Illicit Discharge Detection and Elimination (IDDE) Program

TOWN OF GLASTONBURY, CONNECTICUT

July 1, 2018

This document is based on a template originally created by Fuss & O'Neill and modified for statewide use with the CTDEEP General Permit for the Discharge of Stormwater from Small Municipal Separate Storm Sewer Systems, effective July 1, 2017.

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TOWN OF GLASTONBURY, CONNECTICUT

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1 Introduction

1.1 MS4 Program

The Town of Glastonbury has developed an Illicit Discharge Detection and Elimination (IDDE) program to address the requirements of the Connecticut Department of Energy and Environmental Protection (CTDEEP) *General Permit for the Discharge of Stormwater from Small Municipal Separate Storm Sewer Systems*, effective July 1, 2017, hereafter referred to as the "2017 MS4 Permit" or "MS4 Permit."

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

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

Under Minimum Control Measure 3, the permittee is required to implement an IDDE program to provide the legal authority to prohibit and eliminate illicit discharges to the MS4, find the source of any illicit discharges, eliminate those illicit discharges, and ensure ongoing screening and tracking to prevent and/or eliminate future illicit discharges. The IDDE program must also be recorded in a written (hardcopy or electronic) document and meet the IDDE program requirements specified in the MS4 Permit. This document has been prepared to address this requirement.

1.2 Geographic Scope of IDDE Program

The MS4 Permit requires municipalities to implement the IDDE program within the Urbanized Area (based on 2010 U.S. Census) and those catchment areas of the MS4 with either Directly Connected Impervious Area (DCIA) of greater than 11% or which discharge directly to impaired waters (i.e., "priority" areas). Figure 1-1 below depicts the urbanized area and other areas outside of the urbanized area that, collectively, may be considered priority areas within the Town of Glastonbury.

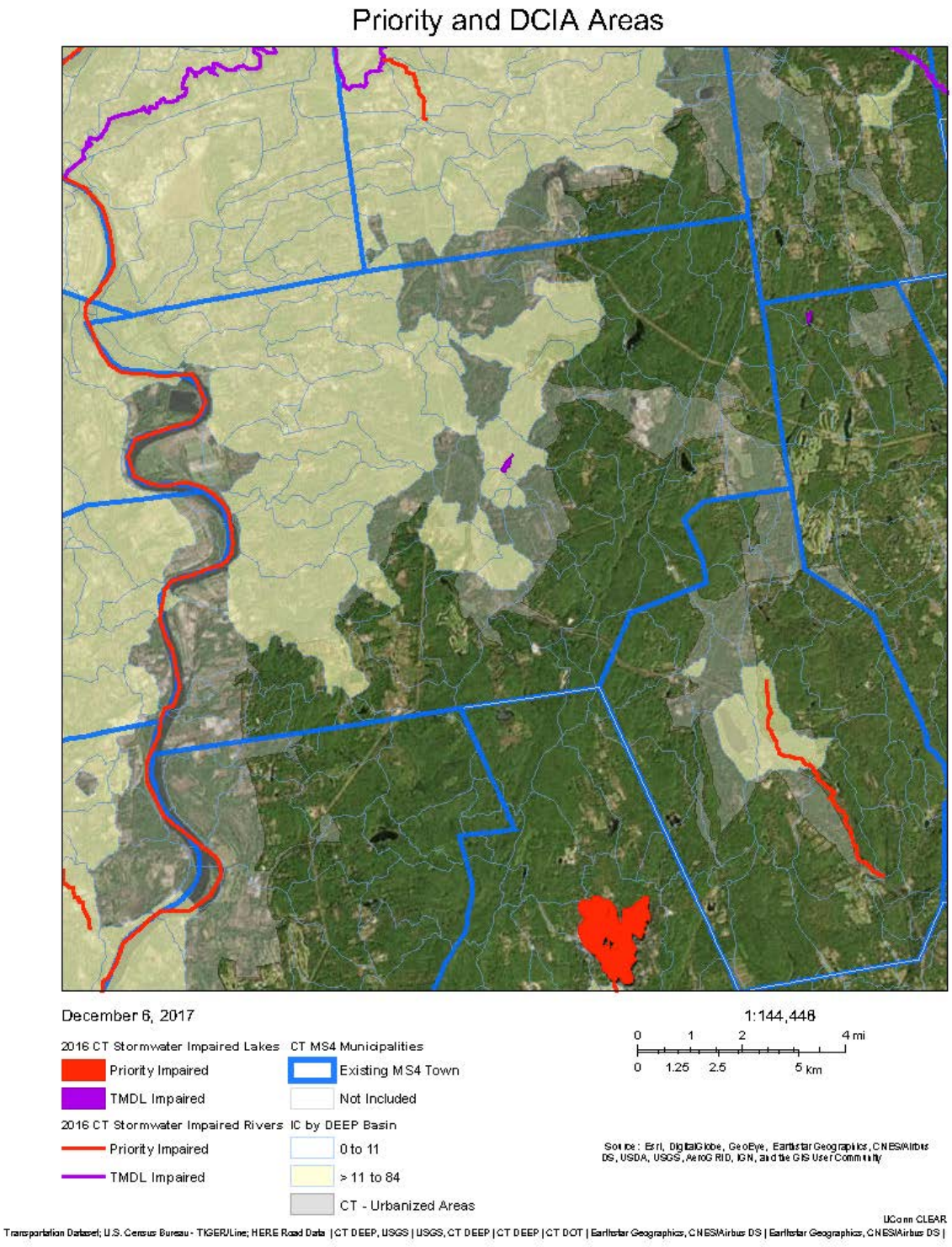


Figure 1-1. Urbanized Areas and Other Areas Potentially Subject to the MS4 Permit IDDE Program Requirements ("Priority Areas")

1.3 Illicit Discharges

An "illicit discharge" is any unpermitted discharge to waters of the state that does not consist entirely of stormwater or uncontaminated ground water except: (1) certain allowable non-stormwater discharges when such non-stormwater discharges are not significant contributors of pollution to a discharge from an identified MS4, or (2) discharges authorized under a separate NPDES permit that authorize a discharge to the MS4.

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

Some illicit discharges are intentional, such as dumping used oil (or other pollutant) into catch basins, a resident or contractor illegally tapping a new sewer lateral into a storm drain pipe to avoid the costs of a sewer connection fee and service, and illegal dumping of yard wastes into surface waters. Some illicit discharges are related to the unsuitability of original infrastructure to the modern regulatory environment. Examples of illicit discharges in this category include connected floor drains in old buildings, as well as sanitary sewer overflows that enter the drainage system. Sump pumps legally connected to the storm drain system may be used inappropriately, such as for the disposal of floor washwater or old household products, in many cases due to a lack of understanding on the part of the homeowner.

Elimination of some discharges may involve substantial cost and effort, such as disconnecting and reconnecting sanitary sewer laterals or replacing leaking sanitary and/or storm sewer lines. Others, such as improving adherence to proper pet waste management practices through public education and by providing pest waste baggies and receptacles, can be accomplished through relatively low-cost efforts.

Regardless of the intention, when not addressed, illicit discharges can be a significant source of pollutants to surface waters, including metals, toxics, oil, grease, solvents, nutrients, and pathogens.

1.4 Allowable Non-Stormwater Discharges

The following categories of non-stormwater discharges are allowed under the MS4 Permit provided: (1) the permittee controls such non-stormwater discharges to the Maximum Extent Practicable (MEP), as required by the MS4 Permit; (2) such non-stormwater discharges do not contribute to a violation of water quality standards; and (3) such non-stormwater discharges are documented in the Stormwater Management Plan and are not significant contributors of pollutants to any identified MS4:

- Uncontaminated groundwater discharges including, but not limited to, pumped ground water, foundation drains, water from crawl space pumps and footing drains
- Irrigation water including, but not limited to, landscape irrigation and lawn watering runoff
- Residual street wash water associated with sweeping
- Discharges or flows from firefighting activities (except training)

- Naturally occurring discharges such as rising ground waters, uncontaminated ground water infiltration (as defined at 40 CFR 35.2005(20)), springs, diverted stream flows and flows from riparian habitats and wetlands.

1.5 Receiving Waters and Impairments

Table 1-1 lists the impaired waters within the boundaries of the Town of Glastonbury based on the latest version of the State of Connecticut Integrated Water Quality Report produced by CTDEEP every two years. Impaired waters are water bodies that do not meet water quality standards for one or more designated use(s) such as recreation or aquatic habitat.

Table 1-1. Impaired Waters

Waterbody Name	Segment ID	Category	Impairment and Stormwater Pollutant of Concern	Approved TMDL
Connecticut River-03	CT4000-00_03	5 and 4a	Recreation-Non-Designated Swimming and other water contact related activities. (B**acteria**)	Connecticut River Watershed TMDL
Angus Park Pond	CT4009-00-2-L4_01	4a	Recreation (**Bacteria**)	Roaring Brook Watershed TMDL

Source: State of Connecticut 2016 Integrated Water Quality Report (CTDEEP).
Category 5 Waters – Available data and/or information indicate that one or more designated uses are not being supported and a TMDL is needed.

Connecticut River-Section CT4000-00_03: The IDDE related requirements identified in the TMDL for this section of the Connecticut River are possible Illicit Discharges, CSO/SSO Issues, Failing Septic Systems, Agricultural Activity, Stormwater Runoff, and Nuisance Wildlife/Pets.

Angus Park Pond-Section CT4009-00-2-L4: The IDDE related requirements identified in the TMDL for this waterbody are possible Illicit Discharges, Failing Septic Systems, Stormwater Runoff, and Nuisance Wildlife/Pets.

1.6 IDDE Program Goals, Framework, and Timeline

The objective of the IDDE program is to systematically find and eliminate sources of non-stormwater discharges to the MS4 and implement procedures to prevent such discharges. The program consists of the following major components as outlined in the MS4 Permit:

- Legal authority to prohibit illicit discharges and enforce this prohibition
- Program for citizen reporting of illicit discharges
- Storm system mapping
- Sanitary Sewer Overflow (SSO) elimination
- Assessment and priority ranking of catchments
- Outfall and interconnection screening and sampling
- Catchment investigations
- Identification/confirmation of illicit sources
- Illicit discharge removal
- Follow-up screening
- Employee training.

The IDDE investigation protocol framework is shown in **Figure 1-2**. The required timeline for implementing the IDDE program is shown in **Table 1-2**.

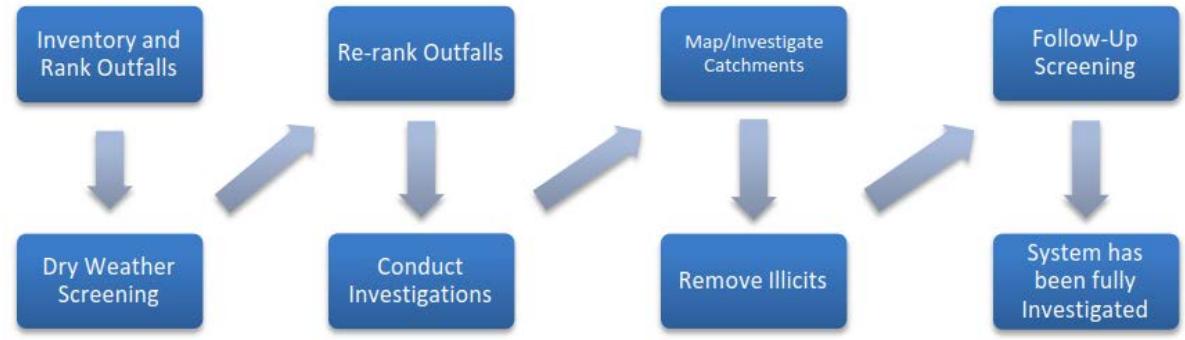


Figure 1-2. IDDE Investigation Procedure Framework

Table 1-2. IDDE Program Implementation Timeline

IDDE Program Requirement	Deadline					
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 10
SSO Inventory (5-year look back)	**Oct 30, 2017**					
Program for Citizen Reporting	**Effective Date**					
Establish IDDE Legal Authority	**July 1, 2018**					
Written IDDE Program	**July 1, 2018**					
Outfall/Interconnection Inventory		**July 1, 2019**				
Map All Stormwater Outfalls		**July 1, 2019**				
Initial Assessment and Priority Ranking of Catchments (update annually)		**July 1, 2019**				
Complete Detailed Storm System Mapping			**July 1, 2020**			
Begin Dry Weather Outfall Screening (high and low priority outfalls)	**July 1, 2018**					
Complete Dry Weather Outfall Screening (high and low priority outfalls)					**July 1, 2022**	
Catchment Investigations – Problem Outfalls (80% and 100% of problem catchments)			**July 1, 2020**		**July 1, 2022**	
Catchment Investigations* – all Problem, High and Low Priority Outfalls						**July 1, 2027**

*For existing 2004 MS4 permittees, catchment investigations must begin with three months of finalization of investigation procedure and no later than 15 months from effective date of permit. New MS4 permittees must begin these investigations no later than 2 years and 3 months from effective date of permit.

1.7 IDDE Program Accomplishments – 2004 MS4 Permit

The 2004 MS4 Permit required MS4 communities to develop a plan to detect illicit discharges using a combination of storm system mapping, adopting a regulatory mechanism to prohibit illicit discharges and enforce this prohibition, and identifying tools and methods to investigate suspected illicit discharges. MS4s were also required to define how confirmed discharges would be eliminated and how the removal would be documented.

The Town of Glastonbury has completed or implemented the following IDDE program elements consistent with the 2004 MS4 Permit requirements:

- Dry weather outfall screening and sampling
- Wet weather outfall monitoring
- Outfall mapping
- Additional storm system mapping, including the locations of catch basins, manholes and pipe connectivity
- Sanitary Sewer Overflow (SSO) inventory
- Adoption of an illicit discharge ordinance or similar legal authority
- Procedures for locating illicit discharges (i.e., visual screening of outfalls for dry weather discharges, dye or smoke testing)
- Procedures for locating the source of the discharge
- Procedures for removal of the source of an illicit discharge
- Procedures for documenting actions and evaluating impacts on the storm sewer system subsequent to removal.

2 Authority and Responsibilities

2.1 Legal Authority

The Town of Glastonbury has adopted a Town Ordinance Article III-Illicit Discharge and Connection. A copy of this ordinance is provided in **Appendix A**. The Town Ordinance Article III-Illicit Discharge and Connection provides the Town of Glastonbury with adequate legal authority to:

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

2.2 Statement of Responsibilities

The Town of Glastonbury Physical Services Department-Engineering Division is the lead municipal department responsible for implementing the IDDE program pursuant to the provisions of the Town of Glastonbury Code of Ordinances; Part II; Chapter 19-Water, Sewers and Sewage Disposal; Article III-Illicit Discharge and Connection Stormwater Ordinance. Departments that have coordination responsibilities and additional roles under this program are listed below.

Physical Services Department (Engineering, Highway and Fleet Divisions):

Engineering Division:

- Outfall and interconnection screening and sampling

- Assessment and priority ranking of catchments
- Catchment investigations
- Identification and conformation of illicit sources
- Follow up screening
- Employee training
- Storm and sanitary sewer mapping
- Manage program for citizen reporting of illicit discharges

Highway Division:

- Illicit discharge removal
- Maintenance and repair of the storm drainage and sanitary sewer system
- CCTV video inspection
- Employee training

Refuse Disposal and Sanitation Department:

- Sanitary Sewer Overflow (SSO) elimination, repair, clean-up and reporting
- Sanitary sewer maintenance, construction and repair
- Employee training

Health Department:

- Septic system design, inspection
- Identification and conformation of illicit sources related to septic systems
- Illicit discharge removal related to septic systems
- Record keeping of failing or repairs to existing septic systems
- E-coli screening and sampling
- Employee Training

3 Citizen Reporting of Illicit Discharges

The MS4 Permit requires municipalities to develop a program for citizen reporting of illicit discharges. The Town of Glastonbury has established a system to allow for citizen reporting which includes an email address or phone number for submitting comments. The reporting system is located on the Town of Glastonbury's website main page http://www.glastonbury-ct.gov/departments/related-links/online-requests under "Citizen Request for Service" and in municipal offices, and consists of an online form utilizing QAlert software for residents to register and track inquiries and complaints. Residents who make inquires or complaints via the telephone, are entered by Town staff into this system. All complaints and inquiries are routed to the appropriate departments and personnel based on the nature of the request.

The Town of Glastonbury will investigate and eliminate any illicit discharges reported by citizens or organizations, provided such a report incorporates at least a time and location of an observed discharge. Town of Glastonbury will conduct an inspection of the reported outfalls, manholes or other sites promptly after receiving such a report. The Town of Glastonbury will incorporate the reported outfalls into the IDDE program. Citizen reports and the responses to those reports will be included in the Annual Report.

4 Mapping

The Town of Glastonbury originally developed G.I.S. mapping of its stormwater system to meet the mapping requirements of the 2004 MS4 Permit. The completed elements included mapping of all outfalls 12" or greater identifying the outfall type, material, surface water classification and identification to the contributing waterbody located within the MS4 Urbanized Area including the entire storm drainage system connected to each outfall which is owned and operated by the municipality. All information described above is depicted on the Town of Glastonbury's G.I.S mapping located on the Town's website. Additionally, the Town of Glastonbury has comprehensive G.I.S. mapping of the entire town owned sanitary sewer system.

A copy of the existing storm system G.I.S. map is provided on the Town of Glastonbury's website located at https://gis.glastonbury-ct.gov/Html5/Index.html?viewer=public utilizing the layers under GlastonburyMS4 and Municipal Facilities and Utilities.

The 2017 MS4 Permit requires a revised and more detailed storm system map than was required by the 2004 MS4 Permit. The Town of Glastonbury Engineering Division is responsible for updating the stormwater system G.I.S. mapping pursuant to the MS4 Permit. The Town of Glastonbury will report on the progress towards completion of the storm system map in each annual report. Updates to the stormwater mapping will be included on the G.I.S. map located on the Town of Glastonbury's website at https://gis.glastonbury-ct.gov/Html5/Index.html?viewer=public.

4.1 Outfall and Interconnection Inventory and Mapping

The Town of Glastonbury will develop an inventory (spreadsheet or database in a format compatible with Microsoft Excel) and mapping at a minimum scale of 1"=2000' and maximum scale of 1"=100' showing all stormwater outfalls[1] located within and owned or operated by the municipality (or institution for institutional MS4s) and all interconnections[2] with other MS4s. The map should, if possible, be developed in GIS or comparable digital format (i.e., CAD).

The inventory and map will include the following information for each outfall and interconnection:

- Unique identifier
- Type, material, size (e.g., 24-inch concrete pipe)
- Spatial location (latitude and longitude with a minimum accuracy of +/-30 feet)
- Name, water body ID and Surface Water Quality Classification of the immediate surface water body or wetland to which the stormwater runoff discharges
- If the outfall does not discharge directly to a named water body, the name and water body ID of the nearest named water body to which the outfall eventually discharges
- Name of the watershed, including subregional drainage basin number, in which the discharge is located
- Date of most recent inspection
- Physical condition
- Indicators of potential non-stormwater discharges (including presence or evidence of suspect flow and sensory observations such as odor, color, turbidity, floatables, or oil sheen) as of the most recent inspection.

The inventory and mapping will be completed within two years of the permit effective date (July 1, 2019).

The inventory will be updated annually to include data collected in connection with dry weather screening and other relevant inspections. An updated inventory and mapping will be provided in each annual report.

4.2 Detailed System Mapping

[1] **Outfall** means a point source as defined by 40 CFR § 122.2 and in Section 2 of the 2017 MS4 Permit as the point where the MS4 discharges to waters of the state. An outfall does not include open conveyances connecting two separate storm sewers or pipes, tunnels or other conveyances that connect segments of the same stream or other waters of the state and that are used to convey waters of the state. It is strongly recommended that a permittee inspect all accessible portions of the system as part of this process. Culverts longer than a simple road crossing shall be included unless the permittee can confirm that they are free of any connections and simply convey waters of the state.

[2] **Interconnection** means the point where the permittee's MS4 discharges to another MS4 or other storm sewer system, through which the discharge is conveyed to waters of the state or to another storm sewer system and eventually to a water of the state.

The following mapping elements are completed and provided on the Town GIS System:

- Outfalls and receiving waters (previously required by the 2004 MS4 Permit)
- Pipes, catch basins, and/or manholes
- Open channel conveyances (swales, ditches, etc.)
- Interconnections with other MS4s and other storm sewer systems
- Municipally owned stormwater treatment structures (e.g., detention and retention basins)
- Water bodies identified by name and indication of all use impairments as identified on the most recent State of Connecticut Integrated Water Quality Report.
- Municipal Sanitary Sewer system
- Storm sewer material, size (pipe diameter), age
- Sanitary sewer system material, size (pipe diameter), age
- Topography
- Orthophotography

The following mapping elements remain to be completed:

- Municipally owned stormwater treatment structures (Infiltration systems, bioretension areas, water quality swales, gross particle separators, oil/water separators)
- Catchment area delineations
- Septic system failures within the sanitary sewer service areas

Detailed system mapping will be completed within three years of the effective date of the permit (July 1, 2020) for the remaining items.

5 Sanitary Sewer Overflow Inventory

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

The Town of Glastonbury will complete an inventory of SSOs that have discharged to the MS4 in the five years prior to the effective date of the 2017 MS4 Permit (July 1, 2012 – June 30, 2017) (**Table 5-1**). The inventory includes all SSOs that occurred during wet or dry weather resulting from inadequate conveyance capacities or where interconnectivity of the storm and sanitary sewer infrastructure allows for transfer of flow between systems. This inventory will be completed within 120 days of the effective permit date (October 28, 2017).

Upon detection of an SSO, the Town of Glastonbury will eliminate it as expeditiously as possible and take interim measures to minimize the discharge of pollutants to and from its MS4 until the SSO is eliminated. Upon becoming aware of an SSO to the MS4, the Town of Glastonbury will provide written notice to CTDEEP within five (5) days of becoming aware of the SSO occurrence.

The inventory in **Table 5-1** will be updated by the Town of Glastonbury when new SSOs are detected. The SSO inventory will be included in the annual report, including the status of mitigation and corrective measures to address each identified SSO.

Table 5-1. SSO Inventory-Town of Glastonbury, Connecticut

SSO Location[1]	Discharge Point[2]	Date[3]	Time Start[3]	Time End[3]	Estimated Volume[4]	Description[5]	Mitigation Completed[6]	Mitigation Planned[7]
194 New London Turnpike	Homeowners Basement	02/14/ 2013	1:00 P.M.	2:00 P.M.	Minimal	Stuck Toilet Flapper	Sewer Main and Lateral cleaned	None
145 Lancaster Road	Homeowners Basement	03/01/ 2013	11:30 A.M.	12:45 A.M.	25-30 Gallons	Sewer main blockage from roots	Sewer line flushed and used root cutter in main sewer line	Sewer line flushed and used root cutter in main sewer line
104 Benton Lane	Manhole	03/03/ 2013	12:30 P.M.	2:15 P.M.	200-300 Gallons	Blockage from rags in pump station wet well. Cleaned ASAP to relieve surcharge	By Pass system which had been installed during pump station upgrade construction activity removed on 3/4/2013	Cleaned ASAP to relieve Surcharge. Hand spread Limed area around manhole.
50 Norman Drive	Homeowners Basement	03/25/ 2013	12:45 P.M.	1:45 P.M.	5-8 Gallons	Broken discharge pipe from grinder pump installation 3/16/13	Plumber fixed discharge pipe from grinder pump	None
116 Oak Street	Hubbard Brook	08/23/ 2013	2:00 P.M.	5:00 P.M.	150-250 Gallons	Concrete at the end of lateral connection	Sewer line will require reconstruction.	Sewer lateral will need to be reconstructed
91 Sherman Road	Homeowners Basement	12/01/ 2013	9:45 P.M.	11:30 P.M.	Minimal	Lateral back up	Highway department responded with jet flusher, flushed sewer mainline releasing blockage stopping by pass	Highway department returned 12/02/2013 to flush/ root cutter followed by camera of whole street

SSO Location[1]	Discharge Point[2]	Date[3]	Time Start[3]	Time End[3]	Estimated Volume[4]	Description[5]	Mitigation Completed[6]	Mitigation Planned[7]
124 Hebron Avenue	Homeowners Basement	12/11/ 2013	?	3:00 P.M.	20 Gallons	Root blockage	Plumber contacted by property owner and cleaned blockage via snaking.	Will be evaluated by property owner.
44 Harris Street	Homeowners Basement	04/30/ 2014	?	?	?	Grease Blockage	Sewer Line flushed by town staff	Sanitary sewer line servicing this property is routinely check for proper operation
Tall Timbers Road	Private Force Main Lateral below grade	09/14/ 2014	June 2014	10:30 A.M.	21,500 Gallons	Broken 1 ¼" private force main lateral	Broken pipe repaired by town Highway staff	Pipe repaired/will suggest pressure testing of line- (Private System)
1909 Main Street	Manhole	08/09/ 2014	7:00 A.M.	9:00 A.M.	500 Gallons	Grease Blockage in 8" Sewer Line	Blockage in sewer line relieved by jet truck, upon release completed jetting. Applied bleach to area around manhole and ground	Added location to Towns routine jetting schedule
2333 Main Street	Manhole in parking lot-Private	02/25/ 2015	11:40 A.M.	4:30 P.M.	Unable to determine	Grease and Root Blockage	Property owner arranged with contractor to clear blockage by flushing and root cutting	Routine flushing and root cutting
1822 Main Street	Basement	05/05/ 2015	7:00 P.M.	10:30 P.M.	Undetermined	Root Blockage	Homeowner contracted plumber to clear and do televise inspection	Town will evaluate as appears that the lateral line may be damaged from tree roots

SSO Location[1]	Discharge Point[2]	Date[3]	Time Start[3]	Time End[3]	Estimated Volume[4]	Description[5]	Mitigation Completed[6]	Mitigation Planned[7]
151 Olde Stage Road	Homeowners Basement	05/12/ 2016	8:30 A.M.	9:00 A.M.	5 Gallons	Minor spill was contained by homeowner	Root cutter used to clear lateral of roots and grease	Town highway department flushing and root cutting followed by TV Inspection
24 Maple Street	Homeowners Basement	05/27/ 2016	12:30 P.M.	1:00 P.M.	100 Gallons	Grease Blockage	Town Highway department flushed sewer lines	Flushed remaining sewer lines and TV inspect after flushing
93 Curtis Road	Homeowners Basement	06/10/ 2016	1:00 P.M.	2:00 P.M.	5-10 Gallons	Unknown Blockage	Main sewer line flushed by town staff	Main sewer line flushed by town staff
25 Linden Street	Homeowners Basement	08/18/ 2016	7:30 A.M.	8:35 A.M.	5,600 Gallons	Unknown Blockage	Main Sewer line jetted, blockage released	Spoke to homeowner about things not to be flushed
2756 Main Street	Manhole Salmon Brook	09/04/ 2016	12:45 P.M.	1:40 P.M.	5,000 Gallons	Electrical equipment failure at Pump Station	Restored Pump Station Operation quickly	None
3025 Main Street	Manhole/Pump Station	08/07/ 2017	1:00 P.M.	5:00 P.M.	Unknown	Mechanical Equipment failure	Burger King regional manager notified to evaluate and repair the reoccurring problem	Repairs made to eliminate future overflows
28 Talcott Road	Manhole/Sewer Main overflowed to catch basin	05/04/ 2017	6:38 P.M.	7:15 P.M.	Unknown	Grease blockage in sewer main	Jetted and flushed sewer main	Inspection of Town sewer main
76-78 Hollister Way South Meadow Hill Condominiums	Condominium Complex Basement	12/18/ 2018	3:00 P.M.	6:00 P.M.	250 Gallons	Sanitary sewer back-up as a result of blockage in Towns Main Street sewer line causing an	Sewer line flushed and televised by Highway Dept. staff to relieve blockage	None

						overflow into private property		

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

6 Catchment Assessment and Priority Ranking

The MS4 Permit requires an assessment and priority ranking of catchments in terms of their potential to have illicit discharges and SSOs and the related public health significance. The ranking will determine the priority order for screening of outfalls and interconnections, catchment investigations for evidence of illicit discharges, and provides the basis for determining permit milestones.

6.1 Catchment Delineations

A catchment is the area that drains to an individual outfall or interconnection. Catchments will be delineated to define contributing areas for investigation of potential sources of illicit discharges. Catchments are typically delineated based on topographic contours and mapped drainage infrastructure, where available. As indicated in Section 4.2, catchment delineations will be completed as part of the detailed system mapping.

CTDEEP Local Basin boundaries were used instead of individual outfall catchment areas to support the initial assessment and priority ranking of catchments. Required updates to the catchment assessment and priority ranking will incorporate refined catchment details as they become available.

6.2 Assessment and Priority Ranking of Catchments

The Town of Glastonbury Engineering Division will complete an initial illicit discharge potential assessment and priority ranking of catchments based on existing information, including the outfall and interconnection inventory and mapping.

The initial assessment and priority ranking will be completed within two (2) years from the effective date of the permit (by July 1, 2019).

An updated assessment and priority ranking will be provided in each annual report thereafter, including a listing of all catchments and the results of the ranking for each catchment. The assessment and priority ranking will be updated annually based on catchment delineations, the results of dry weather screening, and other relevant information.

Catchments associated with outfalls and interconnections will be classified into one of the following categories:

1. **Excluded Catchments**: Catchments with no potential for illicit discharges. This category is limited to:

    - Roadway drainage in undeveloped areas with no dwellings and no sanitary sewers
    - Drainage for athletic fields, parks or undeveloped green space and associated parking without services
    - Cross-country drainage alignments (that neither cross nor are in proximity to sanitary sewer alignments) through undeveloped land.

2. **Problem Catchments**: Catchments with known or suspected contributions of illicit discharges based on existing information. This category includes any catchments where previous outfall/interconnection screening indicates likely sewer input. Likely sewer input indicators are any of the following:

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

    Screening and sampling is not required for Problem Catchments. Problem Catchments must be scheduled for catchment investigation. Following the initial ranking of catchments, subsequent rankings shall not add any catchments to the Problem Catchment category.

3. **High Priority Catchments**: Catchments that have not been classified as Problem Catchments and that are:

    - Discharging to an area of concern to public health due to proximity of public beaches, recreational areas, drinking water supplies or shellfish beds
    - Determined by the permittee as high priority based on outfall/interconnection screening and catchment characteristics assessment.

    Any catchment where outfall/interconnection screening indicates likely sewer input as described under Item 1, Problem Catchments, shall be ranked at the top of the High Priority Catchments category and scheduled for catchment investigation.

4. **Low Priority Catchments**: Catchments determined by the permittee as low priority based on outfall/interconnection screening (see Section 7) and catchment characteristics assessment (see below).

Catchments will be ranked into the above priority categories (except for excluded catchments, which may be excluded from the IDDE program) based on the following characteristics of the defined initial catchment areas, where information is available. Additional relevant characteristics, including location-specific characteristics, may be considered but must be documented in the IDDE program.

- **Previous screening results** – previous screening/sampling results indicate likely sewer input (see criteria above for Problem Catchments).

- **Past discharge complaints and reports.**

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

- **Density of generating sites** – Generating sites are those places, including institutional, 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 dealers; car washes; gas stations; garden centers; and industrial manufacturing areas.

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

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

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

- **Surrounding density of aging septic systems** – Septic systems thirty years or older in residential land use areas 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.

- **Water bodies** that receive a discharge from the MS4 and are drinking water supplies, shell fishing areas, beaches or waters used for contact recreation.

- **Impaired water bodies** that receive a discharge from the MS4 or waters with approved TMDLs applicable to the permittee, where illicit discharges have the potential to contain the pollutant identified as the cause of the water quality impairment.

Table 6-1 is a catchment assessment and priority ranking matrix that was used to document the initial catchment assessment and priority ranking process. The initial assessment utilized CTDEEP Local Drainage Basins until the individual outfall catchments have been delineated.

Table 6-1. Catchment Assessment and Priority Ranking Matrix

Catchment ID (CTDEEP Local Basin ID#)	Receiving Water	Previous Screening Results Indicate Likely Sewer Input? [1]	Discharging to Area of Concern to Public Health? [2]	Frequency of Past Discharge Complaints	Receiving Water Quality [3]	Density of Generating Sites [4]	Age of Development/ Infrastructure [5]	Historic Combined Sewers or Septic? [6]	Aging Septic? [7]	Culverted Streams? [8]	Additional Characteristics	Score	Priority Ranking
Information Source		Catchment inspections and sample results	GIS Maps	Municipal Staff	Impaired Waters List	Land Use/GIS Maps, Aerial Photography	Land Use Information, Visual Observation	Municipal Staff, GIS Maps	Land Use, Municipal Staff	GIS and Storm System Maps	Other		
Scoring Criteria		Yes = 3 (Problem Catchment) No = 0	Yes = 3 No = 0	Frequent = 3 Occasional = 2 None = 0	Poor = 3 Fair = 2 Good = 0	High = 3 Medium = 2 Low = 1	High = 3 Medium = 2 Low = 1	Yes = 3 No = 0	Yes = 3 No = 0	Yes = 3 No = 0	TBD		
4000-00-6+R11	Connecticut River	0	0	0	3	0	0	0	0	0	Urbanized Area IC = >11 to 84% TMDL	3	Low Priority
4006-00-2-R7	Salmon Brook	0	0	0	3	0	0	0	0	0	Urbanized Area	3	Low Priority
4006-13-1	Salmon Brook	0	0	0	0	2	1	0	0	0	Urbanized Area IC = >11 to 84%	3	Low Priority
4006-09-2-R3	Salmon Brook	3	0	0	0	2	2	1	0	3	Urbanized Area IC = >11 to 84%	11	Problem
4006-12-1	Salmon Brook	0	0	0	0	1	2	0	0	0	Urbanized Area IC = >11 to 84%	3	Low Priority
4006-11-1-L3	Salmon Brook	0	0	0	0	1	2	0	0	0	Urbanized Area IC = >11 to 84%	3	Low Priority
4006-11-1-L1	Salmon Brook	0	0	0	0	1	2	0	0	0	Urbanized Area IC = >11 to 84%	3	Low Priority
4006-00-2-R6	Salmon Brook	3	0	0	0	2	2	3	0	3	Urbanized Area IC = >11 to 84%	13	Problem
4006-06-1	Salmon Brook	0	0	0	0	1	2	0	0	0	Urbanized Area IC = >11 to 84%	3	Low Priority
4006-00-2-L1	Salmon Brook	0	0	0	0	1	2	0	0	0	Urbanized Area IC = >11 to 84%	3	Low Priority
4000-00-6+R12	Connecticut River	3	0	0	3	3	2	3	0	0	Urbanized Area TMDL	11	Problem
4007-00-1	Hubbard Brook	0	0	0	0	3	2	3	0	0	Urbanized Area IC = >11 to 84%	8	Medium Priority
4006-00-2-R5	Salmon Brook	0	0	0	0	2	2	0	0	0	Urbanized Area IC = >11 to 84%	4	Low Priority
4006-00-2-R4	Salmon Brook	0	0	0	0	1	2	0	3	0	Urbanized Area IC = >11 to 84%	6	Medium Priority
4006-00-2-R3	Salmon Brook	0	0	0	0	1	2	0	0	0	Urbanized Area IC = >11 to 84%	3	Low Priority
4006-00-2-R2	Salmon Brook	0	0	0	0	1	2	0	0	0	Urbanized Area IC = >11 to 84%	3	Low Priority
4006-02-1-L1	Salmon Brook	0	0	0	0	1	2	0	3	0	Urbanized Area IC = >11 to 84%	6	Medium Priority

Catchment ID (CTDEEP Local Basin ID#)	Receiving Water	Previous Screening Results Indicate Likely Sewer Input? [1]	Discharging to Area of Concern to Public Health? [2]	Frequency of Past Discharge Complaints	Receiving Water Quality [3]	Density of Generating Sites [4]	Age of Development/ Infrastructure [5]	Historic Combined Sewers or Septic? [6]	Aging Septic? [7]	Culverted Streams? [8]	Additional Characteristics	Score	Priority Ranking
Information Source		Catchment inspections and sample results	GIS Maps	Municipal Staff	Impaired Waters List	Land Use/GIS Maps, Aerial Photography	Land Use Information, Visual Observation	Municipal Staff, GIS Maps	Land Use, Municipal Staff	GIS and Storm System Maps	Other		
Scoring Criteria		Yes = 3 (Problem Catchment) No = 0	Yes = 3 No = 0	Frequent = 3 Occasional = 2 None = 0	Poor = 3 Fair = 2 Good = 0	High = 3 Medium = 2 Low = 1	High = 3 Medium = 2 Low = 1	Yes = 3 No = 0	Yes = 3 No = 0	Yes = 3 No = 0	TBD		
4006-01-1-L1	Salmon Brook	0	0	0	0	1	2	0	3	0	Urbanized Area IC = >11 to 84%	6	Medium Priority
4009-04-1	Roaring Brook	0	0	0	0	0	2	0	3	0	Urbanized Area IC = >11 to 84%	5	Low Priority
4007-00-1-L3	Hubbard Brook	0	0	0	0	2	2	0	0	0	Urbanized Area IC = >11 to 84%	4	Low Priority
4007-00-1-L2	Hubbard Brook	0	0	0	0	2	2	3	1	0	Urbanized Area IC = >11 to 84%	8	Medium Priority
4007-01-1	Hubbard Brook	0	0	0	0	0	2	3	0	0	Urbanized Area IC = >11 to 84%	5	Low Priority
4006-04-1	Salmon Brook	0	0	0	0	0	2	0	3	0	Urbanized Area IC = >11 to 84%	5	Low Priority
4006-04-1-L1	Salmon Brook	0	0	0	0	0	2	0	3	0	Urbanized Area IC = >11 to 84%	5	Low Priority
4007-00-2-R1	Hubbard Brook	0	0	0	0	0	2	3	0	0	Urbanized Area	5	Low Priority
4007-00-3-R1	Hubbard Brook	0	0	0	0	0	2	3	0	0	Urbanized Area IC = >11 to 84%	5	Low Priority
4007-00-3-R2	Hubbard Brook	0	0	0	0	0	0	0	0	0	Urbanized Area	0	Low Priority
4007-02-2-R1	Hubbard Brook	0	0	0	0	1	2	3	0	0	Urbanized Area IC = >11 to 84%	6	Medium Priority
4007-03-1	Hubbard Brook	0	0	0	0	0	2	3	0	0	Urbanized Area IC = >11 to 84%	5	Low Priority
4007-04-1	Hubbard Brook	0	0	0	0	0	2	0	3	0	Urbanized Area IC = >11 to 84%	5	Low Priority
4007-02-1	Hubbard Brook	0	0	0	0	0	2	0	3	0	Urbanized Area IC = >11 to 84%	5	Low Priority
4007-04-1-L1	Hubbard Brook	0	0	0	0	0	2	0	3	0	Urbanized Area IC = >11 to 84%	5	Low Priority
4009-00-3-R5	Roaring Brook	0	0	0	0	1	2	3	3	0	Urbanized Area IC = >11 to 84%	9	Problem
4009-00-3-L6	Roaring Brook	0	0	0	0	0	2	0	3	0	Urbanized Area IC = >11 to 84%	5	Low Priority
4000-00-6+R12	Connecticut River	0	3	0	3	0	0	0	0	0	Urbanized Area TMDL	6	Medium Priority

Catchment ID (CTDEEP Local Basin ID#)	Receiving Water	Previous Screening Results Indicate Likely Sewer Input? [1]	Discharging to Area of Concern to Public Health? [2]	Frequency of Past Discharge Complaints	Receiving Water Quality [3]	Density of Generating Sites [4]	Age of Development/ Infrastructure [5]	Historic Combined Sewers or Septic? [6]	Aging Septic? [7]	Culverted Streams? [8]	Additional Characteristics	Score	Priority Ranking
Information Source		Catchment inspections and sample results	GIS Maps	Municipal Staff	Impaired Waters List	Land Use/GIS Maps, Aerial Photography	Land Use Information, Visual Observation	Municipal Staff, GIS Maps	Land Use, Municipal Staff	GIS and Storm System Maps	Other		
Scoring Criteria		Yes = 3 (Problem Catchment) No = 0	Yes = 3 No = 0	Frequent = 3 Occasional = 2 None = 0	Poor = 3 Fair = 2 Good = 0	High = 3 Medium = 2 Low = 1	High = 3 Medium = 2 Low = 1	Yes = 3 No = 0	Yes = 3 No = 0	Yes = 3 No = 0	TBD		
4000-00-6+R13	Connecticut River	0	3	0	3	0	0	0	0	0	Urbanized Area TMDL	6	Medium Priority
4000-00-6+R15	Connecticut River	0	3	0	3	0	0	0	0	0	Urbanized Area IC = >11 to 84% TMDL	6	Medium Priority
4000-00-6+R16	Connecticut River	0	3	0	3	0	2	0	3	0	Urbanized Area TMDL	5	Low Priority
4009-00-2-L4	Roaring Brook	3	3	2	0	1	2	0	3	0	Urbanized Area IC = >11 to 84% TMDL	14	Problem Angus Pond
4009-00-2-R3	Roaring Brook	0	0	0	0	1	2	0	3	0	Urbanized Area IC = >11 to 84%	6	Medium Priority
4009-05-2-R2	Roaring Brook	0	0	0	0	0	2	0	0	0	Urbanized Area IC = >11 to 84%	2	Low Priority
4009-05-2-R1	Roaring Brook	0	0	0	0	0	2	0	0	0	Urbanized Area IC = >11 to 84%	2	Low Priority
4009-00-3-R1	Roaring Brook	0	0	0	0	0	2	0	3	0	Urbanized Area IC = >11 to 84%	5	Low Priority
4009-00-3-R2	Roaring Brook	0	0	0	0	2	2	0	3	0	Urbanized Area IC = >11 to 84%	7	Medium Priority
4008-00-2-L1	Cold Brook	0	0	0	0	0	2	0	0	0	Urbanized Area IC = >11 to 84%	2	Low Priority
4000-00-6+R14	Connecticut River	0	0	2	3	0	2	0	0	0	Urbanized Area TMDL	4	Low Priority
4000-00-6+R16	Connecticut River	3	0	2	3	1	2	0	3	0	Urbanized Area TMDL	11	Problem
4000-00-6+R17	Connecticut River	0	0	0	3	0	2	0	0	0	Urbanized Area TMDL	5	Low Priority
4000-00-6+R18	Connecticut River	0	0	0	3	1	2	0	0	0	Urbanized Area TMDL	6	Medium Priority
4000-30-1	Connecticut River	0	0	0	3	0	2	0	3	0	Urbanized Area TMDL	8	Medium Priority
4000-30-1-L1	Connecticut River	0	0	0	3	0	2	0	0	0	Urbanized Area TMDL	5	Low Priority

Catchment ID (CTDEEP Local Basin ID#)	Receiving Water	Previous Screening Results Indicate Likely Sewer Input? [1]	Discharging to Area of Concern to Public Health? [2]	Frequency of Past Discharge Complaints	Receiving Water Quality [3]	Density of Generating Sites [4]	Age of Development/ Infrastructure [5]	Historic Combined Sewers or Septic? [6]	Aging Septic? [7]	Culverted Streams? [8]	Additional Characteristics	Score	Priority Ranking
Information Source		Catchment inspections and sample results	GIS Maps	Municipal Staff	Impaired Waters List	Land Use/GIS Maps, Aerial Photography	Land Use Information, Visual Observation	Municipal Staff, GIS Maps	Land Use, Municipal Staff	GIS and Storm System Maps	Other		
Scoring Criteria		Yes = 3 (Problem Catchment) No = 0	Yes = 3 No = 0	Frequent = 3 Occasional = 2 None = 0	Poor = 3 Fair = 2 Good = 0	High = 3 Medium = 2 Low = 1	High = 3 Medium = 2 Low = 1	Yes = 3 No = 0	Yes = 3 No = 0	Yes = 3 No = 0	TBD		
4000-35-1	Connecticut River	0	0	0	3	0	2	0	0	0	Urbanized Area TMDL	5	Low Priority
4006-02-1	Salmon Brook	0	0	0	0	0	0	0	0	0	Urbanized Area	0	Low Priority
4006-03-1	Salmon Brook	0	0	0	0	0	2	0	3	0	Urbanized Area	5	Low Priority
4007-00-1-L1	Hubbard Brook	0	0	0	0	0	2	0	0	0	Urbanized Area	2	Low Priority
4009-08-1	Roaring Brook	0	0	0	0	0	2	0	3	0	Urbanized Area	5	Low Priority
4009-00-2-R2	Roaring Brook	0	0	0	0	0	2	0	3	0	Urbanized Area	5	Low Priority
4009-00-2-R1	Roaring Brook	0	0	0	0	0	2	0	0	0	Urbanized Area	2	Low Priority
4009-03-1	Roaring Brook	0	0	0	0	0	2	0	0	0	Urbanized Area	2	Low Priority
4009-09-1	Roaring Brook	0	0	0	0	1	2	0	3	0	Urbanized Area	6	Medium Priority
4009-00-3-L5	Roaring Brook	0	0	0	0	0	2	0	3	0	Urbanized Area	5	Low Priority
4009-07-1	Roaring Brook	0	0	0	0	0	2	0	3	0	Urbanized Area	5	Low Priority
4009-05-1	Roaring Brook	0	0	0	0	0	2	0	3	0	Urbanized Area	5	Low Priority
4009-06-1	Roaring Brook	0	0	0	0	0	2	0	0	0	Urbanized Area	2	Low Priority
4009-00-3-R4	Roaring Brook	0	0	0	0	0	0	0	0	0	Urbanized Area	0	Low Priority
4009-00-2-L3	Roaring Brook	0	0	0	0	0	0	0	0	0	Urbanized Area	0	Low Priority
4009-00-2-L2	Roaring Brook	0	0	0	0	0	0	0	0	0	Urbanized Area	0	Low Priority
4008-00-2-L2	Cold Brook	0	0	0	0	0	2	0	3	0	Urbanized Area	5	Low Priority
4008-03-1	Cold Brook	0	0	0	0	0	2	0	0	0	Urbanized Area	2	Low Priority
4008-01-2-R1	Cold Brook	0	0	0	0	0	2	0	0	0	Urbanized Area	2	Low Priority
4707-06-1-L1	Blackledge River	0	0	0	0	0	2	0	0	0	Urbanized Area	2	Low Priority
4707-04-1	Blackledge River	0	0	0	0	0	2	0	0	0	Urbanized Area	2	Low Priority
4707-00-2-L3	Blackledge River	0	0	0	0	0	2	0	0	0	Urbanized Area	2	Low Priority
4707-00-2-R4	Blackledge River	0	0	0	0	0	2	0	0	0	Urbanized Area	2	Low Priority

Catchment ID (CTDEEP Local Basin ID#)	Receiving Water	Previous Screening Results Indicate Likely Sewer Input? [1]	Discharging to Area of Concern to Public Health? [2]	Frequency of Past Discharge Complaints	Receiving Water Quality [3]	Density of Generating Sites [4]	Age of Development/ Infrastructure [5]	Historic Combined Sewers or Septic? [6]	Aging Septic? [7]	Culverted Streams? [8]	Additional Characteristics	Score	Priority Ranking
Information Source		Catchment inspections and sample results	GIS Maps	Municipal Staff	Impaired Waters List	Land Use/GIS Maps, Aerial Photography	Land Use Information, Visual Observation	Municipal Staff, GIS Maps	Land Use, Municipal Staff	GIS and Storm System Maps	Other		
Scoring Criteria		Yes = 3 (Problem Catchment) No = 0	Yes = 3 No = 0	Frequent = 3 Occasional = 2 None = 0	Poor = 3 Fair = 2 Good = 0	High = 3 Medium = 2 Low = 1	High = 3 Medium = 2 Low = 1	Yes = 3 No = 0	Yes = 3 No = 0	Yes = 3 No = 0	TBD		
4707-06-1	Blackledge River	0	0	0	0	0	2	0	0	0	Urbanized Area	2	Low Priority
4707-06-1-L2	Blackledge River	0	0	0	0	0	2	0	0	0	Urbanized Area	2	Low Priority

Scoring Criteria:

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

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

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

[3] Receiving water quality based on latest version of State of Connecticut Integrated Water Quality Report.

- Poor = Waters with approved TMDLs (Category 4a Waters) where illicit discharges have the potential to contain the pollutant identified as the cause of the impairment
- Fair = Water quality limited waterbodies that receive a discharge from the MS4 (Category 5 Waters)
- Good = No water quality impairments

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

[5] Age of development and infrastructure:

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

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

[7] Aging septic systems are septic systems 30 years or older in residential areas.

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

7 Outfall and Interconnection Screening and Sampling

The 2017 MS4 Permit requires screening and sampling of outfalls and interconnections from the MS4 in dry and wet weather for evidence of illicit discharges and SSOs, including:

- Baseline outfall and interconnection screening (dry weather)for all priority area outfalls
- Additional screenings (dry and/or wet weather depending on System Vulnerability Factor (SVF), evaluation of negative ammonia test screening results with additional testing for Surfactants and Chlorine)
- Follow-up screening where illicit discharges are found.

The Town of Glastonbury Engineering Division is responsible for conducting dry and wet weather outfall and interconnection screening and sampling.

7.1 Dry and Wet Weather Rainfall Criteria

For the purposes of outfall screening and sampling, dry and wet weather conditions are defined as follows:

- **Dry Weather** – dry weather screening and sampling shall proceed when no more than 0.1 inches of rainfall has occurred in the previous 24-hour period.

- **Wet Weather** – wet weather screening and sampling shall occur during or after a storm event of sufficient depth or intensity to produce a stormwater discharge at the outfall. There is no specific rainfall amount that will trigger sampling, although minimum storm event intensities that are likely to trigger sanitary sewer interconnections are preferred. Sampling during the initial period of discharge ("first flush") will be avoided. To the extent feasible, sampling should occur during the spring (March through June) when groundwater levels are relatively high.

Note that wet weather criteria for impaired waters outfall monitoring pursuant to Section 6(i) of the MS4 Permit are different than the above wet weather criteria for outfall screening and sampling.

For purposes of determining dry and wet weather conditions, precipitation data from station **KHFD-Hartford-Brainard Airport** will be used. If station **KHFD-Hartford-Brainard Airport** is not available or not reporting current weather data, then station **KBDL-Windsor Locks-Bradley International Airport** will be used as a back-up.

The remainder of this section is focused on dry weather screening and sampling. Wet weather screening and sampling is discussed further in the context of catchment investigations, including confirmatory and follow up screening in Section 8.

7.2 Dry Weather Screening/Sampling

Dry weather flow is a common indicator of potential illicit connections. The 2017 MS4 Permit requires all outfalls/interconnections (excluding Problem and Excluded Catchments) to be screened (i.e., visually inspected) for the presence of dry weather flow. Dry weather outfall screening and sampling may take place when no more than 0.1 inches of rainfall has occurred in the previous 24-hour period.

7.2.1 General Procedure

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

1. Identify outfall(s) to be screened/sampled based on outfall inventory and initial catchment priority ranking.
2. Acquire the necessary staff, mapping, and field equipment (see **Table 7-1** for list of potential field equipment).
3. Conduct the outfall inspection during dry weather:
    a. Mark and photograph the outfall.
    b. Record the inspection information and outfall characteristics (using paper forms or digital form using a tablet or similar device) (see form in **Appendix C**).
    c. Look for and record visual/olfactory evidence of pollutants in flowing outfalls including odor, color, turbidity, and floatable matter (suds, bubbles, excrement, toilet paper or sanitary products). Also observe outfalls for deposits and stains, vegetation, and damage to outfall structures.
4. If an outfall is inaccessible or submerged, proceed to the first accessible upstream manhole or structure for the observation and sampling and report the location with the screening results. If an interconnection is inaccessible or submerged, perform screening at the first accessible location within the permittee's system upgradient of the interconnection.
5. If flow is observed, sample and test the flow following the procedures described in the following sections.
6. If no flow is observed, but evidence illicit discharges exists (illicit discharges are often intermittent or transitory), revisit the outfall during dry weather within one week of the initial observation, if practicable, to perform a second dry weather screening and sample any observed flow. Other techniques can be used to detect intermittent or transitory flows including conducting inspections during evenings or weekends and using optical brighteners.
7. Input results from screening and sampling into spreadsheet/database. Include pertinent information in the outfall/interconnection inventory and priority ranking.
8. Include all screening data in the annual report.

7.2.2 Field Equipment

Table 7-1 lists field equipment commonly used for dry weather outfall screening and sampling.

Table 7-1. Field Equipment – Dry Weather Outfall Screening and Sampling

Equipment	Use/Notes
Clipboard	For organization of field sheets and writing surface
Field Sheets	Field sheets for both dry weather inspection and Dry weather sampling should be available with extras
Chain of Custody Forms	To ensure proper handling of all samples
Pens/Pencils/Permanent Markers	For proper labeling
Nitrile Gloves	To protect the sampler as well as the sample from contamination
Flashlight/headlamp w/batteries	For looking in outfalls or manholes, helpful in early mornings as well
Cooler with Ice	For transporting samples to the laboratory
Digital Camera	For documenting field conditions at time of inspection
Personal Protective Equipment (PPE)	Reflective vest, Safety glasses and boots at a minimum
GPS Receiver	For taking spatial location data
Water Quality Sonde	If needed, for sampling conductivity, temperature, pH
Water Quality Meter	Hand held meter, if available, for testing for various water quality parameters such as ammonia, surfactants and chlorine
Test Kits	Have extra kits on hand to sample more outfalls than are anticipated to be screened in a single day
Label Tape	For labeling sample containers
Sample Containers	Make sure all sample containers are clean. Keep extra sample containers on hand at all times. Make sure there are proper sample containers for what is being sampled for (i.e., bacteria requires sterile containers).
Pry Bar or Pick	For opening catch basins and manholes when necessary
Sandbags	For damming low flows in order to take samples
Small Mallet or Hammer	Helping to free stuck manhole and catch basin covers
Utility Knife	Multiple uses
Measuring Tape	Measuring distances and depth of flow
Safety Cones	Safety
Hand Sanitizer	Disinfectant/decontaminant
Zip Ties/Duct Tape	For making field repairs
Rubber Boots/Waders	For accessing shallow streams/areas
Sampling Pole/Dipper/Sampling Cage	For accessing hard to reach outfalls and manholes

7.2.3 Sample Collection and Analysis

If flow is present during a dry weather outfall inspection, an ammonia test screening sample will be collected and analyzed for the required permit parameters[3] listed in **Table 7-2**. If the sample is detected

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

above the threshold limits, grab samples will be collected by a Consultant and sent to a lab and analyzed for all the parameters outlined for the type of impairment. The general procedure for collection of outfall samples is as follows:

1. Fill out all sample information on sample bottles and field sheets (see **Appendix C** for Sample Labels and Field Sheets)
2. Put on protective gloves (nitrile/latex/other) before sampling
3. Collect sample with dipper or directly in sample containers. If possible, collect water from the flow directly in the sample bottle. Be careful not to disturb sediments.
4. If using a dipper or other device, triple rinse the device with distilled water and then in water to be sampled (not for bacteria sampling)
5. Use test strips, test kits, and field meters (rinse similar to dipper) for most parameters (see **Table 7-2**)
6. Place laboratory samples on ice for analysis of bacteria and pollutants of concern
7. Fill out chain-of-custody form (**Appendix C**) for laboratory samples
8. Deliver samples to the laboratory
9. Dispose of used test strips and test kit ampules properly
10. Decontaminate all testing personnel and equipment

Field test kits or field instrumentation are permitted for all parameters except indicator bacteria and any pollutants of concern. Field kits need to have appropriate detection limits and ranges. **Table 7-2** lists various field test kits and field instruments that can be used for outfall sampling associated with the 2017 MS4 Permit parameters, other than indicator bacteria and any pollutants of concern. Analytical procedures and user's manuals for field test kits and field instrumentation are provided in **Appendix D**.

Table 7-2. Outfall Screening Sampling Parameters and Analysis Methods

Analyte or Parameter	Instrumentation (Portable Meter)	Field Test Kit
Ammonia		**API Ammonia Test Kit** CHEMetrics™ K-1410 CHEMetrics™ K-1510 (series) Hach™ NI-SA Hach N1-8 Hach™ Ammonia Test Strips
Surfactants (Detergents)		CHEMetrics™ K-9400 and K-9404 Hach™ DE-2
Chlorine		Hach CN-66F
Indicator Bacteria: *E. coli* (freshwater) or Enterococcus (saline water)	EPA certified laboratory procedure (40 CFR § 136)	NA
Pollutants of Concern[1]	EPA certified laboratory procedure (40 CFR § 136)	NA

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

Testing for indicator bacteria and any pollutants of concern must be conducted using analytical methods and procedures found in 40 CFR § 136.[4] Samples for laboratory analysis must also be stored and preserved in accordance with procedures found in 40 CFR § 136. **Table 7-3** lists analytical methods, detection limits, hold times, and preservatives for laboratory analysis of dry weather sampling parameters.

Table 7-3. Required Analytical Methods, Detection Limits, Hold Times, and Preservatives

Analyte or Parameter	Analytical Method	Detection Limit	Max. Hold Time	Preservative
Ammonia	**EPA**: 350.2, **SM**: 4500-NH3C	0.05 mg/L	28 days	Cool ≤6°C, H_2SO_4 to pH <2, No preservative required if analyzed immediately
Surfactants	**SM**: 5540-C	0.01 mg/L	48 hours	Cool ≤6°C
Chlorine	**SM**: 4500-Cl G	0.02 mg/L	Analyze within 15 minutes	None Required
Temperature	**SM**: 2550B	*NA*	Immediate	None Required
Specific Conductance	**EPA**: 120.1, **SM**: 2510B	0.2 µs/cm	28 days	Cool ≤6°C
Salinity	**SM**: 2520	-	28 days	Cool ≤6°C
Indicator Bacteria: *E.coli (freshwater)* *Enterococcus (saltwater)*	*E.coli* **EPA**: 1603 **SM**: 9221B, 9221F , 9223 B **Other**: Colilert®, Colilert-18® *Enterococcus* **EPA**: 1600 **SM**: 9230 C **Other**: Enterolert®	*E.coli* **EPA**: 1 cfu/100mL **SM**: 2 MPN/100mL **Other**: 1 MPN/100mL *Enterococcus* **EPA**: 1 cfu/100mL **SM**: 1 MPN/100mL **Other**: 1 MPN/100mL	6 hours	Cool ≤6°C, 0.0008% $Na_2S_2O_3$ (sodium thiosulfate)

EPA = EPA Methods SM = Standard Methods

[4] 40 CFR § 136: http://www.ecfr.gov/cgi-bin/text-idx?SID=b3b41fdea0b7b0b8cd6c4304d86271b7&mc=true&node=pt40.25.136&rgn=div5

7.3 Interpreting Outfall Sampling Results

Outfall analytical data can be used to help identify the major type or source of discharge. **Table 7-4** shows values identified by the U.S. EPA and the Center for Watershed Protection as typical screening values for select parameters. These represent the typical concentration (or value) of each parameter expected to be found in stormwater. Screening values that exceed these benchmarks may be indicative of pollution and/or illicit discharges.

Table 7-4. Benchmark Field Measurements for Select Parameters

Analyte or Parameter	Benchmark
Ammonia	>0.5 mg/L
Conductivity	>2,000 µS/cm
Surfactants	>0.25 mg/L
Chlorine	>0.02 mg/L (detectable levels per the 2017 MS4 Permit)
Indicator Bacteria *E.coli (freshwater)* *Enterococcus (saltwater)*	*E.coli*: the geometric mean of the five most recent samples taken during the same bathing season shall not exceed 126 colonies per 100 ml and no single sample taken during the bathing season shall exceed 235 colonies per 100 ml for designated swimming areas, 410 colonies per 100 ml for non-designated swimming areas, and 576 colonies per 100 ml for all other uses. *Enterococcus:* the geometric mean of the five most recent samples taken during the same bathing season shall not exceed 35 colonies per 100 ml and no single sample taken during the bathing season shall exceed 104 colonies per 100 ml for designated swimming areas and 500 colonies per 100 ml for all other uses.

Catchments are considered highly likely to contain illicit discharges from sanitary sources when either of the following combinations of sampling results is detected:

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

Catchments with outfall screening results that meet the above criteria shall be ranked at the top of the High Priority Catchments category for investigation.

8 Catchment Investigations

Once stormwater outfalls with evidence of illicit discharges have been identified, various methods can be used to investigate the source of the potential discharge within the outfall catchment area. Common catchment investigation techniques include, but are not limited to:

- Review of maps, historic plans, and records
- Manhole inspection
- Dry and wet weather sampling
- Video inspection
- Smoke testing
- Dye testing.

This section outlines a systematic procedure to investigate outfall catchments and identify the source(s) of potential illicit discharges. Information and data collected as part of the catchment investigations will be reported in each annual report.

8.1 System Vulnerability Factors

The Town of Glastonbury Engineering Division has reviewed relevant mapping and historic plans and records to identify areas within the catchment with higher potential for illicit connections. The following information has been reviewed:

- Plans related to the construction of the storm drainage and sanitary sewer network
- Health Department or other municipal data on septic system failures or required upgrades
- Records related to septic system breakouts, SSOs, and sanitary sewer surcharges

Based on the review of this information, the presence of any of the following **System Vulnerability Factors (SVFs)** have been identified for each catchment. SVFs indicate a risk of sanitary or septic system inputs to the MS4 under wet weather conditions.

- History of SSOs, including, but not limited to, those resulting from wet weather, high water table, or fat/oil/grease blockages.
- Sewer pump/lift stations, siphons, or known sanitary sewer restrictions where power/equipment failures or blockages could readily result in SSOs.
- Inadequate sanitary sewer level of service (LOS) resulting in regular surcharging, customer back-ups, or frequent customer complaints.
- Common or twin-invert manholes serving storm and sanitary sewer alignments.
- Common trench construction serving both storm and sanitary sewer alignments.
- Crossings of storm and sanitary sewer alignments.
- Sanitary sewer alignments known or suspected to have been constructed with an underdrain system.
- Areas formerly served by combined sewer systems.
- Sanitary sewer infrastructure defects such as leaking service laterals, cracked, broken, or offset sanitary infrastructure, directly piped connections between storm drain and sanitary sewer

infrastructure, or other vulnerability factors identified through Inflow/Infiltration Analyses, Sanitary Sewer Evaluation Surveys, or other infrastructure investigations.

- Areas formerly served by combined sewer systems.
- Any storm drain infrastructure greater than 40 years old in medium and densely developed areas.
- Widespread code-required septic system upgrades required at property transfers (indicative of inadequate soils, water table separation, or other physical constraints of the area rather that poor owner maintenance).
- History of multiple health department actions addressing widespread septic system failures (indicative of inadequate soils, water table separation, or other physical constraints of the area rather that poor owner maintenance).

A SVF inventory has been documented for each catchment (see **Table 8-1**), retained as part of this written IDDE program, and included in the annual report.

Table 8-1. Outfall Catchment System Vulnerability Factor (SVF) Inventory

Catchment ID (CTDEEP Local Basin ID #)	Receiving Water	1 History of SSOs	2 Common or Twin Invert Manholes	3 Common Trench Construction	4 Storm/Sanitary Crossings (Sanitary Above)	5 Sanitary Lines with Underdrains	6 Inadequate Sanitary Level of Service	7 Areas Formerly Served by Combined Sewers	8 Sanitary Infrastructure Defects	9 SSO Potential In Event of System Failures	10 Sanitary and Storm Drain Infrastructure >40 years Old	11 Septic with Poor Soils or Water Table Separation	12 History of BOH Actions Addressing Septic Failure
4000-00-6+R11	Connecticut River	No	No	No	No	No	No	No	No	No	No	No	No
4006-00-2-R7	Salmon Brook	No	No	No	No	No	No	No	No	No	No	No	No
4006-13-1	Salmon Brook	No	No	No	No	No	No	No	No	No	Yes	No	No
4006-09-2-R3	Salmon Brook	No	No	No	No	No	No	No	No	No	Yes	No	No
4006-12-1	Salmon Brook	No	No	No	No	No	No	No	No	No	No	No	No
4006-11-1-L3	Salmon Brook	No	No	No	No	No	No	No	No	No	No	No	No
4006-11-1-L1	Salmon Brook	No	No	No	No	No	No	No	No	No	Yes	No	No
4006-00-2-R6	Salmon Brook	No	No	No	No	No	No	Yes	No	Yes	Yes	No	No
4006-06-1	Salmon Brook	No	No	No	No	No	No	No	No	No	Yes	No	No
4006-00-2-L1	Salmon Brook	No	No	No	No	No	No	No	No	Yes	Yes	No	No
4000-00-6+R12	Connecticut River	No	No	No	No	No	No	Yes	No	No	Yes	No	No
4007-00-1	Hubbard Brook	No	No	No	No	No	No	Yes	No	Yes	Yes	No	No
4006-00-2-R5	Salmon Brook	No	No	No	No	No	No	No	No	Yes	Yes	No	No
4006-00-2-R4	Salmon Brook	No	No	No	No	No	No	No	No	Yes	Yes	No	Yes
4006-00-2-R3	Salmon Brook	No	No	No	No	No	No	No	No	Yes	Yes	No	Yes
4006-00-2-R2	Salmon Brook	No	No	No	No	No	No	No	No	Yes	Yes	No	No
4006-02-1-L1	Salmon Brook	No	No	No	No	No	No	No	No	No	No	Yes	Yes
4006-01-1-L1	Salmon Brook	No	No	No	No	No	No	No	No	No	No	Yes	Yes
4009-04-1	Roaring Brook	No	No	No	No	No	No	No	No	No	No	Yes	Yes
4007-00-1-L3	Hubbard Brook	No	No	No	No	No	No	No	No	Yes	Yes	No	No
4007-00-1-L2	Hubbard Brook	No	No	No	No	No	No	Yes	No	Yes	No	Yes	No

Catchment ID (CTDEEP Local Basin ID #)	Receiving Water	1 History of SSOs	2 Common or Twin Invert Manholes	3 Common Trench Construction	4 Storm/Sanitary Crossings (Sanitary Above)	5 Sanitary Lines with Underdrains	6 Inadequate Sanitary Level of Service	7 Areas Formerly Served by Combined Sewers	8 Sanitary Infrastructure Defects	9 SSO Potential In Event of System Failures	10 Sanitary and Storm Drain Infrastructure >40 years Old	11 Septic with Poor Soils or Water Table Separation	12 History of BOH Actions Addressing Septic Failure
4007-01-1	Hubbard Brook	Yes	No	No	No	No	No	Yes	No	Yes	Yes	No	No
4006-04-1	Salmon Brook	No	No	No	No	No	No	No	No	No	No	No	Yes
4006-04-1-L1	Salmon Brook	No	No	No	No	No	No	No	No	No	No	No	Yes
4007-00-2-R1	Hubbard Brook	No	No	No	No	No	No	No	No	Yes	Yes	No	No
4007-00-3-R1	Hubbard Brook	No	No	No	No	No	No	No	No	No	Yes	No	No
4007-00-3-R2	Hubbard Brook	No	No	No	No	No	No	No	No	No	No	No	No
4007-02-2-R1	Hubbard Brook	No	No	No	No	No	No	Yes	No	Yes	Yes	No	No
4007-03-1	Hubbard Brook	No	No	No	No	No	No	Yes	No	Yes	No	No	No
4007-04-1	Hubbard Brook	No	No	No	No	No	No	No	No	No	No	No	Yes
4007-02-1	Hubbard Brook	No	No	No	No	No	No	No	No	Yes	No	No	Yes
4007-04-1-L1	Hubbard Brook	No	No	No	No	No	No	No	No	Yes	No	No	Yes
4009-00-3-R5	Roaring Brook	No	No	No	No	No	No	Yes	No	Yes	Yes	No	Yes
4009-00-3-L6	Roaring Brook	No	No	No	No	No	No	No	No	No	No	No	Yes
4000-00-6+R12	Connecticut River	No	No	No	No	No	No	No	No	No	No	No	No
4000-00-6+R13	Connecticut River	No	No	No	No	No	No	No	No	No	No	No	No
4000-00-6+R15	Connecticut River	No	No	No	No	No	No	No	No	No	No	No	No
4000-00-6+R16	Connecticut River	No	No	No	No	No	No	No	No	No	No	No	Yes
4009-00-2-R3	Roaring Brook	No	No	No	No	No	No	No	No	Yes	Yes	No	Yes
4009-00-2-R2	Roaring Brook	No	No	No	No	No	No	No	No	No	Yes	No	No
4009-05-2-R2	Roaring Brook	No	No	No	No	No	No	No	No	No	No	No	Yes

Catchment ID (CTDEEP Local Basin ID #)	Receiving Water	1 History of SSOs	2 Common or Twin Invert Manholes	3 Common Trench Construction	4 Storm/Sanitary Crossings (Sanitary Above)	5 Sanitary Lines with Underdrains	6 Inadequate Sanitary Level of Service	7 Areas Formerly Served by Combined Sewers	8 Sanitary Infrastructure Defects	9 SSO Potential In Event of System Failures	10 Sanitary and Storm Drain Infrastructure >40 years Old	11 Septic with Poor Soils or Water Table Separation	12 History of BOH Actions Addressing Septic Failure
4009-00-3-R1	Roaring Brook	No	No	No	No	No	No	No	No	No	No	No	Yes
4009-00-3-R2	Cold Brook	No	No	No	No	No	No	No	No	No	Yes	No	Yes
4000-00-6+R14	Connecticut River	No	No	No	No	No	No	No	No	No	No	No	No
4000-00-6+R16	Connecticut River	No	No	No	No	No	No	No	No	No	No	No	Yes
4000-00-6+R17	Connecticut River	No	No	No	No	No	No	No	No	No	No	No	No
4000-00-6+R18	Connecticut River	No	No	No	No	No	No	No	No	No	No	No	No
4000-30-1	Connecticut River	No	No	No	No	No	No	No	No	No	No	No	Yes
4000-30-1-L1	Connecticut River	No	No	No	No	No	No	No	No	No	No	No	No
4000-35-1	Connecticut River	No	No	No	No	No	No	No	No	No	No	No	No
4006-02-1	Salmon Brook	No	No	No	No	No	No	No	No	No	No	No	No
4006-03-1	Salmon Brook	No	No	No	No	No	No	No	No	Yes	No	No	Yes
4007-00-1-L1	Hubbard Brook	No	No	No	No	No	No	No	No	No	No	No	No
4009-08-1	Roaring Brook	No	No	No	No	No	No	No	No	No	No	No	Yes
4009-00-2-R2	Roaring Brook	No	No	No	No	No	No	No	No	No	No	No	Yes
4009-00-2-R1	Roaring Brook	No	No	No	No	No	No	No	No	No	No	No	No
4009-03-1	Roaring Brook	No	No	No	No	No	No	No	No	No	No	No	No
4009-09-1	Roaring Brook	No	No	No	No	No	No	No	No	No	No	No	Yes
4009-00-3-L5	Roaring Brook	No	No	No	No	No	No	No	No	No	No	No	Yes
4009-07-1	Roaring Brook	No	No	No	No	No	No	No	No	No	No	No	Yes
4009-05-1	Roaring Brook	No	No	No	No	No	No	No	No	No	No	No	Yes
4009-06-1	Roaring Brook	No	No	No	No	No	No	No	No	No	No	No	No

Catchment ID (CTDEEP Local Basin ID #)	Receiving Water	1 History of SSOs	2 Common or Twin Invert Manholes	3 Common Trench Construction	4 Storm/Sanitary Crossings (Sanitary Above)	5 Sanitary Lines with Underdrains	6 Inadequate Sanitary Level of Service	7 Areas Formerly Served by Combined Sewers	8 Sanitary Infrastructure Defects	9 SSO Potential In Event of System Failures	10 Sanitary and Storm Drain Infrastructure >40 years Old	11 Septic with Poor Soils or Water Table Separation	12 History of BOH Actions Addressing Septic Failure
4009-00-3-R4	Roaring Brook	No	No	No	No	No	No	No	No	No	No	No	Yes
4009-00-2-L3	Roaring Brook	No	No	No	No	No	No	No	No	No	No	No	No
4009-00-2-L2	Roaring Brook	No	No	No	No	No	No	No	No	No	No	No	No
4008-00-2-L2	Cold Brook	No	No	No	No	No	No	No	No	No	No	No	Yes
4008-03-1	Cold Brook	No	No	No	No	No	No	No	No	No	No	No	No
4008-01-2-R1	Cold Brook	No	No	No	No	No	No	No	No	No	No	No	No
4707-06-1-L1	Blackledge River	No	No	No	No	No	No	No	No	No	No	No	No
4707-04-1	Blackledge River	No	No	No	No	No	No	No	No	No	No	No	No
4707-00-2-L3	Blackledge River	No	No	No	No	No	No	No	No	No	No	No	No
4707-00-2-R4	Blackledge River	No	No	No	No	No	No	No	No	No	No	No	No
4707-06-1	Blackledge River	No	No	No	No	No	No	No	No	No	No	No	No
4707-06-1-L2	Blackledge River	No	No	No	No	No	No	No	No	No	No	No	No

Presence/Absence Evaluation Criteria:

1. History of SSOs, including, but not limited to, those resulting from wet weather, high water table, or fat/oil/grease blockages
2. Common or twin-invert manholes serving storm and sanitary sewer alignments
3. Common trench construction serving both storm and sanitary sewer alignments
4. Crossings of storm and sanitary sewer alignments where the sanitary system is shallower than the storm drain system
5. Sanitary sewer alignments known or suspected to have been constructed with an underdrain system
6. Inadequate sanitary sewer level of service (LOS) resulting in regular surcharging, customer back-ups, or frequent customer complaints
7. Areas formerly served by combined sewer systems
8. Sanitary sewer infrastructure defects such as leaking service laterals, cracked, broken, or offset sanitary infrastructure, directly piped connections between storm drain and sanitary sewer infrastructure, or other vulnerability factors identified through Inflow/Infiltration Analyses, Sanitary Sewer Evaluation Surveys, or other infrastructure investigations
9. Sewer pump/lift stations, siphons, or known sanitary sewer restrictions where power/equipment failures or blockages could readily result in SSOs
10. Any sanitary sewer and storm drain infrastructure greater than 40 years old
11. Widespread code-required septic system upgrades required at property transfers (indicative of inadequate soils, water table separation, or other physical constraints of the area rather that poor owner maintenance)
12. History of multiple health department actions addressing widespread septic system failures (indicative of inadequate soils, water table separation, or other physical constraints of the area rather that poor owner maintenance)

8.2 Dry Weather Investigation (Manhole Inspections)

The Town of Glastonbury Engineering Division will implement a dry weather storm drain network investigation that involves systematically and progressively observing, sampling and evaluating key junction manholes in the MS4 to determine the approximate location of suspected illicit discharges.

The Town of Glastonbury Engineering Division will be responsible for implementing the dry weather manhole inspection program and making updates as necessary. Infrastructure information will be incorporated into the storm system map, and catchment delineations will be refined based on the field investigation, where necessary. The SVF inventory will also be updated based on information obtained during the field investigations, where necessary.

Several 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 system vulnerability factors. This program involves progressive inspection and sampling at manholes in the storm drain network to isolate and eliminate illicit discharges.

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

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

For most catchments, manhole inspections will proceed from the outfall moving up into the system. However, the decision to move up or down the system depends on the nature of the drainage system and the surrounding land use and the availability of information on the catchment and drainage system. Moving up the system can begin immediately when an illicit discharge is detected at an outfall, and only a map of the storm drain system is required. Moving down the system requires more advance

preparation and reliable drainage system information on the upstream segments of the storm drain system, but may be more efficient if the sources of illicit discharges are believed to be located in the upstream portions of the catchment area. Once a manhole inspection methodology has been selected, investigations will continue systematically through the catchment.

Inspection of key junction manholes will proceed as follows:

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

2. If flow is observed, a sample will be collected and analyzed at a minimum for ammonia, chlorine, and surfactants. Field kits can be used for these analyses. Sampling and analysis will be in accordance with procedures outlined in **Section 7**. Additional indicator sampling may assist in determining potential sources.

3. Where sampling results or visual or olfactory evidence indicate potential illicit discharges, the area draining to the junction manhole will be flagged for further upstream manhole investigation and/or isolation and confirmation of sources.

4. Subsequent key junction manhole inspections will proceed until the location of suspected illicit discharges can be isolated to a pipe segment between two manholes.

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

8.3 Wet Weather Investigation (Outfall Sampling)

Where a minimum of one (1) System Vulnerability Factor (SVF) is identified based on previous information or the catchment investigation, a wet weather investigation will also be conducted at the associated outfall. The Town of Glastonbury Engineering Division will be responsible for implementing the wet weather outfall sampling program and making updates as necessary.

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

Wet weather outfall sampling will proceed as follows:

1. At least one wet weather sample will be collected at the outfall for the same parameters required during dry weather screening (refer to **Table 7-3** and **Table 7-4**).

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. There is no specific rainfall amount that will trigger sampling, although minimum storm event intensities that are likely to trigger sanitary sewer interconnections are preferred.

b. Sampling during the initial period of discharge ("first flush") will be avoided.
c. To the extent feasible, sampling should occur during the spring (March through June) when groundwater levels are relatively high. Refer to **Section 7.1** for information on weather tracking.

3. If wet weather outfall sampling indicates a potential illicit discharge, then additional wet weather source sampling will be performed, as warranted, or source isolation and confirmation procedures will be followed as described in **Section 8.4**.

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

8.4 Source Isolation and Confirmation

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

- Sandbagging
- Dye Testing
- CCTV/Video Inspections
- Optical Brightener Monitoring

These methods are described in the sections below. Instructions and Standard Operating Procedures (SOPs) for these and other IDDE methods are provided in **Appendix F**.

Public notification is an important aspect of a detailed source investigation program. Prior to dye testing, or TV inspections, the Town of Glastonbury Engineering Division will notify property owners in the affected area.

8.4.1 Sandbagging

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

8.4.2 Dye Testing

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

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

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

8.4.3 CCTV/Video Inspection

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

8.4.4 Optical Brightener Monitoring

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

8.5 Illicit Discharge Removal

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

- The location of the discharge and its source(s)
- A description of the discharge
- The method of discovery
- Date of discovery
- Date of elimination, mitigation or enforcement action
- Estimate of the volume of flow removed.

8.5.1 Confirmatory Outfall Screening

Within one (1) year of removal of all identified illicit discharges and SSO sources within a catchment area, confirmatory outfall or interconnection screening will be conducted. The confirmatory screening will be conducted in dry weather unless System Vulnerability Factors have been identified, in which case both dry weather and wet weather confirmatory screening will be conducted. If confirmatory screening indicates evidence of additional illicit discharges, the catchment will be scheduled for additional investigation. Confirmatory screening is not required in catchments where no illicit discharges or System Vulnerability Factors have been identified and no previous screening indicated suspicious flows.

8.6 Follow-up Screening

Upon completion of all catchment investigations and illicit discharge removal and confirmation (if necessary), 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 **Section 7** of this document. Ongoing wet weather screening and sampling will also be conducted at outfalls where wet weather screening was required due to System Vulnerability Factors and will be conducted in accordance with the procedures described in **Section 8.1**. All sampling results will be reported in the annual report.

8.7 Illicit Discharge Prevention Procedures

The Town of Glastonbury will implement the following mechanisms and procedures to assist in the prevention of illicit discharges and SSOs:

- Spill response and prevention procedures including identification of spills, reporting procedures, containment procedures, and documentation.
- Public awareness (may be part of the education program required by Subsection 2 of the MS4 Permit).
- Reporting hotlines and training of public employees involved in the IDDE program on way to identify potential illicit discharges and SSOs.

9 Training

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

10 Progress Reporting

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

- Measures that demonstrate efforts to locate illicit discharges
- Number of illicit discharges identified and removed
- Percent and area in acres of the catchment area served by the MS4 evaluated using the catchment investigation procedure
- Number of dry weather outfall inspections/screenings
- Number of wet weather outfall inspections/sampling events
- Number of enforcement notices issued
- All dry weather and wet weather screening and sampling results
- Estimate of the volume of sewage removed, as applicable
- Number of employees trained annually.

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

Appendix A

Legal Authority (IDDE Ordinance)

Sec. 19-246. To be kept on work premises for display on request; responsibility for compliance.

Permits shall be kept on the premises at all times where work is in progress and shall be shown to any proper person asking to see the same. All persons operating under such permits shall be held responsible for conformity to the requirements thereof and of this article.
(Ord. of 10-25-88)

Note—See editor's note for Ch. 19, found at the bottom of page CD19:7, for former derivation of Ch. 19.

Sec. 19-247. Suspension, cancellation or termination.

Any permits may be suspended, cancelled or terminated by the manager, or an authorized agent thereof, on written notice to the permittee for violation of the conditions thereof or for violation of the requirements of this article or of the standards and specifications established by the manager or an authorized agent thereof for such work as provided by this article or for other reasons in the public interest. Suspension, cancellation or termination of a permit may cover all or any portion of the work contemplated thereunder as the manager, or an authorized agent thereof, may direct. Suspension, cancellation or termination of a permit shall not entitle the permittee to any compensation or reimbursement from the town or its agents for any alleged loss or expense incurred thereby, and permits shall be issued only on this condition.
(Ord. of 10-25-88)

ARTICLE III. ILLICIT DISCHARGE AND CONNECTION STORMWATER ORDINANCE

Sec. 19-251. Purpose.

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

(1) To regulate the contribution of pollutants to the storm drainage system through stormwater discharges by any user.

(2) To prohibit illicit connections and discharges to the storm drainage system.

(3) To establish legal authority to carry out all inspection, surveillance and monitoring procedures necessary to ensure compliance with this article.

(Ord. No. 317, 2-23-10)

Sec. 19-252. Definitions.

For the purposes of this article, the following shall mean:

Best management practices (BMPs) shall mean schedules of activities, prohibition of practices, general good house keeping practices, pollution prevention and educational practices, maintenance procedures, and other management practices to prevent or reduce the discharge of pollutants directly or indirectly to stormwater, receiving waters, or stormwater conveyance systems. BMPs also include treatment practices, operating procedures, and practices to control site runoff, spillage or leaks, sludge or water disposal, or drainage from raw materials storage.

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

Construction activity shall mean activities subject to NPDES construction permits. Currently these include construction projects resulting in land disturbance of five (5) acres or more. Beginning in March 2003, NPDES storm water phase II permits have been required for construction projects resulting in land disturbance of one (1) acre or more. Such activities include but are not limited to clearing and grubbing, grading, excavating, and demolition.

Hazardous materials shall mean 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.

Hearing officer shall mean the person designated from time to time by the town manager to hear appeals in accordance with section 19-265 herein.

Illegal discharge shall mean any direct or indirect non-stormwater discharge to the storm drain system, except as exempted in section 19-257 of this article.

Illicit connections shall mean an illicit connection is defined as either of the following:

Any drain or conveyance, whether on the surface or subsurface, which allows an illegal discharge to enter the storm drain system including, but not limited to, any conveyances which allow any non-stormwater discharge including sewage, process wastewater, and wash water to enter the storm drain 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 the town manager; any drain or conveyance connected from a commercial or industrial land use to the storm drain system which has not been documented in plans, maps, or equivalent records and approved by the town manager.

Industrial activity shall mean activities subject to NPDES industrial permits as defined in 40 CFR, Section 122.26 (b)(14).

National Pollutant Discharge Elimination System (NPDES) storm water discharge permit shall mean a permit issued by EPA (or by a state under authority delegated pursuant to 33 USC § 1342(b)) 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.

Non-stormwater discharge shall mean any discharge to the storm drain system that is not composed entirely of stormwater.

Person shall mean 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.

Pollutant shall mean anything which causes or contributes to pollution. Pollutants may include, but are not limited to: paints, varnishes, and solvents; oil and other automotive fluids; non-hazardous liquid and solid wastes and yard wastes; refuse, rubbish, garbage, litter, or other discarded or abandoned objects, ordinances, and accumulations, so that same may cause or contribute to pollution; floatables; pesticides, herbicides, and fertilizers; hazardous substances and wastes; sewage, fecal coliform and pathogens; dissolved and particulate metals; animal wastes; wastes and residues that result from constructing a building or structure; and noxious or offensive matter of any kind.

Facility shall mean any building, lot, parcel of land, or portion of land whether improved or unimproved including adjacent sidewalks and parking strips.

Storm drainage system shall mean the 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, piped storm drains, pumping facilities, retention and detention basins, natural and human-made or altered drainage channels, reservoirs, and other drainage structures.

Stormwater shall mean any surface flow, runoff, and drainage consisting entirely of water from any form of natural precipitation, and resulting from such precipitation.

Stormwater pollution prevention plan shall mean a document that 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.

Town manager shall mean the Glastonbury Town Manager or his/her authorized designee.

Wastewater shall mean any water or other liquid, other than uncontaminated stormwater, discharged from a facility.

Watercourse shall mean a permanent or intermittent stream or other body of water, either natural or man-made, which gathers or carries surface water. This includes but is not limited to lakes, ponds, rivers, streams and any other surface water defined as a watercourse by the town's inland wetland regulations.
(Ord. No. 317, 2-23-10)

Sec. 19-253. Applicability.

This article shall apply to all water entering the storm drain system generated on any developed and undeveloped lands unless explicitly exempted by the town manager.
(Ord. No. 317, 2-23-10)

Sec. 19-254. Responsibility for administration.

The town manager shall administer, implement, and enforce the provisions of this article. The town manager may delegate his/her powers and duties under this article to an authorized designee.
(Ord. No. 317, 2-23-10)

Sec. 19-255. Severability.

The provisions of this article are hereby declared to be severable. If any provision, clause, sentence, or paragraph of this article 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 article.
(Ord. No. 317, 2-23-10)

Sec. 19-256. Ultimate responsibility.

The standards set forth herein and promulgated pursuant to this article are minimum standards; therefore this article does not intend nor imply that compliance by any person will ensure that there will be no contamination, pollution, nor unauthorized discharge of pollutants.
(Ord. No. 317, 2-23-10)

Sec. 19-257. Discharge prohibitions.

(1) *Prohibition of illegal discharges.* No person shall discharge or cause to be discharged into the storm drainage system any materials, including but not limited to, pollutants or waters containing any pollutants that cause or contribute to a violation of applicable water quality standards, other than stormwater.

The commencement, conduct or continuance of any illegal 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 article: water line flushing or other potable water sources, landscape irrigation or lawn watering, diverted stream flows, rising ground water, ground water infiltration to storm drains, uncontaminated pumped ground water, foundation or footing drains (not including active groundwater dewatering systems), crawl space pumps, air conditioning condensation, springs, non-commercial washing of vehicles, natural riparian habitat or wet-land flows, swimming pools (if dechlorinated - typically less than one (1) PPM chlorine), fire fighting activities, and any other water source not containing pollutants.

(b) Discharges specified in writing by the town manager as being necessary to protect public health and safety.

(c) Dye testing is an allowable discharge, but requires a written notification to the town manager prior to the time of the test. Said written notification may be in the form of electronic mail, facsimile transmission or hard copy letter format.

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

(2) *Prohibition of illicit connections.*

(a) The construction, use, maintenance or continued existence of illicit connections to the storm drain system is prohibited.

(b) This prohibition expressly includes, without limitation, illicit connections made in the past, regardless of whether the connection was permissible under law or practices applicable or prevailing at the time of connection.

(c) A person is considered to be in violation of this article if the person connects a line conveying sewage to the storm drainage system, or allows such a connection to continue.

(Ord. No. 317, 2-23-10)

Sec. 19-258. Suspension of storm drainage system access.

Suspension due to illicit discharges in emergency situations. The town manager may, without prior notice, suspend storm drainage system 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 storm drainage system or Waters of the United States. If the violator fails to comply with a suspension order issued in an emergency, the town manager may take such steps as deemed necessary to prevent or minimize damage to the storm drainage system or Waters of the United States, or to minimize danger to persons.

Suspension due to the detection of illicit discharge. Any person discharging to the storm drainage system in violation of this article may have their storm drainage system access terminated if such termination would abate or reduce an illicit discharge. The town manager will notify a violator of the proposed termination of its storm drainage system access. The violator may petition the town manager for reconsideration and hearing.

A person commits an offense if the person reinstates storm drainage system access to premises terminated pursuant to this section, without the prior approval of the town manager.
(Ord. No. 317, 2-23-10)

Sec. 19-259. Industrial or construction activity discharges.

Any person subject to an industrial or construction activity NPDES stormwater discharge permit shall comply with all provisions of such permit. Proof of compliance with said permit may be required in a form acceptable to town manager prior to the allowing of discharges to the storm drainage system.
(Ord. No. 317, 2-23-10)

Sec. 19-260. Right of entry, evaluation, and monitoring of damages.

(a) *Applicability.* This section applies to all facilities that have stormwater discharges associated with industrial or construction activity, and any other commercial or residential facilities that discharge stormwater to the storm drainage system.

(b) *Access to facilities.*

(1) The town manager shall be permitted to enter and inspect facilities subject to regulation under this article as often as may be necessary to determine compliance with this article. 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 manager.

(2) Facility operators shall allow the town manager ready access to all parts of the facility for the purposes of inspection, sampling, examination and copying of records that must be kept under the conditions of a town, state or federal NPDES permit to discharge stormwater, and the performance of any additional duties as defined by state and federal law.

(3) The town manager shall have the right to set up on any NPDES permitted facilities such devices as are necessary in the opinion of the town manager to conduct monitoring and/or sampling of the facility's stormwater discharge.

(4) The town manager has the right to require the installation of sampling and monitoring equipment on any NPDES permitted facility by the discharger at it's own expense. 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.

(5) Any temporary or permanent obstruction to safe and easy access to the facility to be inspected and/or sampled shall be promptly removed by the operator at the written or oral request of the town manager and shall not be replaced. The costs of clearing such access shall be borne by the operator.

(6) Unreasonable delays in allowing the town manager access to a permitted facility is a violation of a stormwater discharge permit and of this article. A person who is the operator of a facility with a NPDES permit to discharge stormwater associated with industrial activity commits an offense if the person denies the town manager reasonable access to the permitted facility for the purpose of conducting any activity authorized or required by this article.

(7) If the town manager has been refused access to any part of the facility from which stormwater is discharged, and he/she is able to demonstrate probable cause to believe that there may be a violation of this article, 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 article or any order issued hereunder, or to protect the overall public health, safety, and welfare of the community, then the town manager may seek issuance of a search warrant from any court of competent jurisdiction.

(8) While performing the necessary work on private properties referred to in subsections (b)(1) through (5) of this section, the town manager shall observe all safety rules applicable to the premises established by the facility.

(Ord. No. 317, 2-23-10)

Sec. 19-261. Requirement to prevent, control, and reduce stormwater pollutants by the use of best management practices.

The town manager will adopt requirements identifying best management practices 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 U.S. The owner or operator of a commercial or industrial establishment shall provide, at their own expense, reasonable protection from accidental discharge of prohibited materials or other wastes into the storm drainage system or watercourses through the use of these structural and non-structural BMPs. Further, any person responsible for a property or facility, which 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 storm drainage system as directed by the town manager. Compliance with all terms and conditions of a valid NPDES permit authorizing the discharge of stormwater associated with industrial or construction activity, to the extent practicable, shall be deemed compliance with the provisions of this section. These BMPs shall be part of a stormwater pollution prevention plan (SWPP) as necessary for compliance with requirements of the NPDES permit.

(Ord. No. 317, 2-23-10)

Sec. 19-262. Watercourse protection.

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, excessive vegetation, 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.

(Ord. No. 317, 2-23-10)

Sec. 19-263. 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 water of the U.S. 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 manager in person or by phone, electronic mail 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 manager within three (3) 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 three (3) years.
(Ord. No. 317, 2-23-10)

Sec. 19-264. Enforcement.

(a) *Notice of violation.* Whenever the town manager finds that a person has violated a prohibition or failed to meet a requirement of this article, he/she shall order compliance by written notice of violation to the responsible person. Such notice may require, without limitation:

(1) The performance of monitoring, analyses, and reporting;

(2) The elimination of illicit discharges or connections;

(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; and

(5) The implementation of source control or treatment BMPs.

If abatement of a violation and/or restoration of affected property are required, the notice shall set forth a deadline within which such remediation or restoration must be completed. Said notice shall further advise that, should the violator fail to remediate or restore within the established deadline, the town manager may order the work be done by a designated governmental agency or a contractor and the violator fined an amount equal to the expense thereof. in addition to any fines imposed in subsections (b) or (c) of this section.

(b) *Procedure for issuance of citations.*

(1) The town manager shall issue a written notice to any person who violates any provision of this article. No written notice may be issued against the state or any state official or state employee acting within the scope of his employment. Such written notice shall explain the nature of the violation and the steps required for compliance, and shall allow a seventy-two-hour period within which to correct the violation or within which a written plan for correction shall be submitted to the town manager, setting forth a reasonable time period for correction of the violation as agreed upon by

the town manager. A written notice issued pursuant to this subsection shall be served: 1) by hand delivery, at which time the seventy-two-hour period shall begin; or 2) by certified mail return receipt requested and by regular first class mail. Three (3) business days shall be allowed for mail delivery of the notice prior to the commencement of the seventy-two-hour period.

(2) Within two (2) business days after the period for correction established in subsection (a) expires, the town manager shall reinspect the subject property to determine compliance.

(3) If the violations set forth in the written notice have not been corrected at the time of reinspection, the town manager, in his/her capacity as chief executive officer, may issue a citation and fine of up to two hundred fifty dollars ($250.00) for each violation by hand, by certified return receipt requested, by leaving a true and attested copy of the citation at the usual place of abode or residence of the person in violation, or in the case of a corporate or business entity, delivery to the business address or the address of the statutory agent of said entity. No such fine shall be levied against the state or any state official or state employee acting within the scope of his employment. All citations issued pursuant to this section shall state the violation for which the citation is being issued, the fine imposed for the violation, the time period within which the fine must be paid, and an address for remittance of the fine.

(c) *Compliance periods after citation.*

(1) Any violation for which a citation is issued and which is not corrected within the time period specified in subsection (b) of this section shall be a new violation of this article, and every twenty-four-hour period thereafter in which the violation is not corrected shall constitute a new violation. The citation shall include a notice to the alleged violator that each twenty-four-hour period of noncompliance after the time period specified in section [19-264(b)] shall constitute a new violation and a new fine of up to two hundred fifty dollars ($250.00).

(2) The town manager shall not be responsible for a daily reinspection. Rather, the person to whom the citation has been issued shall be responsible for reporting subsequent compliance by way of written report to the town manager. The town manager shall reinspect to confirm compliance within one (1) business day of receipt of such report.

(d) *Payment of fines.*

(1) All fines imposed under this article which are uncontested shall be made payable to the Town of Glastonbury and shall be received by the town manager within ten (10) calendar days from date of notice of the citation. All fines collected by the town manager shall be deposited into the Town of Glastonbury General Fund.

(Ord. No. 317, 2-23-10)

Sec. 19-265. Appeals.

(a) If the town manager issues a notice of violation, the town manager shall send written notice of action and a statement of the right to an appeal to the facility operator or facility owner.

(b) The facility operator or facility owner may appeal a notice of violation to the town manager by setting forth in writing the reasons for the appeal within fifteen (15) calendar days after date of the notice of violation.

(c) The facility operator or facility owner may appeal the decision of the town manager to the hearing officer as follows:

(1) The facility operator or facility owner may file a written request for a review by paying an appeal fee of twenty-five dollars ($25.00) and setting forth the reasons for the appeal within twenty (20) calendar days after the date of notification of the decision from the town manager. Appeal fees shall be returned to the appealing facility operator or facility owner if the appeal is upheld.

(2) The hearing officer shall conduct a hearing within thirty (30) calendar days of the receipt of the request. The hearing shall be informal in nature. The person requesting the hearing may testify concerning the facts, circumstances and nature of his/her appeal and may present supporting documentation.

The hearing officer shall render a written decision within fifteen (15) calendar days of the hearing. The decision will affirm or reverse the decision of the town manager.

(d) Filing of a request for appeal shall stay the action by the town manager requiring payment of a surcharge until the hearing officer has completed his review. If a request for appeal is not made within the twenty-calendar day period, the action of the town manager is final.
(Ord. No. 317, 2-23-10)

Sec. 19-266. Injunctive relief.

It shall be unlawful for any person to violate any provision or fail to comply with any of the requirements of this article. If a person has violated or continues to violate the provisions of this article, the town manager may petition for a preliminary or permanent injunction restraining the person from activities which would create further violations or compelling the person to perform abatement or remediation of the violation.
(Ord. No. 317, 2-23-10)

Sec. 19-267. Compensatory action.

In lieu of enforcement proceedings, penalties, and remedies authorized by this article, the town manager may impose upon a violator alternative compensatory actions, such as storm drain stenciling, attendance at compliance workshops, watershed cleanup, or other related activities.
(Ord. No. 317, 2-23-10)

Sec. 19-268. 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 article 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 nuisance may be taken.
(Ord. No. 317, 2-23-10)

Sec. 19-269. Criminal prosecution.

Any person that has violated or continues to violate this article shall be liable to criminal prosecution to the fullest extent of the law. The town manager may recover all attorney's fees, court costs, and other expenses associated with enforcement of this article, including sampling and monitoring expenses.
(Ord. No. 317, 2-23-10)

Sec. 19-270. Remedies not exclusive.

The remedies listed in this article 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 manager to seek cumulative remedies.
(Ord. No. 317, 2-23-10)

Sec. 19-271. Adoption of ordinance.

This article shall be in full force and effect ten (10) days after publication. All prior ordinances and parts of ordinances in conflict with this article are hereby repealed.
(Ord. No. 317, 2-23-10)

Secs. 19-272—19-275. Reserved.

Note—See editor's note for Ch. 19, found at the bottom of page CD19:7, for former derivation of Ch. 19.

Appendix B

Storm System Mapping

The Town of Glastonbury's current storm drainage mapping can be found on the Town's GIS page of the website located at **https://gis.glastonburyct.gov/Html5/Index.html?viewer=public**

Appendix C

Field Forms

TOWN OF GLASTONBURY
ENGINEERING DIVISION
OUTFALL INSPECTION FIELD SHEET

Section 1: Background Data

Subwatershed:		Outfall ID:
Today's date:		Time (Military):
Investigators:		Form completed by:
Temperature (°F):	Rainfall (in.): Last 24 hours:	Last 48 hours:
Snow Coverage: (inches)		Photo #s:
Street Name:		Nearest Address:
Land Use in Drainage Area (Check all that apply):		
☐ Industrial		☐ Open Space
☐ Ultra-Urban Residential		☐ Institutional
☐ Suburban Residential		Other: _____
☐ Commercial		Known Industries: _____
Notes (e.g.., origin of outfall, if known):		

Section 2: Outfall Description

LOCATION	MATERIAL	SHAPE		DIMENSIONS (IN.)	SUBMERGED
☐ **Closed Pipe**	☐ RCP ☐ CMP ☐ PVC ☐ HDPE ☐ Steel ☐ Other: _____	☐ Circular ☐ Eliptical ☐ Box ☐ Other: ____	☐ Single ☐ Double ☐ Triple ☐ Other: ____	Diameter/Dimensions: _____	In Water: ☐ No ☐ Partially ☐ Fully With Sediment: ☐ No ☐ Partially ☐ Fully
☐ **Open drainage**	☐ Concrete ☐ Earthen ☐ rip-rap ☐ Other: ____	☐ Trapezoid ☐ Parabolic ☐ Other: ____		Depth: ____ Top Width: ____ Bottom Width: ____	
☐ **In-Stream**	**(applicable when collecting samples)**				
Flow Present?	☐ Yes ☐ No	***If No, Skip to Section 5***			
Flow Description (If present)	☐ Trickle ☐ Less than 1/3 Full ☐ 1/3 to 2/3 Full ☐ Greater than 2/3 full				

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS (COMPLETE THIS SECTION ONLY IF SAMPLING OUTFALL)				
PARAMETER		**RESULT**	**UNIT**	**EQUIPMENT**
☐Flow #1	Volume		Liter	Bottle
	Time to fill		Sec	
☐Flow #2	Flow depth		In	Tape measure
	Flow width	____' ____"	Ft, In	Tape measure
	Measured length	____' ____"	Ft, In	Tape measure
	Time of travel		S	Stop watch

Outfall Inspection Field Sheet

Section 4: Physical Indicators for Flowing Outfalls Only

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

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

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

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

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

Section 6: Overall Outfall Characterization

☐ Unlikely ☐ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 7: Data Collection

1.	Sample for the lab?	☐ Yes	☐ No	
2.	If yes, collected from:	☐ Flow	☐ Pool	
3.	Intermittent flow trap set?	☐ Yes	☐ No	If Yes, type: ☐ OBM ☐ Caulk dam

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

Appendix D

Water Quality Analysis Instructions, User's Manuals and Standard Operating Procedures

21524-05-0609

API®
Aquarium Pharmaceuticals

AMMONIA (NH_3/NH_4^+) TEST KIT INSTRUCTIONS

Why Test for Ammonia?

Fish continually release ammonia (NH_3) directly into the aquarium/pond through their gills, urine, and solid waste. Uneaten food and other decaying organic matter also add ammonia to the water. A natural mechanism exists that controls ammonia in the aquarium/pond – the biological filter. However, as with any natural process, imbalances can occur. So, testing for the presence of toxic ammonia is essential. Ammonia in the aquarium/pond may damage gill membranes, and prevent fish from carrying on normal respiration. High levels of ammonia quickly lead to fish death. Even trace amounts stress fish, suppressing their immune system and increasing the likelihood of disease. Water should be tested for ammonia every other day when the aquarium is first set up, and once a week after the biological filter has been established (in about 4 - 6 weeks).

Testing Tips

This salicylate-based ammonia test kit reads the total ammonia level in parts per million (ppm) which are equivalent to milligrams per liter (mg/L) from 0 - 8.0 ppm (mg/L).

Directions

To remove childproof safety cap: With one hand, push red tab left with thumb while unscrewing cap with free hand.

1. Fill a clean test tube with 5 ml of water to be tested (to the line on the tube).
2. Add 8 drops from Ammonia Test Solution Bottle #1, holding the dropper bottle upside down in a completely vertical position to assure uniform drops.
3. Add 8 drops from Ammonia Test Solution Bottle #2, holding the dropper bottle upside down in a completely vertical position to assure uniform drops.
4. Cap the test tube & shake vigorously for 5 seconds.
5. **Wait 5 minutes for the color to develop.**
6. Read the test results by comparing the color of the solution to the appropriate Ammonia Color Card (choose either Freshwater or Saltwater. For ponds, use the freshwater color card). The tube should be viewed in a well-lit area against the white area of the card. The closest match indicates the ppm (mg/L) of ammonia in the water sample. Rinse the test tube with clean water after use. Note: Do not pour test tube contents back into the aquarium/pond.

What the Test Results Mean

In a new aquarium/pond, the ammonia level may surge to 4 ppm (mg/L) or more, and then fall rapidly as the biological filter becomes established. The ammonia will be converted to nitrite (also toxic), then to nitrate. This process may take several weeks. Use API STRESS ZYME® to speed up the development of the biological filter. In an established aquarium/pond, the ammonia level should always remain at 0 ppm (mg/L); any level above 0 can harm fish. The presence of ammonia indicates possible over-feeding, too many fish, or inadequate biological filtration.

IRRITANT **CORROSIVE**

Bottle #1 contains sodium salicylate.
May cause sensitisation by skin contact.
Keep out of the reach of children.
Avoid contact with skin.
Wear suitable gloves.
If swallowed, seek medical advice immediately and show this container or label.
Bottle #2 contains sodium hydroxide and sodium hypochlorite.
Causes severe burns.
Contact with acids liberates toxic gas.
Toxic by inhalation, in contact with skin and if swallowed.
Danger of cumulative effects.
Keep locked up and out of the reach of children.
Keep away from food, drink and animal feeding stuffs.
In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
If contact lens is present, remove after the first 5 minutes, then continue rinsing.
After contact with skin, wash immediately with plenty of water.
Remove contaminated clothing.
Wear suitable gloves and eye/face protection.
In case of accident, or if you feel unwell, seek medical advice immediately (show label where possible).
Do not mix with acidic materials.

Reducing Ammonia Levels

In a newly setup aquarium or pond, ammonia and nitrite levels will rise and then fall in the first few weeks, indicating the formation of the biological filter. However, to reduce ammonia levels within the first few weeks use API AMMO LOCK® or PondCare® AMMO LOCK as directed. After AMMO LOCK is added the ammonia will be converted into a non-toxic form. The Ammonia test kit will still show the ammonia, even though treating with AMMO LOCK has made it non-toxic. The biological filter will then consume the non-toxic ammonia, converting it to nitrite and then to nitrate.

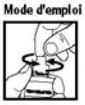
In freshwater aquariums, adding API AMMO-CARB® or AMMO-CHIPS®, or in ponds PondCare AMMO ROCKS, to the filter will remove ammonia and improve water quality. In addition, a water change (25% or more) will reduce ammonia. In an emergency, a daily water change may be required over several days. Be sure to use a water conditioner, like STRESS COAT or AMMO LOCK, when adding tap water back into the aquarium or pond.

FR Mode d'emploi

Pourquoi analyser la concentration en ammoniaque?

L'ammoniac (NH_3) est produit par les branchies, l'urine et les déjections des poissons tropicaux et se répand directement dans l'eau de l'aquarium. L'ammoniac provient également de la nourriture et d'autres matières organiques en décomposition. Une forte concentration en ammoniac peut entraîner la perte rapide des poissons. Même des traces d'ammoniac peuvent stresser les poissons, ralentir le fonctionnement de leur système immunitaire et diminuer leur résistance aux maladies. Lors de l'installation d'un nouvel aquarium, la concentration en ammoniaque doit être analysée tous les deux jours. Une fois le filtre biologique établi (de 4 à 6 semaines), l'analyse de la concentration en ammoniaque doit être effectuée une fois par semaine.

Mode d'emploi



Pour retirer le bouchon à l'épreuve des enfants: D'une main, pousser la languette rouge vers la gauche avec le pouce et dévisser le bouchon avec la main libre.

1. Remplir un tube à essai propre avec 5 ml d'eau de l'aquarium (jusqu'à la graduation sur le tube).
2. En tenant le flacon à la verticale, ajouter 8 gouttes du flacon n° 1 de Ammonia (NH_3/NH_4^+) Test Solution.
3. Puis, en tenant le flacon à la verticale, ajouter 8 gouttes du flacon n° 2 d'Ammonia (NH_3/NH_4^+) Test Solution.
4. Mettre le bouchon sur le tube à essai et agiter vigoureusement pendant 5 secondes.
5. **Attendre 5 minutes afin que la couleur se développe.**
6. Lire le résultat de l'analyse en comparant la couleur de la solution au nuancier Ammonia Color Card (choisir eau douce ou eau de mer). Le tube doit être placé dans une zone bien éclairée sur le fond blanc du nuancier. La couleur la plus proche indique la concentration en ammoniaque en mg/L de l'échantillon d'eau. Rincer le tube à essai à l'eau propre après chaque utilisation.

Lecture des résultats

Dans un nouvel aquarium, la concentration en ammoniaque peut atteindre 4 mg/L ou plus pour ensuite diminuer rapidement une fois le filtre biologique établi. L'ammoniaque est alors transformé en nitrites (également toxiques), puis en nitrates. Ce processus peut s'étaler sur plusieurs semaines. Utiliser API STRESS ZYME pour accélérer le développement du filtre biologique. Dans un aquarium établi, la concentration en ammoniaque doit toujours être de 0 mg/L. La présence d'ammoniaque est habituellement un indice d'une suralimentation, d'une surpopulation ou d'une filtration biologique inadéquate.

IRRITANT **CORROSIF**

Bouteille de solution N°1 contient de Salicylate de sodium.
Peut entraîner une sensibilisation par contact avec la peau.
Conserver hors de portée des enfants.
Éviter le contact avec la peau.
Porter des gants appropriés.
En cas d'ingestion, consulter immédiatement un médecin et lui montrer l'emballage ou l'étiquette.
Le flacon n°2 contient de l'hydroxyde de sodium et de l'hypochlorite de sodium.
Provoque de graves brûlures.
Au contact d'un acide, dégage un gaz toxique.
Toxique par inhalation, par contact avec la peau et par ingestion.
Danger d'effets cumulatifs.
Conserver sous clef et hors de portée des enfants.
Conserver à l'écart des aliments et boissons, y compris ceux pour animaux.
En cas de contact avec les yeux, laver immédiatement et abondamment avec de l'eau et consulter un spécialiste.
Si vous portez des lentilles de contacts, retirez les après 5 minutes puis continuer à rincer.
Après contact avec la peau, se laver immédiatement et abondamment avec de l'eau.
Oter tout vêtements contaminés.
Porter des gants appropriés et un appareil de protection des yeux/du visage.
En cas d'accident ou de malaise, consulter immédiatement un médecin (si possible, lui montrer l'étiquette).
Ne pas mélanger avec des acides.

Réduction de la concentration en ammoniaque

Pour détoxiquer instantanément l'ammoniac, utiliser API AMMO LOCK. AMMO LOCK n'élimine pas l'ammoniac, il transforme simplement l'ammoniac toxique en une forme non toxique. Lorsque l'eau de l'aquarium est traitée à l'aide de AMMO LOCK, le résultat de l'analyse de la concentration en ammoniaque reste donc positif, même si l'ammoniaque présent n'est plus toxique. Dans les aquariums d'eau douce, l'ajout de API AMMO-CARB or AMMO-CHIPS au filtre permet d'éliminer l'ammoniaque et d'améliorer la qualité de l'eau. Par ailleurs, un changement d'eau (25 % ou plus) permet de réduire la concentration en ammoniaque. En cas d'ajout d'eau du robinet dans l'aquarium, s'assurer d'utiliser un conditionneur d'eau tel que STRESS COAT ou AMMO LOCK.

ES Instrucciones de uso

¿Por qué analizar la concentración en amoniaco?

El amoniaco (NH_3) es producido por las branquias, la orina y las defecaciones de los peces tropicales y se extiende directamente en el agua del acuario. El amoniaco también procede de la comida y otras materias orgánicas en descomposición. Una fuerte concentración en amoniaco puede provocar la muerte rápida de los peces. Incluso trazas de amoniaco pueden estresar los peces, ralentizar el funcionamiento de su sistema inmunitario y reducir su resistencia a las enfermedades. Durante la instalación de un nuevo acuario, la concentración en amoniaco debe ser analizada cada día. Una vez establecido el filtro biológico (de 4 a 6 semanas), el análisis de la concentración en amoniaco debe efectuarse una vez por semana.

Instrucciones de uso

Para retirar el tapón de seguridad para niños: Con una mano, empujar la lengüeta roja con el pulgar hacia la izquierda y desenroscar el tapón con la otra mano.

1. Llenar un tubo de ensayo limpio con 5 ml de agua del acuario (hasta la marca sobre el tubo).
2. Manteniendo vertical el frasco, añadir 8 gotas del frasco n° 1 de Ammonia (NH_3/NH_4^+) Test Solution.
3. Luego, manteniendo vertical el frasco, añadir 8 gotas del frasco n° 2 de Ammonia (NH_3/NH_4^+) Test Solution.
4. Poner el tapón sobre el tubo de ensayo y agitar vigorosamente durante 5 segundos.
5. **Esperar 5 minutos con el fin de que el color se desarrolle.**
6. Leer el resultado del análisis comparando el color de la solución con la carta Ammonia Color Card (elegir agua dulce o agua salada). El tubo debe colocarse en una zona bien iluminada sobre el fondo blanco de la carta. El color más parecido indica la concentración en amoniaco en mg/L de la muestra de agua. Enjuagar el tubo de ensayo con agua limpia después de cada uso.

Lectura de los resultados

En un acuario nuevo, la concentración en amoniaco puede alcanzar 4 mg/L o más para luego reducirse rápidamente una vez que se haya establecido el filtro biológico. El amoniaco es entonces transformado en nitrito (también tóxico), luego en nitrato. Este proceso puede prolongarse durante varias semanas. Utilizar API STRESS ZYME para acelerar el desarrollo del filtro biológico. En un acuario establecido, la concentración en amoniaco siempre debe ser de 0 mg/L. La presencia de amoniaco es habitualmente un indicio de una sobrealimentación, de una sobrepoblación o de una filtración biológica inadecuada.

IRRITANTE **CORROSIVO**

Frasco No. 1 contiene Salicilato de sodio.
Posibilidad de sensibilización en contacto con la piel.
Manténgase fuera del alcance de los niños.
Evítese el contacto con la piel.
Úsense guantes adecuados.
En caso de ingestión, acúdase inmediatamente al médico y muéstresele la etiqueta o el envase.
El frasco n° 2 contiene hidróxido de sodio e hipoclorito de sodio.
Provoca quemaduras graves.
En contacto con ácidos libera gases tóxicos.
Tóxico por inhalación, por ingestión y en contacto con la piel.
Peligro de efectos acumulativos.
Consérvese bajo llave y manténgase fuera del alcance de los niños.
Manténgase lejos de alimentos, bebidas y piensos.
En caso de contacto con los ojos, lávense inmediata y abundantemente con agua y acúdase a un médico.
Si tiene lentes de contacto, quítelos después de 5 minutos y continúe enjuagando.
En caso de contacto con la piel, lávese inmediata y abundantemente con agua.
Quítese la ropa manchada o salpicada
Úsense guantes adecuados y protección para los ojos/la cara.
En caso de accidente o malestar, acúdase inmediatamente al médico (si es posible, muéstresele la etiqueta).
No mezclar con ácidos.

Reducción de la concentración en amoniaco

Para desintoxicar instantáneamente el amoniaco, utilizar API AMMO LOCK. AMMO LOCK no elimina el amoniaco, transforma simplemente el amoniaco tóxico en una forma no tóxica. Cuando el agua del acuario está tratada mediante AMMO LOCK, el resultado del análisis de la concentración en amoniaco permanece por lo tanto positivo, aunque el amoniaco presente deja de ser tóxico. En los acuarios de agua dulce, añadir API AMMO-CARB o AMMO-CHIPS al filtro permite eliminar el amoniaco y mejorar la calidad del agua. Por otra parte, un cambio de agua (25 % o más) permite reducir la concentración en amoniaco. En caso de añadir agua del grifo en el acuario, asegurarse de utilizar un acondicionador de agua tal como STRESS COAT o AMMO LOCK.

IT Modo d'uso

Perché analizzare la concentrazione di Ammoniaca?

I pesci tropicali eliminano continuamente ammoniaca (NH_3) direttamente nell'acquario attraverso le loro pinne, l'urina ed i rifiuti solidi. Gli avanzi di mangime ed altre materie organiche decomponibili aggiungono inoltre ammoniaca all'acqua. Livelli elevati di ammoniaca causano rapidamente la morte dei pesci. Anche quantità minime provocano stress ai pesci sopprimendo il loro sistema immunitario e aumentando la probabilità di malattie. Eseguire il test dell'ammoniaca tutti i giorni dopo la prima installazione dell'acquario e una volta alla settimana una volta che il filtro biologico sia stato installato (circa 4 - 6 settimane).

Istruzioni

Per togliere il coperchio di sicurezza a prova di bambino: con il pollice di una mano, spingere a sinistra la striscetta rossa mentre con l'altra mano si svita il coperchio.

1. Riempire una provetta pulita con 5 ml d'acqua da testare (fino alla linea di demarcazione).
2. Mantenendo la provetta verticalmente, aggiungere 8 gocce del flacone 1° di Ammonia (NH_3/NH_4^+) Test Solution.
3. Poi, mantenendo la provetta verticalmente, aggiungere 8 gocce dal flacone n°2 di Ammonia (NH_3/NH_4^+) Test Solution.
4. Rimettere il coperchio della provetta ed agitare vigorosamente per 5 secondi.
5. **Attendere 5 minuti affinché il colore possa svilupparsi.**
6. Leggere il risultato del test confrontando il colore della soluzione con l'apposita Ammonia Color Card (è possibile utilizzare acqua dolce o salata). La provetta deve essere guardata in un ambiente ben illuminato confrontandola con l'area bianca della scheda. Il risultato più simile indica la quantità di ammoniaca presente nel campione d'acqua espressa in mg/l. Sciacquare la provetta del test con acqua pulita dopo l'uso.

Lettura dei risultati del Test

In un acquario nuovo, il livello di ammoniaca può salire fino a 4 mg/l o più, e in seguito diminuire rapidamente man mano che la maturazione del filtro biologico viene completata. L'ammoniaca sarà convertita in nitriti (anche essi tossici), e in seguito in nitrati. Tale processo può durare numerose settimane. Utilizzare API STRESS ZYME per accelerare lo sviluppo del filtro biologico. In un acquario già installato, il livello di ammoniaca deve rimanere sempre a 0 mg/l. La presenza di ammoniaca indica la possibilità di sovra alimentazione, sovrabbondanza di pesci oppure una filtrazione biologica inadeguata.

IRRITANTE **CORROSIVO**

Il flacone N°1 contiene salicilato di sodio.
Può provocare sensibilizzazione per contatto con la pelle.
Conservare fuori della portata dei bambini.
Evitare il contatto con la pelle.
Usare guanti adatti.
In caso d'ingestione consultare immediatamente il medico e mostrargli il contenitore o l'etichetta.
Bottiglia #2 contiene idrossido di sodio e ipoclorito di sodio.
Provoca gravi ustioni.
A contatto con acidi libera gas tossico.
Tossico per inalazione, contatto con la pelle e per ingestione.
Pericolo di effetti cumulativi.
Conservare sotto chiave e fuori della portata dei bambini.
Conservare lontano da alimenti o mangimi e da bevande.
In caso di contatto con gli occhi, lavare immediatamente e abbondantemente con acqua e consultare un medico.
In caso di contatto con la pelle lavarsi immediatamente ed abbondantemente con acqua.
Usare guanti adatti e proteggersi gli occhi/la faccia.
In caso di incidente o di malessere consultare immediatamente il medico (se possibile, mostrargli l'etichetta).
Non mescolare con sostanze acide.

Ridurre la concentrazione di Ammoniaca

Per detossificare istantaneamente l'ammoniaca, utilizzare API AMMO LOCK. AMMO LOCK non elimina l'ammoniaca ma semplicemente converte l'ammoniaca tossica in una forma non tossica. Il Kit del test di ammoniaca test risulteranno ancora positivi all'ammoniaca anche quando il trattamento con AMMO LOCK l'avrà resa non tossica. Negli acquari d'acqua dolce, aggiungendo API AMMO-CARB o AMMO-CHIPS al filtro si eliminerà l'ammoniaca migliorando la qualità dell'acqua. Inoltre, effettuando un cambio dell'acqua (25% o più) sarà possibile ridurre l'ammoniaca. Quando si aggiunge acqua di rubinetto all'acquario accertarsi di utilizzare un condizionatore dell'acqua come STRESS COAT o AMMO LOCK.

PT Instruções de utilização

Porquê analisar a concentração em amoníaco ?

O amoníaco (NH_3) é produzido pelas brânquias, a urina e as dejecções dos peixes tropicais e espalha-se directamente na água do aquário. O amoníaco provém também dos alimentos e de outras matérias orgânicas em decomposição. Uma forte concentração em amoníaco pode implicar uma morta rápida dos peixes. Mesmos vestígios de amoníaco podem causar stress nos peixes, reduzir o funcionamento do respectivo sistema imunitário e diminuir a capacidade de resistência às doenças. Aquando da instalação de um novo aquário, a concentração em amoníaco deve ser analisada todos os dois dias. Uma vez o filtro biológico estabelecido (de 4 a 6 semanas), a análise da concentração em amoníaco deve ser efectuada uma vez por semana.

Instruções de utilização

Para retirar a rolha com uma segurança para crianças: Com uma mão, puxar a lingueta vermelha para a esquerda com o polegar e desaparafusar a rolha com a mão livre.

1. Encher um tubo de ensaio limpo com 5 ml de água do aquário (até à graduação indicada no tubo).
2. Segurando o frasco na vertical, adicionar 8 gotas do frasco nº 1 de Ammonia (NH_3/NH_4^+) Test Solution.
3. Em seguida, segurando o frascomna vertical, adicionar 8 gotas do frasco nº 2 de Ammonia (NH_3/NH_4^+) Test Solution.
4. Colocar a rolha no tubo de ensaio e agitar durante 5 segundos.
5. **Aguardar 5 minutos para que a cor se desenvolva.**
6. Ler o resultado da análise comparando a cor da solução com o cartão de cor Ammonia Color Card (escolher água doce ou água do mar). O tubo deve estar colocado numa zona bem iluminada no fundo branco do cartão de cor. A cor a mais próxima indica a concentração de amoníaco em mg/l da amostra de água. Enxaguar o tubo de ensaio com água limpa após cada utilização.

Leitura dos resultados

Num aquário novo, a concentração em amoníaco pode atingir 4 mg/L ou mais para em seguida diminuir rapidamente uma vez o filtro biológico estabelecido. O amoníaco é então transformado em nitrito (também tóxico), e em seguida em nitrato. Este processo pode prolongar-se durante várias semanas. Utilizar API STRESS ZYME para acelerar o desenvolvimento do filtro biológico. Num determinado aquário, a concentração em amoníaco deve ser sempre de 0 mg/L. A presença de amoníaco é habitualmente um índice de uma alimentação excessiva, de uma população excessiva ou de uma filtração biológica inadequada.

IRRITANTE **CORROSIVO**

O frasco nº 1 contém salicilato de sódio
Pode causar sensibilização em contacto com a pele.
Manter fora do alcance das crianças.
Evitar o contacto com a pele.
Usar luvas adequadas.
Em caso de ingestão, consultar imediatamente o médico e mostrar-lhe a embalagem ou o rótulo.
O frasco nº 2 contém hidróxido de sódio e hipoclorito de sódio
Provoca queimaduras graves.
Em contacto com ácidos liberta gases tóxicos.
Tóxico por inalação, em contacto com a pele e por ingestão.
Perigo de efeitos cumulativos.
Guardar fechado à chave e fora do alcance das crianças.
Manter afastado de alimentos e bebidas, incluindo os dos animais.
Em caso de contacto com os olhos, lavar imediata e abundantemente com água e consultar um especialista.
Após contacto com a pele, lavar imediata e abundantemente com água.
Usar luvas e equipamento protector para os olhos/face adequados.
Em caso de acidente ou de indisposição, consultar imediatamente o médico (se possível mostrar-lhe o rótulo).
Não misturar com ácidos.

Redução da concentração em amoníaco

Para desintoxicar instantaneamente o amoníaco, utilizar API AMMO LOCK. AMMO LOCK não elimina o amoníaco, transforma simplesmente o amoníaco tóxico numa forma não tóxica. Quando a água do aquário é tratada com AMMO LOCK, o resultado da análise da concentração em amoníaco permanece positivo mesmo se o amoníaco presente já não é tóxico. Nos aquários com água doce, se adicionar API AMMO-CARB ou AMMO-CHIPS no filtro, isto permite eliminar o amoníaco e melhorar a qualidade da água. Por outro lado, uma mudança de água (25 % ou mais) permite reduzir a concentração em amoníaco. Se adicionar água da torneira no aquário, deve utilizar um condicionador de água tal como STRESS COAT ou AMMO LOCK.

DE Gebrauchsanweisung

Warum muss der Ammoniakgehalt analysiert werden?

Tropenfische geben ständig Ammoniak (NH_3) über Kiemen, Urin und Exkremente direkt in das Aquariumwasser ab. Über nicht verzehrtes Futter und sonstige organische Zerfallsprodukte gelangt ebenfalls Ammoniak ins Wasser. Ein hoher Ammoniakgehalt führt schnell zum Absterben der Fische. Schon im Spurenbereich belastet Ammoniak die Fische, schwächt ihr Immunsystem und erhöht die Wahrscheinlichkeit von Fischkrankheiten. Im Anschluss an den ersten Einsatz des Aquariums muss der Ammoniakgehalt jeden zweiten Tag analysiert werden, anschließend einmal wöchentlich, sobald die Wirkung des biologischen Filters eingesetzt hat (nach ca. 4 bis 6 Wochen).

Gebrauchsanweisung

Abnehmen des Kindersicherheitsverschlusses:

Mit dem Daumen einer Hand auf die rote linke Lasche drücken und gleichzeitig mit der freien Hand den Deckel aufdrehen.

1. Ein sauberes Teströhrchen mit 5 ml des zu analysierenden Wassers (bis zur gekennzeichneten Linie auf dem Röhrchen) füllen.
2. 8 Tropfen aus der Flasche Nr. 1 mit der Ammonia (NH_3/NH_4^+) Test Solution hinzufügen, wobei die Flasche senkrecht zu halten ist.
3. Dann 8 Tropfen aus der Flasche Nr. 2 mit der Ammonia (NH_3/NH_4^+) Test Solution hinzufügen, wobei die Flasche senkrecht zu halten ist.
4. Das Teströhrchen verschließen und 5 Sekunden kräftig schütteln.
5. **5 Minuten warten, bis sich die Farbe entwickelt hat.**
6. Die Testergebnisse durch Vergleichen der Farbe der Lösung mit der entsprechenden Farbe der auf der Ammonia Color Card Farbkarte ablesen (entweder Süßwasser oder Salzwasser wählen). Das Röhrchen sollte in einem gut beleuchteten Bereich betrachtet werden, wobei die weiße Fläche der Karte als Hintergrund dient. Die Farbe, die der Farbe der Lösung am nächsten kommt, zeigt den Ammoniakgehalt der Wasserprobe in mg/l an. Spülen Sie das Teströhrchen nach dem Gebrauch mit sauberem Wasser aus.

Was bedeuten die Testergebnisse?

In einem neuen Aquarium kann der Ammoniakgehalt auf 4 mg/l und mehr ansteigen und fällt dann, sobald die Wirkung des biologischen Filters eingesetzt hat, schnell wieder ab. Das Ammoniak wird in Nitrit (ebenfalls giftig) und dann in Nitrat umgewandelt. Dieser Prozess kann einige Wochen dauern. Zur Beschleunigung der Entwicklung des biologischen Filters kann API STRESS ZYME verwendet werden. In einem eingefahrenen Aquarium sollte der Ammoniakgehalt immer bei 0 mg/l bleiben. Das Vorhandensein von Ammoniak weist auf eine mögliche Überfütterung, zu viele Fische oder eine unzureichende biologische Filterung hin.

REIZAUSLÖSEND **ÄTZEND**

Die Flasche Nr. 1 enthält Natriumsalicylat.
Sensibilisierung durch Hautkontakt möglich.
Darf nicht in die Hände von Kindern gelangen.
Berührung mit der Haut vermeiden.
Geeignete Schutzhandschuhe tragen.
Bei Verschlucken sofort ärztlichen Rat einholen und Verpackung oder Etikett vorzeigen.
Die Flasche Nr. 2 enthält Natriumhydroxid und Natriumhypochlorit.
Verursacht schwere Verätzungen.
Entwickelt bei Berührung mit Säure giftige Gase.
Giftig beim Einatmen, Verschlucken und Berührung mit der Haut.
Gefahr kumulativer Wirkungen.
Unter Verschluss und für Kinder unzugänglich aufbewahren.
Von Nahrungsmitteln, Getränken und Futtermitteln fernhalten.
Bei Berührung mit den Augen sofort gründlich mit Wasser abspülen und Arzt konsultieren.
Bei Berührung mit der Haut sofort abwaschen mit viel Wasser.
Bei der Arbeit geeignete Schutzhandschuhe und Schutzbrille/Gesichtsschutz tragen.
Bei Unfall oder Unwohlsein sofort Arzt zuziehen (wenn möglich, dieses Etikett vorzeigen).
Nicht mischen mit säurehaltigen Stoffen vermischen.

Senken der Ammoniakkonzentration

Verwenden Sie API AMMO LOCK zur sofortigen Beseitigung von giftigem Ammoniak. AMMO LOCK entfernt das Ammoniak nicht, sondern wandelt nur giftiges Ammoniak in eine ungiftige Form um. Wird das Aquarium wasser mit AMMO LOCK behandelt, ergibt sich bei der Analyse des Ammoniakgehalts daher trotzdem ein positives Ergebnis, auch wenn das vorhandene Ammoniak nicht mehr giftig ist. In Süßwasseraquarien kann das Ammoniak durch Zugabe von API AMMO-CARB oder AMMO-CHIPS in den Filter beseitigt und die Wasserqualität verbessert werden. Außerdem kann die Ammoniakkonzentration durch einen Wasseraustausch (25 % oder mehr) reduziert werden. Stellen Sie sicher, dass bei Zugabe von Leitungswasser in das Aquarium ein Wasseraufbereiter wie z. B. STRESS COAT oder AMMO LOCK verwendet wird.

NL Gebruiksaanwijzing

Waarom moet de ammoniakconcentratie worden getest?

Ammoniak (NH_3) wordt gevormd door de kieuwen, de urine en de uitwerpselen van tropische vissen en verspreidt zich direct in het aquariumwater. Ammoniak is ook afkomstig van overtollig voer en andere rottende organische stoffen. Een sterke ammoniakconcentratie kan leiden tot snelle sterfte van de vissen. Zelfs ammoniaksporen kunnen leiden tot stress bij de vissen, de werking van hun immuunsysteem vertragen en hun weerstand tegen ziektes verminderen. Bij ingebruikneming van een nieuw aquarium moet de ammoniakconcentratie om de dag worden gecontroleerd. Zodra het biologische filter is ingesteld (na 4 tot 6 weken) moet de ammoniakconcentratie eenmaal per week worden gecontroleerd.

Gebruiksaanwijzing

Verwijder de kindveilige dop als volgt: Duw het rode lipje met de duim van één hand naar links en draai de dop met de vrije hand los.

1. Vul een schone testbuis met 5 ml aquariumwater (tot aan het merkstreepje op de buis).
2. Voeg 8 druppels uit flacon nr. 1 van Ammonia (NH_3/NH_4^+) Test Solution toe en houd de flacon hierbij verticaal.
3. Voeg vervolgens 8 druppels uit flacon nr. 2 van Ammonia (NH_3/NH_4^+) Test Solution toe en houd de flacon hierbij verticaal.
4. Sluit de testbuis met de dop af en schud hem krachtig gedurende 5 seconden.
5. **Wacht 5 minuten zodat er een verkleuring kan ontstaan (mis à la ligne).**
6. Lees het testresultaat af door de kleur van de oplossing te vergelijken met de kleurenkaart Ammonia Color Card (kies zoetwater of zeewater). Houd de testbuis op een goed verlichte plaats tegen de witte achtergrond van de kleurenkaart. De kleur die er het dichtste bij is, geeft de ammoniakconcentratie in mg/L van het watermonster aan. Spoel de testbuis telkens na gebruik met kraanwater schoon.

Betekenis van de testresultaten

In een nieuw aquarium kan de ammoniakconcentratie een waarde van 4 mg/L of meer bereiken om vervolgens weer snel te dalen zodra het biologische filter is ingesteld. De ammoniak wordt dan omgezet in het (eveneens giftige) nitriet, en vervolgens in nitraat. Dit proces kan enkele weken duren. Gebruik API STRESS ZYME om de ontwikkeling van het biologische filter te versnellen. In een ingesteld aquarium moet de ammoniakconcentratie altijd 0 mg/L zijn. Als er ammoniak aanwezig is, is er meestal sprake van overtollig voer, te veel vissen of onvoldoende biologische filtering.

IRRITEREND **BIJTEND**

Flacon nr. 1 bevat natriumsalicylaat.
Kan overgevoeligheid veroorzaken bij contact met de huid.
Buiten bereik van kinderen bewaren.
Aanraking met de huid vermijden.
Draag geschikte handschoenen.
In geval van inslikken onmiddellijk een arts raadplegen en verpakking of etiket tonen.
Flacon nr. 2 bevat natriumhydroxide en natriumhypochloriet.
Veroorzaakt ernstige brandwonden.
Vormt vergiftige gassen in contact met zuren.
Vergiftig bij inademing, opname door de mond en aanraking met de huid.
Gevaar voor cumulatieve effecten.
Achter slot en buiten bereik van kinderen bewaren.
Verwijderd houden van eet- en drinkwaren en van diervoeder.
Bij aanraking met de ogen onmiddellijk met overvloedig water afspoelen en deskundig medisch advies inwinnen.
Na aanraking met de huid onmiddellijk wassen met veel water.
Draag geschikte handschoenen en een beschermingsmiddel voor de ogen/het gezicht.
Bij een ongeval of indien men zich onwel voelt, onmiddellijk een arts raadplegen (indien mogelijk hem dit etiket tonen).
Niet met zuren vermengen.

Vermindering van de ammoniakconcentratie

Om de ammoniak onmiddellijk te ontgiften, kunt u API AMMO-LOCK gebruiken. AMMO-LOCK verwijdert ammoniak niet, maar zet alleen giftig ammoniak om in een niet-giftige vorm. Wanneer het aquariumwater wordt behandeld met AMMO-LOCK, blijft het resultaat van de ammoniaktest dus positief, ook al is het aanwezige ammoniak niet meer giftig. In zoetwateraquaria kunt u door API AMMO-CARB of AMMO-CHIPS aan het filter toe te voegen de ammoniak verwijderen en de kwaliteit van het water verbeteren. Verder kunt u, door 25% of meer van het water te vervangen, de ammoniak-concentratie ook verminderen. Indien u kraanwater aan het aquarium toevoegt, dient u wel een waterconditioner als STRESS COAT of AMMO LOCK te gebruiken.

SE Bruksanvisning

Varför analysera ammoniakkoncentrationen?

Ammoniak (NH_3) produceras av de tropiska fiskarnas gälar, urin och exkrementer och sprids direkt via vattnet i akvariet. Ammoniak kommer även från föda och andra organiska ämnen som håller på att brytas ned. En hög koncentration av ammoniak kan leda till en snabb fiskdöd. Även bara spår av ammoniak kan stressa fiskarna, försämra deras immunförsvar och göra dem mottagligare för sjukdomar. Vid start av ett nytt akvarium bör ammoniaknivån mätas varannan dag. Då det biologiska filtret bildats (4 - 6 veckor) bör ammoniaknivån kontrolleras en gång per vecka.

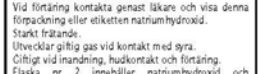
Anvisningar

Ta av det barnsäkra locket så här: Tryck med ena handen den röda tabben mot vänster med tummen och skruva loss locket med den fria handen.

1. Fyll ett rent provrör med 5 ml akvarievatten (ända till graderingen på röret).
2. Häll flaskan lodrätt och lägg till 8 droppar Ammonia (NH_3/NH_4^+) Test Solution ur flaska nr 1.
3. Lägg därefter till - med flaskan lodrätt - 8 droppar Ammonia (NH_3/NH_4^+) Test Solution ur flaska nr 2.
4. Sätt locket på provröret och skaka kraftigt om i 5 sekunder.
5. **Vänta 5 minuter så att färgen utvecklas.**
6. Avläs testresultatet genom att jämföra lösningens färg med färgkartan Ammonia Color Card (välj sötvatten eller saltvatten). Röret skall placeras i ett rum med god belysning mot färgkartans vita bakgrund. Den färg som är närmast anger ammoniakkoncentrationen i mg/L i vattenprovet. Skölj provröret efter varje användning.

Avläsning av resultaten

I ett nytt akvarium kan ammoniakkoncentrationen nå upp till 4 mg/L eller mer och minskar sedan snabbt då det biologiska filtret etablerats. Ammoniaken omvandlas då till nitrit (även det giftigt) och sedan till nitrat. Detta förlopp kan ske under flera veckor. Använd API STRESS ZYME för att påskynda utvecklingen av det biologiska filtret. I ett etablerat akvarium skall ammoniakkoncentrationen alltid vara 0 mg/L. Närvaron av ammoniak i etablerade akvarier indikerar eventuell övergödning, för många fiskar eller olämplig biologisk filtrering.



IRRITERANDE **FRÄTANDE**

Flaska nr 1 innehåller natriumsalicylat.
Kan ge allergi vid hudkontakt.
Förvaras oåtkomligt för barn.
Undvik kontakt med huden.
Använd lämpliga skyddshandskar.
Vid förtäring kontakta genast läkare och visa denna förpackning eller etiketten natrium hydroxid.
Starkt frätande.
Utvecklar giftig gas vid kontakt med syra.
Giftigt vid inandning, hudkontakt och förtäring.
Flaska nr 2 innehåller natriumhydroxid och natriumhypoklorit.
Kan ansamlas i kroppen och ge skador.
Förvaras i låst utrymme och oåtkomligt för barn.
Förvaras åtskilt från livsmedel och djurfoder.
Vid kontakt med ögonen, spola genast med mycket vatten och kontakta läkare.
Vid kontakt med huden tvätta genast med mycket vatten.
Använd lämpliga skyddshandskar samt skyddsglasögon eller ansiktsskydd.
Vid olycksfall, illamående eller annan påverkan, kontakta omedelbart läkare. Visa om möjligt etiketten.
Blanda inte med syror.

Reducering av ammoniakkoncentrationen

Använd API AMMO LOCK för att avgifta ammoniaken ögonblickligen. AMMO LOCK eliminerar inte ammoniaken, men den omvandlar giftig ammoniak till en annan form som inte är giftig. Då akvarievattnet behandlas med AMMO LOCK, kommer testresultatet att visa att det innehåller ammoniak, men den ammoniak som finns där är inte längre giftig. I sötvattensakvarier kan ett tillägg av API AMMO-CARB eller AMMO-CHIPS till filtret göra det möjligt att eliminera ammoniak och förbättra vattnets kvalitet. Dessutom kan man genom att byta vatten (25 % eller mer) minska mängden av ammoniak. Vid tillägg av kranvatten i akvariet, tänk på att använda ett vattenberedningsmedel som t. ex. STRESS COAT eller AMMO LOCK.

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Questions or Comments?
In North America, call us at 1-800-847-0659.
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AMMONIA TEST KIT

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PRODUCT SUMMARY:

The API® Ammonia Test Kit measures ammonia to help prevent fish loss, as ammonia is the number one stressor and killer of tropical fish. Ammonia is released into an aquarium in the forms of uneaten food, decaying organic matter, and when fish release it through their gills, urine, and solid waste.

The API Ammonia Test Kit is a mercury-free, salicylate test for fresh and saltwater fish, and levels ammonia levels from 0 to 8 ppm.

We recommend that you take a few minutes each week to monitor your aquarium conditions and create a better underwater world for your fish. Testing your aquarium water has never been so easy or accurate!

SIZE:

Contains 130 tests and includes 2 test solutions, easy-to-ready instructions, glass test tube and 2 color charts

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Appendix E

IDDE Employee Training Record

Illicit Discharge Detection and Elimination (IDDE) Program
Employee Training Record

Glastonbury, Connecticut

Date of Training: _____

Duration of Training: _____

Name	Title	Signature