Town of Marlborough, Connecticut

2019 Annual Report

General Permit for the Discharge of Stormwater from Small Municipal Separate Storm Sewer Systems

Permit Number 000073

MS4 General Permit
Town of Marlborough 2019 Annual Report
Existing MS4 Permittee
Permit Number GSM 000073
January 1, 2019 - December 31, 2019

This report documents the Town of Marlborough's efforts to comply with the conditions of the MS4 General Permit to the maximum extent practicable (MEP) from January 01, 2019 to December 31, 2019.

Greg Lowrey replaced Amy Traversa as First Selectman in November 2019

Part I: Summary of Minimum Control Measure Activities

1. Public Education and Outreach (Section 6 (a)(1) / page 19)

1.1 BMP Summary

BMP	Status	Activities in current reporting period	Measurable goal	Responsible Person and Department	Due	Date completed or projected completion date	Additional details
1-1 Implement Public Education and Outreach	To be developed in early 2019.	2017 - None 2018 - None 2019 - None Before July 01, 2019 Clean Waters Starting in Your Home and Yard Fact Sheets prepared by a collaborative effort between the Connecticut Sea Grant Extension Program and the University of Connecticut Cooperative Extension System NEMO Program will be made available to the public on the town website	Improving	Amy J. Traversa, First Selectman, Board of Selectmen	July 01, 2018	Before July 01, 2020	

		at: http://marlboroughct.net/					
1-2 Address Public Education and Outreach for Pollutants of Concern*	To Be Developed in 2020	2017 - None 2018 - None 2019 - None Before July 01, 2019 Clean Waters Starting in Your Home and Yard Fact Sheets specific to bacteria will be made available to the public on the town website at: http://marlboroughct.net/		Gregory Lowrey, First Selectman, Board of Selectmen	July 1, 2018	To be implemented by July 01, 2020	
1-3 Salmon River Watershed Partnership (SRWP) Activities	Ongoing	2017 through 2019 Pat Young, SRWP Coordinator, represents the Partnership on statewide issues relating to water quality and non-point source pollution and related information is shared with the 10 watershed towns.	Public Education and Outreach	Pat Young, SRWP Coordinator		Annually	

1.2 Describe any Public Education and Outreach activities planned for the next year, if applicable.

The Salmon River Watershed Partnership (SRWP) was formed in 2007 and has been conducting annual public education and outreach activities since then. It is anticipated that public education and outreach activities will continue to be conducted in 2020.

1.3 Details of activities implemented to educate the community on stormwater

Program Element / Activity	Audience (and number of people reached)	Topic(s) covered	Pollutant of Concern addressed (if applicable)	Responsible dept. or partner org.
SRWP Annual Newsletter March 2017 March 2018 March 2019	100s	Watershed resource protection and water quality preservation	Not Applicable	Pat Young, SRWP Coordinator
SRWP Brochure August 2018	100s	Published a new brochure about the SRWP which	Bacteria	Pat Young, SRWP Coordinator

		includes opportunities for residents to volunteer on water quality initiatives with the SRWP and steps that landowners can take to protect water quality.		

2. Public Involvement/Participation (Section 6(a)(2) / page 21)

2.1 BMP Summary

BMP	Status	Activities in current reporting period	Measurable goal	Responsible Person and Department	Due	Date completed or projected completion date	Additional details
2-1 Comply with public notice requirements for the Stormwater Management Plan	Completed	A hard copy of the Draft 2017 Stormwater Management Plan (SMP) was made available to the public for review and comment on the town website at: http://marlboroughct.net/	Complied with requirements	Amy J. Traversa, First Selectman, Board of Selectmen	April 03, 2017	The 2017 SMP was available to the public on April 20, 2017.	No public comments were received by the Office of the First Selectman
2-2 Comply with public notice requirements for Annual Reports	Completed	The Draft 2017 MS4 Annual Report was made available for public review and comment.	Complied with Requirements	Amy J. Traversa, First Selectman, Board of Selectmen	Feb 15, 2018	February 22, 2018	No public comments were received by the Office of the First Selectman
	Completed	The Draft 2018 MS4 Annual Report was made available for public review and comment.	Substantially Complied with Requirements	Amy J. Traversa, First Selectman, Board of Selectmen	Feb 15, 2019	March 07, 2019	No public comments were received by the Office of the First Selectman
	Completed	The Draft 2019 MS4 Annual Report was made available for public review and comment.	Substantially Complied with Requirements	Gregory Lowrey, First Selectman, Board of Selectmen	Feb 15, 2020	February ***15***, 2019	
2-3 Town Planners Workshop	Completed	2017 - Workshop with town land use staff to review upcoming large projects to incorporate stormwater quality measures	Improvement in water quality.	Pat Young, SRWP Coordinator	Not Applicable	May 2017	12 Town land use officials
2-4 Public Event	Completed	2017 - A booth was set up at the Marlborough Business Day which included a Public TV	Public education and an improvement	Pat Young, SRWP Coordinator	Not Applicable	May 2017	Approximately 200 general public attendees

		interview. The booth displayed SRWP activities and a sign up for volunteering for water quality monitoring activities and the impact of water quality on macroinvertebrates.	in water quality.				
2-5 Water Quality Monitoring	Completed	2017 **Summer Stream Temperature Readings** at 10 Stream Locations suing HOBO Loggers	Public education and an improvement in water quality.	Pat Young, SRWP Coordinator	Not Applicable	June to September	3 College Student Interns, 2 Community Volunteers and Town Land Use Board Members
	Completed	2019 **Summer Stream Temperature Readings** at 10 Stream Locations suing HOBO Loggers	Public education and an improvement in water quality.	Pat Young, SRWP Coordinator	Not Applicable	May to September	2 College Student Interns and Community Volunteers and Town Land Use Board Members
	Completed	2017 **Field Monitoring and Volunteer Training** Handheld meters were used to obtain weekly Temperature, pH, Dissolved Oxygen, Conductivity, Total Dissolved Solids and Salinity at 11 stream segments.	Public education and an improvement in water quality.	Pat Young, SRWP Coordinator	Not Applicable	June to August	12 Local Citizens
	Completed	2018 **Field Monitoring and Volunteer Training** Handheld meters were used to obtain weekly Temperature, pH, Dissolved Oxygen, Conductivity, Total Dissolved Solids and Salinity at 11 stream segments and 8 sites in the Lake Pocotopaug Watershed.	Public education and an improvement in water quality.	Pat Young, SRWP Coordinator	Not Applicable	June to August	2 Summer Interns and 11 Local Citizens

	Completed	2019 **Field Monitoring and Volunteer Training** Handheld meters were used to obtain weeklyTemperature, pH, Dissolved Oxygen, Conductivity, Total Dissolved Solids and Salinity at 11 stream segments and 8 sites in the Lake Pocotopaug Watershed.	Public education and an improvement in water quality.	Pat Young, SRWP Coordinator	Not Applicable	June to August	2 Summer Interns and 11 Local Citizens
	Completed	2017 **Hourly Readings of Conductivity and Temperature.** Dedicated loggers were installed and monitored at 3 stream segments.	Public education and an improvement in water quality.	Pat Young, SRWP Coordinator and GZA Inc. Green Team	Not Applicable	Year Around	6 GZA Green Team Members, CT DEEP Fisheries Staff and SRWP Staff.
	Completed	2018 **Hourly Readings of Conductivity and Temperature.** Dedicated loggers were installed and monitored at 3 stream segments.	Public education and an improvement in water quality.	Pat Young, SRWP Coordinator and GZA Inc. Green Team	Not Applicable	Year Around	6 GZA Green Team Members and CT DEEP Fisheries Staff.
	Completed	2019 **Hourly Readings of Conductivity and Temperature.** Dedicated loggers were installed and monitored at 3 stream segments.	Public education and an improvement in water quality.	Pat Young, SRWP Coordinator and GZA Inc. Green Team	Not Applicable	Year Around	5 GZA Green Team Members, CT DEEP Fisheries and Water Quality Staff and SRWP Staff.
2-6 Field Assessment and Volunteer Training	Completed	2017 **Macroinvertebrate Assessment** of two stream segments	Public education and an improvement in water quality.	Pat Young, SRWP Coordinator	Not Applicable	June to August	3 College Interns and 10 GZA Staff and Family Members
	Completed	2017 **Macroinvertebrate Assessment** of eleven stream segments	Public education and an improvement in water quality.	Pat Young, SRWP Coordinator	Not Applicable	September to November	Local Citizens

	Completed	2018 **Macroinvertebrate Assessment** of two stream segments	Public education and an improvement in water quality.	Pat Young, SRWP Coordinator	Not Applicable	June to August	3 College Interns
	Completed	2018 **Macroinvertebrate Assessment** of eleven stream segments	Public education and an improvement in water quality.	Pat Young, SRWP Coordinator	Not Applicable	September to November	Local Citizens
	Completed	2019 **Macroinvertebrate Assessment** of fourteen stream segments	Public education and an improvement in water quality.	Pat Young, SRWP Coordinator	Not Applicable	September to November	Local Citizens
2-7 Education Program	Completed	2017 - **Pond Life and Water Quality**. Presentation and field netting, identification and discussion on impacts of water quality on pond life.	Public education and an improvement in water quality.	Pat Young, SRWP Coordinator	Not Applicable	October	90 RHAM Middle School Students, Teachers and Parents 15 Marlborough Boy Scouts
	Completed	2019 - **Pond Life and Water Quality**. Presentation and field netting, identification and discussion on impacts of water quality on pond life.	Public education and an improvement in water quality.	Pat Young, SRWP Coordinator	Not Applicable	October	80 RHAM Middle School Students, and Teachers
2-8 SRWP Outreach	Completed	2017 Website and Facebook Outreach	Summary of watershed monitoring efforts	Pat Young, SRWP Coordinator	Not Applicable	Ongoing	
	Completed	2018 Website and Facebook Outreach	Summary of watershed monitoring efforts	Pat Young, SRWP Coordinator	Not Applicable	Ongoing	
	Completed	2019 Website and Facebook Outreach	Summary of watershed monitoring efforts	Pat Young, SRWP Coordinator	Not Applicable	Ongoing	

2.2 Describe any Public Involvement/Participation activities planned for the next year, if applicable.

2017 through 2019 - The Salmon River Watershed Partnership was formed in 2007 and has been conducting public outreach and participation activities.
It is anticipated that public outreach and participation activities will continue in 2019.

2.3 Public Involvement/Participation reporting metrics

Metrics	Implemented	Date	Posted
2017 - Availability of the Stormwater Management Plan announced to public	Yes	03/28/2017	Town Website
Availability of the 2017 Annual Report announced to public	Yes	02/27/2018	Town Website
Availability of the 2018 Annual Report announced to public	Yes	03/08/2019	Town Website
Availability of the 2019 Annual Report announced to public	Yes	02/*15*/2020	Town Website

3. Illicit Discharge Detection and Elimination (Section 6(*a*)(3) and Appendix B / page 22)

3.1 BMP Summary

BMP	Status	Activities in current reporting period	Measurable goal	Responsible Person and Department	Due	Date completed or projected completion date	Additional details
3-1 Develop written IDDE program	In Progress	A written IDDE program using the IDDE program template available from the CT DEEP is being developed.	Develop written plan of IDDE program	Gregory Lowrey, First Selectman, Board of Selectmen and Nathan L. Jacobson & Associates, Inc., Town Engineer	July 01, 2018	Anticipate completing by July 01, 2020.	The Department of Public Works will be the listed contact.
3-2 Develop list and maps of all MS4 stormwater outfalls in priority areas	In Progress	Completed MS4 stormwater outfall mapping was conducted from May 2007 to July2007. The stormwater outfall mapping was compiled on a ESRI GIS layer. The MS4 stormwater outfall mapping will be updated to include impaired waters as contained in the State of Connecticut, Department of Energy and Environmental Protection 2018 Integrated Water Quality Report if applicable. The stormwater outfalls in the impaired	Development of an ESRI GIS map layer with MS4 stormwater outfalls.	Nathan L. Jacobson & Associates, Inc., Town Engineer	July 01, 2019	Prior to July 01, 2020.	

		waters will be identified.					
3-3 Implement citizen reporting program	In Progress	A program to allow the general public to report suspected illicit discharges is in the process of being set up.	Under Development	John Jones, Director, Department of Public Works	July 01, 2017	Anticipate completing by July 01, 2020.	The Department of Public Works will be the listed contact.
3-4 Establish legal authority to prohibit illicit discharges	Completed	An Illicit Discharge Detection and Elimination Ordinance and Citation Hearing Procedure was enacted at a Town Meeting on June 04, 2010.	Completed	Board of Selectmen	July 01, 2018	May 03, 2007	
3-5 Develop record keeping system for IDDE tracking	To Be Developed	None A suspected Illicit Discharge Record Keeping System will be developed using a Microsoft Excel spreadsheet.	To Be Completed	John Jones, Director, Department of Public Works	July 01, 2018	Anticipate completing by July 01, 2020.	
3-6 Address IDDE in areas with pollutants of concern	Not Applicable	The 3.82 Mile Segment of Lyman Brook is impaired by Chlorides which most likely is a result of deicing agents applied by the Conn DOT on Route 2 as the Town of Marlborough salt storage facility is not located within the Lyman Brook watershed.	Not Applicable	Not Applicable	July 01, 2018	Not Applicable	

3.2 Describe any IDDE activities planned for the next year, if applicable.

The written IDDE Program will be posted on the town website and a link listed in each Annual Report. The town will update the written IDDE program as needed throughout the permit term.

The Department of Public Works will maintain the master IDDE tracking spreadsheet and ensure all employees involved in IDDE program understand the logging process

3.3 List of citizen reports of suspected illicit discharges received during this reporting period.

Date of Report	**Location / suspected source**	**Response taken**
2017 - None Reported		
2018 - None Reported		
2019 - None Reported		

3.4 Provide a record of illicit discharges occurring during the reporting period and SSOs occurring July 2012 through end of reporting period using the following table. The Town of Marlborough has had no SSOs

Location (Lat long/ street crossing /address and receiving water)	**Date and duration of occurrence**	**Discharge to MS4 or surface water**	**Estimated volume discharged**	**Known or suspected cause / Responsible party**	**Corrective measures planned and completed** (include dates)	**Sampling data** (if applicable)

3.5 Briefly describe the method used to track illicit discharge reports, responses to those reports, and who was responsible for tracking this information.

2017 - No potential illicit discharges were reported.

2018 - No potential illicit discharges were reported.

2019 - No potential illicit discharges were reported.

3.6 Provide a summary of actions taken to address septic failures using the table below.

Location and nature of structure with failing septic systems	Actions taken to respond to and address the failures	Impacted waterbody or watershed, if known
2017 - Steve Knauf, R.S., Chief Sanitarian of the Chatham Health District reported no subsurface sewage disposal hydraulic failures were a source of illicit discharges to town stormwater management facilities.	None Required	Not Applicable
2018 - Don Mitchell, R.S., Director of Health of the Chatham Health District reported no subsurface sewage disposal hydraulic failures were a source of illicit discharges to town stormwater management facilities.	None Required	Not Applicable
2019 - The Chatham Health District reported no subsurface sewage disposal hydraulic failures were a source of illicit discharges to town stormwater management facilities.	None Required	Not Applicable

3.7 IDDE reporting metrics

Metrics	
Estimated or actual number of MS4 outfalls	231
Estimated or actual number of interconnections	To Be Determined
Outfall mapping complete	95%
Interconnection mapping complete	0%
System-wide mapping complete (detailed MS4 infrastructure)	50%
Outfall assessment and priority ranking	0%
Dry weather screening of all High and Low priority outfalls complete	0%
Catchment investigations complete	0%

Estimated percentage of MS4 catchment area investigated	95%

3.8 Briefly describe the IDDE training for employees involved in carrying out IDDE tasks including what type of training is provided and how often is it given (minimum once per year).

The Department of Public Works will be provided with a copy of the publication entitled *Illicit Discharge Detection and Elimination Manual, A Handbook for Municipalities*, Published January 2003, by the New England Interstate Water Pollution Control Commission.

4. Construction Site Runoff Control (Section 6(a)(4) / page 25)

4.1 BMP Summary

BMP	Status	Activities in current reporting period	Measurable goal	Department / Person Responsible	Due	Date completed or projected completion date	Additional details
4-1 Implement, upgrade, and enforce land use regulations or other legal authority to meet requirements of MS4 General Permit	Ongoing	Not Applicable	Compliance	Peter Hughes, Director of Planning & Development, Building Department	July 01, 2019	Ongoing	It is anticipated that UConn CLEAR and/or a Regional Planning Agency will provide a Construction Site Runoff Control template for use by all MS4 Towns.
4-2 Develop/Implement plan for interdepartmental coordination in site plan review and approval	Ongoing	Nathan L. Jacobson & Associates, Inc., Town Engineer, prepares land use review letters for most applications for the Inland Wetlands Commission, Planning Commission and Zoning Commission.	Interdepartmental Coordination	Peter Hughes, Director of Planning & Development, Building Department	July 01, 2017	Ongoing	
4-3 Review site plans for stormwater quality concerns	Ongoing	Nathan L. Jacobson & Associates, Inc., Town Engineer, encourages the use of LID BMPs as contained in the 2004 Connecticut Stormwater Quality Manual.	Compliance	Nathan L. Jacobson & Associates, Inc., Town Engineer	July 01, 2017	Ongoing	
4-4 Conduct site inspections	Ongoing	The town conducts construction site inspections for proper implementation and maintenance of soil erosion and sediment control measures.	Compliance with Approved Plans	Nathan L. Jacobson & Associates, Inc., Town Engineer	July 01, 2017	Ongoing	

4-5 Implement procedure to allow public comment on site development	Ongoing	The land use application process allows for public comment on land use applications which are submitted to the Inland Wetlands Agency and the Planning & Zoning Commission during the Public Hearing Process when applicable.	Compliance	Peter Hughes, Director of Planning & Development, Building Department	July 01, 2017	Ongoing	
4-6 Implement procedure to notify developers about the CT DEEP Construction Stormwater General Permit	Ongoing	Since the inception of the MS4 program Nathan L. Jacobson & Associates, Inc., Town Engineer, has made developer's engineers aware of the need to register for the General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities in engineering review letters which are typically prepared as part of the land use application process.	Compliance Awareness of the need to register for the General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities	Nathan L. Jacobson & Associates, Inc., Town Engineer	July 01, 2017	Ongoing	

4.2 Describe any Construction Site Runoff Control activities planned for the next year, if applicable.

5. Post-Construction Stormwater Management (Section 6(*a*)(5) / page 27)

5.1 BMP Summary

BMP	Status	Activities in current reporting period	Measurable goal	Department / Person Responsible	Due	Date completed or projected completion date	Additional details
5-1 Establish and/or update legal authority and guidelines regarding LID and runoff reduction in site development planning	LID Guidelines are already in place in the Zoning Regulations and the Subdivision Regulations. The modifications contained in the modified MS4 permit will be incorporated into the Zoning regulation and the Subdivision Regulations.	None The land use regulations will be revised to incorporate the requirements contained in Minimum Control Measure No. 5 - Post-Construction Runoff Control.	The additional requirements contained in Minimum Control Measure No. 5 - Post-Construction Runoff Control will be forwarded to the Director of Planning & Development.	Peter Hughes, Director of Planning & Development, Building Department	July 01, 2021		It is anticipated that UConn CLEAR and/or a Regional Planning Agency will provide a Post-construction Stormwater Management template for use by all MS4 Towns.
5-2 Enforce LID/runoff reduction requirements for development and redevelopment projects	Ongoing	Continued to require LID Practices and stormwater quality measures to be incorporated into the site design during the engineering land use application process.	Met	Nathan L. Jacobson & Associates, Inc., Town Engineer	July 01, 2019	Ongoing	
5-3 Identify retention and detention ponds in priority areas	To Be Developed	Retention Ponds, Detention Ponds and Hydrodynamic Separators will be inventoried. A GIS Map Layer will be created after	Met	John Jones, Director, Department of Public Works, and Nathan L. Jacobson &	July 01, 2019	July 01, 2019	

		the inventory. Part of the inventory process will be facility operation and maintenance requirements.		Associates, Inc., Town Engineer			
5-4 Implement long-term maintenance plan for stormwater basins and treatment structures	Developed Implementation Needed	After the Retention Ponds, Detention Ponds and Hydrodynamic Separators have been inventoried a Long-Term Operation and Maintenance Plan will be implemented.	A *Post-Construction Stormwater Management Facility Operation & Maintenance Plan Manual* with an Effective Date of July 01, 2019 was completed.	John Jones, Director, Department of Public Works	July 01, 2019	2020	It is anticipated that measures outlined in the *Post-Construction Stormwater Management Facility Operation & Maintenance Plan Manual* will begin to be implemented in 2020.
5-5 DCIA mapping	Completed	Completed the process of DCIA Mapping from base mapping prepared by UConn CLEAR.	The DCIA to MS4 stormwater outfalls discharging to waters identified as impaired in the 2018 Integrated Water Quality Report and in watersheds with a DCIA of greater than 11 percent will start in 2018.	John Jones, Director, Department of Public Works, and Nathan L. Jacobson & Associates, Inc., Town Engineer	July 01, 2020	February 2019	
5-6 Address post-construction issues in areas with pollutants of concern	Not Required	Not Applicable. See 3-6.	Not Required	Not Applicable			

5.2 Describe any Post-Construction Stormwater Management activities planned for the next year, if applicable.

Procedures outlined in the Post-Construction Stormwater Management Facility Operation & Maintenance Plan Manual will be implemented in 2020.

5.3 Post-Construction Stormwater Management reporting metrics

Metrics	
Baseline (2012) Directly Connected Impervious Area (DCIA)	6.42 Acres
DCIA disconnected (redevelopment plus retrofits)	2012 to 2016 - To Be Determined 2017 - 0 Acres 2018 - 0 Acres 2019 - 0 Acres
Retrofits completed	2012 to 2016 - To Be Determined 2017 - 0 2018 - 0 2019 - 0
DCIA disconnected	2012 to 2016 - To Be Determined 2017 - 0% 2018 - 0% 2019 - 0%
Estimated cost of retrofits	$0
Detention or retention ponds identified	0 this year / 0 total

5.4 Briefly describe the method to be used to determine baseline DCIA.

Based on information contained in the Factsheet: *Town of Marlborough Water Quality and Stormwater Summary,* prepared by the CT DEEP, 606.29 acres of the town has an impervious area exceeding 12% which is approximately 4.03% of the town. 201.34 acres have an impervious cover of ranging from 12% to 25%, 294.43 acres have an impervious cover ranging from 26% to 50%, 96.45 acres have an impervious cover ranging from 51% to 75% and 14.07 acres have an impervious cover ranging from 76% to 100%.

Based on information contained in the MS4 mapping tab of Connecticut Environmental Conditions Online The impervious surface area consists of 135.09 acres of buildings, 300.80 acres of roads and 273.19 acres of other impervious surfaces for a total impervious surface area of 709.08 acres. Of the total road impervious are of 300.80 acres, 197.76 are Town roads and 103.04 acres are State roads. The State roads constitute approximately 34.3% of the total road impervious area.

The DCIA Mapping was conducted in substantial accordance with the methodologies presented in the October 25, 2017 UConn CLEAR Webinar entitled *CT MS4 Mapping Details, Clarifications and Tools,* the October 19, 2018 UConn CLEAR Workshop entitled *CT MS4 Mapping Workshop* as well as information contained in the EPA reference entitled *Estimating Change in Impervious Area (IA) and Directly Connected Impervious Area (DCIA) for Massachusetts Small MS4 Permit utilizing Sutherland equations*.

The DCIA computations were prepared utilizing Connecticut Environmental Conditions Online MS4 base mapping prepared by UConn CLEAR.

Impaired waters were determined from the report entitled *2018 Integrated Water Quality Report*, dated August 01, 2019, prepared by the State of Connecticut Department of Energy and Environmental protection.

The method to determine the 2012 baseline DCIA was to first compile the CT DEEP drainage basin characteristics in a Microsoft Excel spreadsheet. Information on the Connecticut Environmental Conditions Online MS4 Mapping was used to determine the impervious area breakdown as Buildings, Roads and Other. For CT DEEP drainage basins that fell in two or more municipalities the advanced mapping tab of Connecticut Environmental Conditions Online was used to delineate and determine the applicable town CT DEEP basin area. It was assumed that the entire drainage basin characteristics were directly proportional to the applicable town CT DEEP drainage basin area.

In that ConnDOT has a MS4 Stormwater Program which applies to state owned roads and facilities which the town has no control over, it was decided that the impervious state road area would be determined and deducted from the total impervious road area for each CT DEEP drainage basin as the impervious road areas associated with state highways and facilities constitutes a considerable portion of the total town impervious road area.

The ConnDOT state highway, parking lot and facility impervious road areas were then determined for each CT DEEP drainage basin.

The ConnDOT state highway, parking lot and facility impervious road areas were then deducted from the total town impervious road area to determine a town owned impervious road area for each CT DEEP drainage basin.

Subsequent to the above deduction, the total impervious area in acres and percentage was then recomputed for each CT DEEP drainage basin.

The DCIA formula for each of four development types was then utilized to compute the DCIA. The impervious area in acres was assigned to each of the four Sutherland equations which were modified for the northeastern United State. The Sutherland equation to be utilized was determined using the following methodology:

For impervious percentage less than 6%:

100% of the impervious area was assigned to the slight connectivity Sutherland Equation where $DCIA\% = 0.01*(IA\%)^{2.0}$

For an impervious area between 6% and 12 %:

50% of the area was assigned to the partial connectivity Sutherland Equation where $DCIA\% = 0.04*(IA\%)^{1.7}$
and
50% was assigned to the average connectivity Sutherland Equation where $DCIA\% = 0.10*(IA\%)^{1.5}$

For an impervious area between 12% and 18 %:

50% of the area was assigned to the average connectivity Sutherland Equation where $DCIA\% = 0.10*(IA\%)^{1.5}$
and
50% was assigned to the high connectivity Sutherland Equation where $DCIA\% = 0.40*(IA\%)^{1.2}$

For an impervious area of greater than 18 %:

100% of the area was assigned to the high connectivity Sutherland Equation where $DCIA\% = 0.40*(IA\%)^{1.2}$

The DCIA for each CT DEEP drainage basin was then summed to determine the entire town DCIA.

Subsequent to completion of 2012 Baseline DCIA computations, UConn CLEAR Mapping available on Connecticut Environmental Conditions Online (CT ECO) was revised to separate road impervious area into State Road Impervious Area (Acres) and Town Road Impervious Area (Acres).

The original 2012 Baseline DCIA computations were revised utilizing the UConn CLEAR State Road Impervious Area (Acres) and Town Road Impervious Area (Acres). No major 2012 Baseline DCIA computation discrepancies were noted.

Land use files will be reviewed to determine disconnection of DCIA since July 01, 2012 for utilization in reaching the CT DEEP goal of 2% disconnection of DCIA by June 30, 2022.

6. Pollution Prevention/Good Housekeeping (Section 6(*a*)(6) / page 31)

6.1 BMP Summary

BMP	Status	Activities in current reporting period	Measurable goal	Department / Person Responsible	Due	Date completed or projected completion date	Additional details
6-1 Develop/implement formal employee training program	Ongoing	See 6.3 Below	Continuing	John Jones, Director, Department of Public Works and Nathan L. Jacobson & Associates, Inc., Town Engineer	July 01, 2017	July 01, 2017	
6-2 Implement MS4 property and operations maintenance	Ongoing	Ongoing	Continuing	John Jones, Director, Department of Public Works	July 01, 2018	July 01, 2017	
6-3 Implement coordination with interconnected MS4s	Ongoing	The Town of Marlborough continued to coordinate MS4 responsibilities with the Towns of Glastonbury, Hebron, Colchester, and East Hampton as well as Conn DOT.	Continuing	John Jones, Director, Department of Public Works	July 01, 2017	July 01, 2017	
6-4 Develop/implement program to control other sources of pollutants to the MS4	To Be Developed	2017 - None 2018 - None 2019 - None		Nathan L. Jacobson & Associates, Inc., Town Engineer	July 01, 2017		

6-5 Evaluate additional measures for discharges to impaired waters*	Not Applicable	None		Nathan L. Jacobson & Associates, Inc., Town Engineer	July 01, 2017		
6-6 Track projects that disconnect DCIA	To Be Developed	None		John Jones, Director, Department of Public Works and Nathan L. Jacobson & Associates, Inc., Town Engineer	Jul 1, 2017		
6-7 Implement infrastructure repair/rehab program	To Be Developed	None		John Jones, Director, Department of Public Works and Nathan L. Jacobson & Associates, Inc., Town Engineer	July 01, 2021		
6-8 Develop/implement plan to identify/prioritize retrofit projects	To Be Developed	None		John Jones, Director, Department of Public Works and Nathan L. Jacobson & Associates, Inc., Town Engineer	July 01, 2020		
6-9 Implement retrofit projects to disconnect 2% of DCIA	To Be Developed	None		John Jones, Director, Department of Public Works and Nathan L. Jacobson & Associates, Inc., Town Engineer	July 01, 2022		

6-10 Develop/implement street sweeping program	Ongoing	The Town of Marlborough currently implements a road sweeping program whereby all town roads are swept at one time per year.	Ongoing	John Jones, Director, Department of Public Works	July 01, 2017	July 01, 2017	
6-11 Develop/implement catch basin cleaning program	2017 - None 2018 -	The Town of Marlborough will implement a catch basin cleaning program in 2018.	Catch basin cleaning will be conducted	John Jones, Director, Department of Public Works	July 01, 2020	July 01, 2017	
6-12 Develop/implement snow management practices	Ongoing	The town uses treated NaCl salt for road deicing. The treated salt has resulted in a marked decrease in road sweeping and catch basin cleaning volumes.		John Jones, Director, Department of Public Works	July 01, 2018	July 01, 2017	

6.2 Describe any Pollution Prevention/Good Housekeeping activities planned for the next year, if applicable.

6.3 Pollution Prevention/ Good Housekeeping reporting metrics

Metrics	
Employee training provided for key staff	DPW Employees are encouraged to attend the Connecticut Interlocal Risk Management Agency (CIRMA) Snow Plow Safety course and the Connecticut Training & Technical Assistance Center training programs. 2017 - None 2018 - None 2019 - None
Street sweeping	

Lane miles swept	2017 - 121.88 (60.94 Road Miles) 2018 - 121.88 (60.94 Road Miles) 2019 - 121.88 (60.94 Road Miles)
Volume (or mass) of material collected	2017 Undetermined 2018 - 150± C.Y. to 175± C.Y. 2019 - ***150***± C.Y. to ***175***± C.Y.
Catch basin cleaning	
Total catch basins in priority areas	2018 - All catch basins which drain to Lake Terrramugus are cleaned every year. No Town outfalls discharge directly to Lyman Brook
Total catch basins in MS4	1,400±
Catch basins inspected	2017 - 0 2018 – 700 2019 - ***700***
Catch basins cleaned	2017 - 0 2018 - 700 2018 - ***700***
Volume (or mass) of material removed from all catch basins	2017 - 0 C.Y. 2018 - 10± C.Y. to 15± C.Y. 2019 - ***10***± C.Y. to ***15***± C.Y.
Volume removed from catch basins to impaired waters (if known)	0 C.Y. No Town outfalls discharge directly to Lyman Brook
Snow management	
Type(s) of deicing material used	NaCl Salt treated with Ice B'Gone at the rate of 6-8 gallons per ton obtained from DRVN in New London.
Total amount of each deicing material applied	Winter 2016 to 2017 - 1,000-1,200 Tons Winter 2017 to 2018 - 1,000-1,200 Tons Winter 2018 to 2019 - 900-1,000 Tons
Type(s) of deicing equipment used	Nine Large Snow Plow/Spreaders Three Small Snow Plow/Spreaders. The nine large snow plow/spreaders are ground speed controlled and set at an application rate of 250-300 pounds per lane mile. The manually controlled spreaders are also calibrated to an application rate of 250-300 pounds per lane mile.
Lane-miles treated	2017 - 121.88 (60.94 Road Miles) 2018 - 121.88 (60.94 Road Miles) 2019 - 121.88 (60.94 Road Miles)
Snow disposal location	Roadside Only
Staff training provided on application methods & equipment	See Above Spreaders are calibrated prior to the snow plowing season.
Municipal turf management program actions (for permittee properties in basins with N/P impairments)	

Reduction in application of fertilizers (since start of permit)	0 %
Reduction in turf area (since start of permit)	0 acres
Lands with high potential to contribute bacteria (dog parks, parks with open water, & sites with failing septic systems)	
Cost of mitigation actions/retrofits	$0

6.4Catch Basin Cleaning Program

Briefly describe the method used to optimize your catch basin inspection and cleaning schedule. [Complete this section for the 2017 Annual Report only]
There are approximately 1,400 catch basins in the Town of Marlborough. 2017 - None of the catch basins were cleaned 2018 - 700± catch basin were cleaned. 2019 - *700*± catch basin were cleaned.

6.5 Retrofit program

Briefly describe the Retrofit Program identification and prioritization process, the projects selected for implementation, the rationale for the selection of those projects and the total DCIA to be disconnected upon completion of each project.
Storm Drainage Retrofit prioritization will be given to stormwater outfalls that are known to result in soil erosion and sedimentation. Prioritization will be given to the outfalls within the impaired water drainage basins with particular emphasis placed on stormwater outfalls which are located on fine grained glacial till soils. The retrofit program will be prioritized based on setback distance from watercourse and/or waterbodies.

Describe plans for continuing the Retrofit program and how to achieve a goal of 1% DCIA disconnection in future years.
The 2012 Baseline DCIA for the town was computed to be 6.42 acres. To obtain the 2% DCIA disconnection goal will require a DCIA disconnection of 0.128 acres by July 01, 2022. Land use files will be reviewed to determine disconnection of DCIA since July 01, 2012 for utilization in reaching the CT DEEP goal of 2% disconnection of DCIA by June 30, 2022.

Describe plans for continuing the Retrofit program beyond this permit term with the goal to disconnect 1% DCIA annually over the next 5 years.
Redevelopment projects in town will be required to implement LID practices whenever possible to meet or exceed the CT DEEP DCIA disconnection goal.

Part II: Impaired waters investigation and monitoring

1. Impaired waters investigation and monitoring program

1.1 Indicate which stormwater pollutant(s) of concern occur(s) in your municipality or institution. This data is available on the MS4 map viewer:

Nitrogen/ Phosphorus ☐ Bacteria ☐ Mercury ☐ Other Pollutant of Concern ☒

Lyman Brook - Chlorides

1.2 Describe program status.

Discuss 1) the status of monitoring work completed, 2) a summary of the results and any notable findings, and 3) any changes to the Stormwater Management Plan based on monitoring results.
The impairment of Lyman Brook is most likely the result of pavement deicing activities. There are no direct town owned MS4 stormwater outfalls discharges to Lyman Brook. The impairment is most likely the result of ConnDOT pavement deicing activities associated with Connecticut Route 2.

2. Screening data for outfalls to impaired waterbodies (Section 6(i)(1) / page 41)

2.1 Screening data collected under 2017 permit

Complete the table below for any outfalls screened during the reporting period. Each Annual Report will add on to the previous year's screening data showing a cumulative list of outfall screening data.

Outfall ID	**Sample date**	**Parameter** (Nitrogen, Phosphorus, Bacteria, or Other pollutant of concern)	**Results**	**Name of Laboratory (if used)**	**Follow-up required?**
No Sampling	2017				
No Sampling	2018				
No Sampling	2019				

Dry weather screening was scheduled for the Fall of 2018 but the unseasonably high precipitation, and resulting high groundwater conditions, precluded dry weather screening. It is anticipated that dry weather screening will be conducted in 2019.

Dry weather screening was scheduled for the Fall of 2019 but the unseasonably high precipitation, and resulting high groundwater conditions, precluded dry weather screening. It is anticipated that dry weather screening will be conducted in 2020.

2.2 Credit for screening data collected under 2004 permit

If any outfalls to impaired waters were sampled under the 2004 MS4 permit, that data can count towards the monitoring requirements under the modified 2017 MS4 permit. Complete the table below to record sampling data for any outfalls to impaired waters under the 2004 MS4 permit.

Outfall	**Sample date**	**Parameter** (Nitrogen, Phosphorus, Bacteria, or Other pollutant of concern)	**Results**	**Name of Laboratory (if used)**	**Follow-up required?**
Not Applicable					

3. Follow-up investigations (Section 6(i)(1)(D) / page 43)

Provide the following information for outfalls exceeding the pollutant threshold.

Outfall	Status of drainage area investigation	Control measure implementation to address impairment

4. Prioritized outfall monitoring (Section 6(i)(1)(D) / page 43)

Once outfall screening has been completed for at least 50% of outfalls to impaired waters, identify 6 of the highest contributors of any pollutants of concern. Begin monitoring these outfalls on an annual basis by July 01, 2020.

Outfall	Sample Date	Parameter(s)	Results	Name of Laboratory (if used)

Part III: Additional IDDE Program Data [This section required beginning with 2018 Annual Report]

1. Assessment and Priority Ranking of Catchments data (Appendix B (A)(7)(c) / page 5)

Provide a list of all catchments with ranking results (DEEP basins may be used instead of manual catchment delineations).

1. Catchment ID (DEEP Basin ID)	2. Category	3. Rank
4707-12-_01	Impairment	1
4708-00-2-L1	13.35% Impervious	2
4707-12-1	11.98% Impervious	3
4708-00-2-R1	14.43% Impervious	4

2. Outfall and Interconnection Screening and Sampling data (Appendix B (A)(7)(d) / page 7)

2.1 Dry weather screening and sampling data from outfalls and interconnections

Provide sample data for outfalls where flow is observed. Only include Pollutant of concern data for outfalls that discharge into stormwater impaired waterbodies.

Outfall / Interconnection ID	Screening / sample date	Ammonia	Chlorine	Conductivity	Salinity	E. coli or enterococcus	Surfactants	Water Temp	Pollutant of concern	If required, follow-up actions taken

Dry weather screening was scheduled for the Fall of 2018 but the unseasonably high precipitation, and resulting high groundwater conditions, precluded dry weather screening. It is anticipated that dry weather screening will be conducted in 2019.

Dry weather screening was scheduled for the Fall of 2019 but the unseasonably high precipitation, and resulting high groundwater conditions, precluded dry weather screening. It is anticipated that dry weather screening will be conducted in 2020.

2.2 Wet weather sample and inspection data

Provide sample data for outfalls and key junction manholes of any catchment area with at least one System Vulnerability Factor.

Outfall / Interconnection ID	Sample date	Ammonia	Chlorine	Conductivity	Salinity	E. coli or Enterococcus	Surfactants	Water Temp	Pollutant of concern

3. Catchment Investigation data (Appendix B (A)(7)(e) / page 9)

3.1 System Vulnerability Factor Summary

For those catchments being investigated for illicit discharges (i.e. categorized as high priority, low priority, or problem) document the presence or absence of System Vulnerability Factors (SVF). If present, report which SVF's were identified. An example is provided below.

Outfall ID	Receiving Water	System Vulnerability Factors

Where SVFs are:

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

3.2 Key junction manhole dry weather screening and sampling data

Key Junction Manhole ID	Screening / Sample date	Visual / olfactory evidence of illicit discharge	Ammonia	Chlorine	Surfactants

Dry weather screening was scheduled for the Fall of 2018 but the unseasonably high precipitation, and resulting high groundwater conditions, precluded dry weather screening. It is anticipated that dry weather screening will be conducted in 2019.

Dry weather screening was scheduled for the Fall of 2019 but the unseasonably high precipitation, and resulting high groundwater conditions, precluded dry weather screening. It is anticipated that dry weather screening will be conducted in 2020.

3.3 Wet weather investigation outfall sampling data

Outfall ID	Sample date	Ammonia	Chlorine	Surfactants

3.4 Data for each illicit discharge source confirmed through the catchment investigation procedure

Discharge location	Source location	Discharge description	Method of discovery	Date of discovery	Date of elimination	Mitigation or enforcement action	Estimated volume of flow removed

Part IV: Certification

"I have personally examined and am familiar with the information submitted in this document and all attachments thereto, and I certify that, based on reasonable investigation, including my inquiry of those individuals responsible for obtaining the information, the submitted information is true, accurate and complete to the best of my knowledge and belief. I understand that a false statement made in this document or its attachments may be punishable as a criminal offense, in accordance with Section 22a-6 of the Connecticut General Statutes, pursuant to Section 53a-157b of the Connecticut General Statutes, and in accordance with any other applicable statute."	
Chief Elected Official or Principal Executive Officer	Document Prepared by
Print Name: Greg Lowrey, First Selectman	Print Name: Wade M. Thomas
Signature / Date: April *XX*, 2020	Signature / Date: April *XX*, 2020