormwater

44



Site Inspection Form

Facility Name: Highway Department
 Facility Address: 12 Main Street, Kingston, NH 03848
 Inspection Date: _____ Inspection Time: _____
 Inspector(s): _____
 Weather: _____
 Stormwater Discharge Description (circle one): None Light Moderate Heavy
 Stormwater discharge notes, if any: _____
 Have previously unidentified discharges been identified as part of this inspection? Yes / No
 If yes, describe: _____
 Are control measures in need of maintenance or repair? Yes / No
 If yes, describe: _____
 Did you identify failed control measures that need replacement as part of this inspection? Yes / No
 If yes, describe: _____
 (If yes, provide a copy of this inspection report to the Facility SWMP Manager with 3-days of this inspection.)
 Are changes to the SWPPP needed based on this inspection? Yes / No
 If yes, describe: _____

Please scan and save a copy of this inspection file and keep the hard copy on-site at least five (5) years after the inspection date.

45



If control measures are discovered to need repair or be ineffective, whether as part of a routine inspection or otherwise, the Town will repair or replace them as soon as practicable, and preferably before the next storm event.

46



Recordkeeping

47



The Town will maintain records of maintenance, inspection, training, and other activities required for at least five (5) years.

48

Training

49

Who should be trained?

- Employees who work in areas where materials or activities are exposed to stormwater
- Employees who are responsible for implementing activities identified in the SWPPP (e.g., inspectors, maintenance personnel)
- Members of the SWPPP Team

50

- **Stormwater Coordinator** - Responsible for developing, maintaining, and revising the SWPPP and supervising team activities and training.
- **SWPPP Team** - Responsible for implementing SWPPP provisions, performing inspections, attending training sessions, reporting and addressing corrective actions as needed.

51

- Understand the permit requirements
- Be aware of your activities and what could impact stormwater or the environment
- Be aware of inspection requirements and monitoring procedures
- Inform the SWPPP team members if activities change
- Report spills to SWPPP team and follow response procedures

52

- Document training sessions including:
 - Title and training duration
 - Training date
 - Subjects covered during training
 - List of municipal attendees
- Environmental Protection Agency recommends annual training

53

Questions?



54



GeoInsight
ENVIRONMENTAL STRATEGY & ENGINEERING

TOWN OF KINGSTON

JUNE 30, 2021

STORMWATER POLLUTION PREVENTION PLAN
(SWPPP)

AND

ILLICIT DISCHARGE DETECTION AND
ELIMINATION (IDDE)

TRAINING

TRAINING ROSTER

**PERSONNEL TRAINING RECORD
 STORMWATER POLLUTION PREVENTION PLAN (SWPPP) AND
 ILLICIT DISCHARGE DETECTION AND ELIMINATION (IDDE)
 TOWN OF KINGSTON
 KINGSTON, NEW HAMPSHIRE**

Instructor Name and Title: Megan Dalton

Training Location: Kingston, New Hampshire Date 06/30/2021

NAME (Printed)	SIGNATURE
RICHARD ST HILAIRE	
SUSAN AYER	
BRIAN MARTIN	
DYLAN CHENEVERT	

TRAINING PRESENTATION



Town of Kingston

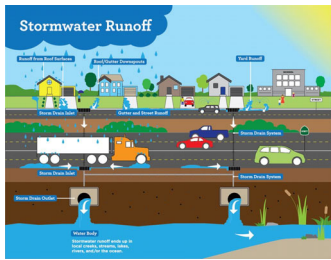
Stormwater Pollution Prevention Plan (SWPPP) and Illicit Discharge Detection and Elimination (IDDE) Training

1



The Problem

Stormwater washes away anything that can
move from yards and streets...



2



The Problem

...and discharges it directly to waters of the
United States



3



The Problem

Stormwater is not filtered or treated in any way



4



REGULATORY BACKGROUND



- “MS4 General Permit” (the Permit)
- Authorizes municipalities to discharge stormwater under the
 - Clean Water Act
 - National Pollutant Discharge Elimination System (NPDES)

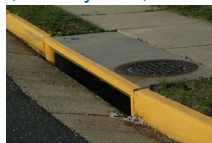
5



The Permit

A **Municipal Separate Storm Sewer System (MS4)** includes the stormwater collection, conveyance, and outfall structures, such as:

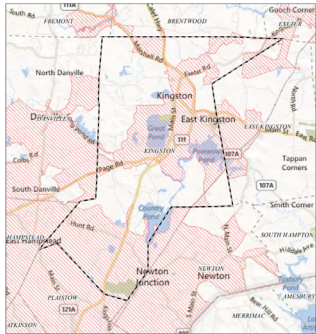
- Catch basins
- Storm drains
- Drain manholes
- Culverts
- Stormwater basins
- Swales



6



REGULATED AREA



7



Stormwater Pollution Prevention Plan (SWPPP)

8



SPECIFIC COMPONENTS

Components of your Facility's SWPPP:

- Stormwater Pollution Prevention Team
- Potential Pollutant Sources
- Implementation of Controls and Best Management Practices (BMPs)
- Inspection Requirements
- Record Keeping Requirements
- Staff Training

9



Highway Department

10



STORMWATER POLLUTION PREVENTION TEAM

SWPPP TEAM ROLE	NAME	TITLE	DEPARTMENT	PHONE NUMBER	EMAIL
Stormwater Coordinator	Richard St. Hilaire	Road Agent	Highway Department	(603) 642-8042	highway@kingstonnh.org
Authorized Representative	Philip Coombs	Chairman of the Board of Selectmen	Selectmen's Office	(603) 642-3342	admin@kingstonnh.org
Website Administrator	Susan Ayer	Permitting & Assessing	Selectmen's Office	(603) 642-3342	admin@kingstonnh.org
Recordkeeper	Lori Dowd	Administrative Assistant	Highway Department	(603) 642-3342	admin@kingstonnh.org
Conservation Commission	Evelyn Nathan	Conservation Chairman	Conservation Commission	(603) 642-5290	evynathan@comcast.net
Planning Board	Glen G. Coppelman	Planning Board Chairman	Planning Board	(603) 770-5355	pb@kingstonnh.org
Assistant Stormwater Coordinator	Brian Martin	Assistant Road Agent	Highway Department	(603) 642-8042	highway@kingstonnh.org

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POTENTIAL POLLUTANT SOURCES

Description	Potential Pollutants
Lawn Care/Landscaping (i.e. Chain Saws, Pole Saws, Weed Wackers, Blowers, Gas Compactors)	Fertilizer, Herbicides, Pesticide, Residual Oil
Mobile Vehicles (i.e. Dump Trucks with Plows & Sanders, Pickups with Plows, JCB Backhoes, Loader, Town Car, Compactor Roller)	Metal, Residual Oil, and Total Suspended Solids
Two 100-gallon Propane Tanks for Heaters	Metal
One Woodchipper	Woodchips, Metal, Residual Oil
Asphalt Paved Roads and Parking Lot	Sand, Salt, Oil
Salt Shed	Salt
Sand Pile	Sand
Vehicle Washing	Total Suspended Solids, Residual Oil
Equipment/Vehicle Maintenance	Residual Oil
1,000-gallon waste oil tank within secondary containment	Oil

12



FACILITY SITE PLAN



13



Controls and Best Management Practices

14



Minimize or Prevent Exposure

- Equipment maintenance and repairs are performed off-site or indoors



15



Good Housekeeping

- Sweep impervious exterior areas at least annually, or as-needed
- Outdoor storage areas will be regularly swept and kept free of leaking or damaged containers
- Drip pans are used when changing fluids, and spigots/funnels are used to minimize drips/leaks

16



Good Housekeeping

- Spills of chemicals will be promptly cleaned and reported as required
- Substances requiring secondary containment will be handled as such
- Lawn care materials will be stored indoors when not in use

17



Preventative Maintenance

- Drainage swales are kept maintained and clear of obstructions
- Hydraulic mechanical equipment is kept in good repair to minimize leaks
- Materials, drains, tanks, and containers are properly stored and labeled

18



Spill Prevention and Response

- Contain spills as close to the source as possible with a dike of absorbent materials from the emergency spill kit, and a cover or dike will protect catch basins or other stormwater intake structures
- The Stormwater Coordinator will be advised immediately of hazardous or regulated material spills, regardless of quantity



19



Spill Prevention and Response

- Spills will be evaluated to determine the necessary response
- Spill response equipment is located at potential spill areas
- Outdoor storage tank containment areas are checked regularly for leaks
- Aboveground storage tanks are inspected regularly for signs of corrosion or leaks

20



Maintenance of Stormwater Control Measures

- Control measures will be maintained in operating condition
- SWPPP will be supplemented by on-site documentation describing maintenance procedures and a schedule outlining preventative maintenance
- The Town will work to develop backup procedures and practices in case a runoff event occurs while a control measure is offline

21



Erosion and Sediment Control

Potential areas for erosion were not identified at the Facilities

22



Management of Stormwater Runoff

- Runoff from the site discharges to a catch basins
- Impervious areas are uncurbed where practical to encourage sheet flow runoff to vegetated areas



23



Inspections

24



INSPECTIONS

- Conduct quarterly inspections (Jan-Mar, Apr-Jun, Jul-Sep, Oct-Dec) of the Facility that will cover areas exposed to stormwater and related stormwater control measures
- At least one of the inspections will occur during a period of active stormwater discharge
- Conduct additional inspections as needed if significant activities are exposed to stormwater

25



ROUTINE INSPECTION FORM

Site Inspection Form

Facility Name: Hydrex Department
 Facility Address: 12 Main Street, Kennebunk, NH 03044
 Inspection Date: _____ Inspection Time: _____
 Inspector(s): _____
 Weather: _____
 Stormwater Discharge Description (circle one): None Light Moderate Heavy
 Stormwater discharge notes, if any: _____
 Have previously unidentified discharges been identified as part of this inspection? Yes / No
 If yes, describe: _____
 Are control measures in need of maintenance or repair? Yes / No
 If yes, describe: _____

 Did you identify failed control measures that need replacement as part of this inspection? Yes / No
 If yes, describe: _____
 (If yes, provide a copy of this inspection report to the Facility SWMP Manager with 3-days of this inspection.)
 Are changes to the SWPPP needed based on this inspection? Yes / No
 If yes, describe: _____

Please scan and save a copy of this inspection file and keep the hard copy on-site at least five (5) years after the inspection date.


26



INSPECTIONS


If control measures are discovered to need repair or be ineffective, whether as part of a routine inspection or otherwise, the Town will repair or replace them as soon as practicable, and preferably before the next storm event.

27



Recordkeeping


28



Routine Inspection Form

The Town will maintain records of maintenance, inspection, training, and other activities required for at least five (5) years.

29



Training

30



SWPPP Training

Who should be trained?

- Employees who work in areas where materials or activities are exposed to stormwater
- Employees who are responsible for implementing activities identified in the SWPPP (e.g., inspectors, maintenance personnel)
- Members of the SWPPP Team

31



SWPPP Team Roles

- **Stormwater Coordinator** - Responsible for developing, maintaining, and revising the SWPPP and supervising team activities and training.
- **SWPPP Team** - Responsible for implementing SWPPP provisions, performing inspections, attending training sessions, reporting and addressing corrective actions as needed.

32



Your Role

- Understand the permit requirements
- Be aware of your activities and what could impact stormwater or the environment
- Be aware of inspection requirements and monitoring procedures
- Inform the SWPPP team members if activities change
- Report spills to SWPPP team and follow response procedures

33



SWPPP Training

Training topics:

- Spill response
- Good housekeeping
- Best management practice operation and maintenance
- Material management practices
- Identification of drainage flow pathways
- Discussion of sensitive receptors
- Identification of material and associated management practices
- Pest control
- Inspection requirements
- SWPPP team individual responsibilities

34



SWPPP Training

- Document training sessions including:
 - Title and training duration
 - Training date
 - Subjects covered during training
 - List of municipal attendees
- Environmental Protection Agency recommends annual training

35



GeoInsight®
Environmental Strategy & Engineering

Questions?



36



Illicit Discharge Detection and Elimination (IDDE)

37



The Problem

Pollutants in stormwater is a major cause of:

1. Impairment of water quality and flow in local waters
2. Contamination of drinking water supplies
3. Alteration or destruction of aquatic and wildlife habitat



38




IDDE

An "illicit discharge" is a discharge to a drainage system that is not composed entirely of stormwater

*Exceptions



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

39

 **Training Goals**

Everyone should be able to:

1. Correctly **IDENTIFY**
2. And **REPORT** an illicit discharge

40


 **Allowable Non-Stormwater Discharges**

What is not an illicit discharge?

Non-stormwater discharges include:

<ul style="list-style-type: none"> • Landscape irrigation • Building foundation drains • Air conditioning condensation • Water line flushing • Diverted stream flows • Rising ground water • Uncontaminated ground water infiltration • Uncontaminated pumped ground water • Discharge from potable water sources • Irrigation water, springs 	<ul style="list-style-type: none"> • Water from crawl space pumps • Footing drains • Individual resident car washing • Flows from riparian habitats and wetlands • De-chlorinated swimming pool discharges • Street wash waters • Residential building wash waters without detergents
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41

 **Allowable Non-Stormwater Discharges**

If the allowable non-stormwater discharges are significant contributors to the MS4, they must be considered an “illicit discharge” and investigated and addressed in the IDDEP

42



Illicit Discharges

What is an illicit discharge?

Typical Pollutants include:

- Sand, salt & soils
- Pesticides, herbicides & fertilizers
- Oil and automotive fluids
- Paints, varnishes & solvents
- Garbage, litter & floatables
- Sewage, fecal coliform, & pathogens
- Animal waste
- Non-hazardous liquid, solid waste & yard waste
- Hazardous materials & waste
- Dissolved and particulate metals
- Noxious or offensive matter of any kind

43

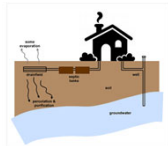


How To Identify IDDE

Direct connections may be relatively obvious, such as connections from non-stormwater sources found in a piped drain system.



Indirect illicit discharges may be more difficult to detect or address, such as failing septic systems that discharge untreated sewage to a ditch within the MS4.



44



How To Identify IDDE

- **Intentional** - dumping used oil into catch basins or yard wastes into surface waters
- **Unsuitability of original infrastructure** - floor drains in old buildings connected to the storm drain system
- **Obstruction of the municipal storm drain system** - a resident or contractor may not obstruct or interfere with the storm drain system without permission



45



Addressing IDDE

- Addressing discharges may be accomplished by outreach and education
 - Improving self-policing of dog waste management installing dog waste bins and providing educational material
- Elimination of some discharges may require substantial costs and efforts
 - Floor drains connected to stormwater system

46



Illicit Discharge Removal

When an illicit discharge is identified, collect the following information:

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

47



Legal Authority

- The Town of Kingston is the lead municipal agency responsible for implementing the IDDEP

• Legal authority:

- Prohibit illicit discharges;
- Investigate suspected illicit discharges;
- Eliminate illicit discharges; and
- Implement appropriate enforcement procedures and actions.



- Illicit Discharge Detection and Elimination (IDDE) Ordinance

48



Dry weather screening/sampling



Conduct the outfall inspection during dry weather:

- Mark and photograph the outfall;
- Record the inspection information and outfall characteristics (digital form using a tablet); and
- Look for and record visual/olfactory evidence of pollutants in flowing outfalls including odor, color, turbidity, and floatable matter (suds, bubbles, excrement, toilet paper or sanitary products). Also observe outfalls for deposits and stains, vegetation, and damage to outfall structures.

If flow is observed, sample and test the flow

If no flow is observed, but evidence of illicit flow exists per above observations (illicit discharges are often intermittent or transitory), revisit the outfall during dry weather within one week of the initial observation

49



Questions?



50

CERTIFICATES

Certificate of Completion

This is to certify that

RICHARD ST HILAIRE

of

Town of Kingston

Has successfully completed training on

Stormwater Pollution Prevention Plan (SWPPP) - meeting the requirements identified in 40 CFR 122

***Illicit Discharge Detection and Elimination (IDDE) - meeting the requirements of the
Municipal Separate Storm Sewer System (MS4) General Permit***

Certificate Number: 21-0630-01

Completion Date: June 30, 2021

GeoInsight, Inc.
Manchester, New Hampshire

Coordinator: Megan E. Dalton



 **GeoInsight**

Certificate of Completion

This is to certify that

SUSAN AYER

of

Town of Kingston

Has successfully completed training on

Stormwater Pollution Prevention Plan (SWPPP) - meeting the requirements identified in 40 CFR 122

***Illicit Discharge Detection and Elimination (IDDE) - meeting the requirements of the
Municipal Separate Storm Sewer System (MS4) General Permit***

Certificate Number: 21-0630-02

Completion Date: June 30, 2021

GeoInsight, Inc.
Manchester, New Hampshire

Coordinator: Megan E. Dalton



 **GeoInsight**

Certificate of Completion

This is to certify that

BRIAN MARTIN

of

Town of Kingston

Has successfully completed training on

Stormwater Pollution Prevention Plan (SWPPP) - meeting the requirements identified in 40 CFR 122

***Illicit Discharge Detection and Elimination (IDDE) - meeting the requirements of the
Municipal Separate Storm Sewer System (MS4) General Permit***

Certificate Number: 21-0630-03

Completion Date: June 30, 2021

GeoInsight, Inc.
Manchester, New Hampshire

Coordinator: Megan E. Dalton



 **GeoInsight**

Certificate of Completion

This is to certify that

DYLAN CHENEVERT

of

Town of Kingston

Has successfully completed training on

Stormwater Pollution Prevention Plan (SWPPP) - meeting the requirements identified in 40 CFR 122

***Illicit Discharge Detection and Elimination (IDDE) - meeting the requirements of the
Municipal Separate Storm Sewer System (MS4) General Permit***

Certificate Number: 21-0630-04

Completion Date: June 30, 2021

GeoInsight, Inc.
Manchester, New Hampshire

Coordinator: Megan E. Dalton



 **GeoInsight**