



Town of Hebron, Connecticut

2019 Annual Report

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

Permit Number GSM000101

MS4 General Permit
Town of Hebron 2019 Annual Report
Existing MS4 Permittee
Permit Number GSM 000101
January 01, 2019 - December 31, 2019

This report documents the Town of Hebron'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.

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 2020	None Before July 01, 2020 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 at: http://hebronct.com/	Developing	Andrew J. Tierney, Town Manager and Nathan L. Jacobson & Associates, Inc., Town Engineer	July 01, 2018	Before July 01, 2020	

1-2 Address Public Education and Outreach for Pollutants of Concern*	To Be Developed in 2019	None Required		Andrew J. Tierney, Town Manager	July 1, 2018	
1-3 Salmon River Watershed Partnership (SRWP) Activities	Ongoing	The SRWP Coordinator, Pat Young, 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 public education and outreach activities since then. It is anticipated that public education and outreach activities will continue to be conducted through 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.
2017 - March SRWP Annual Newsletter	100s	Watershed resource protection and water quality preservation	Sediment, salt and thermal impacts	Pat Young, SRWP Coordinator
2017 - March and ongoing Gay City State Park Vegetated Buffer Area and Biofilter and Permanent Educational Signage	100s	Impacts of waterfowl on water quality.	Waterfowl bacteria	SRWP, UConn Master Gardeners and CT DEEP Parks
2017 - October Pond Life and Water Quality	90 RHAM Middle School Students	Impacts of water quality on pond life.	Not Applicable	Pat Young, SRWP Coordinator
2018 - March SRWP Annual Newsletter	100s	Watershed resource protection and water quality preservation	Sediment, salt and thermal impacts	Pat Young, SRWP Coordinator
2018 Gay City State Park Vegetated Buffer Area and Biofilter	100s	Impacts of waterfowl on water quality.	Waterfowl bacteria	SRWP, UConn Master Gardeners and CT DEEP Parks

296 native shrubs and perennials were planted to further deter Canada Geese from the pond and temporary signage explaining the plants were installed.				
2018 - August Hebron Day Celebration Public Event	100s	<p>A booth was set up to display SRWP activities and a sign-up for volunteer water quality monitoring to focus on the impact of water quality on macroinvertebrates and water quality preservation.</p> <p>A brochure was also available to participants which included steps landowners can take to protect water quality.</p>	landowner impacts on water quality	Pat Young, SRWP Coordinator
2019 - March SRWP Annual Newsletter	100s	Watershed resource protection and water quality preservation	Sediment, salt and thermal impacts	Pat Young, SRWP Coordinator
2019 - March Hebron Maple Fest	100s	A booth was set up to display SRWP activities and a sign-up for volunteer water quality monitoring to focus on the impact of water quality on macroinvertebrates and water quality preservation.		
2019 - March - August Gay City State Park Vegetated Buffer Area and Biofilter 150 native shrubs and perennials were planted to further deter Canada Geese from	100s	Impacts of waterfowl on water quality.	Waterfowl bacteria	SRWP, UConn Master Gardeners and CT DEEP Parks

the pond. Temporary signage explaining the plants that were planted was also installed.				
2019 - August Hebron Day Celebration Public Event	100s	<p>A booth was set up to display SRWP activities and a sign-up for volunteer water quality monitoring to focus on the impact of water quality on macroinvertebrates and water quality preservation.</p> <p>A brochure was also available to participants which included steps landowners can take to protect water quality.</p>	landowner impacts on water quality	Pat Young, SRWP Coordinator

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://hebronct.com/	Complied with requirements	Andrew J. Tierney, Town Manager and Nathan L. Jacobson & Associates, Inc., Town Engineer	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 Town Manager
2-2 Comply with public notice requirements for Annual Reports	Will Be Completed	The Draft 2017 MS4 Annual Report will be made available for public review and comment on the town website at: http://hebronct.com/	Will comply with Requirements The 2017 MS4 Annual Report will be made available to the public for review and comment.	Andrew J. Tierney, Town Manager	Feb 15, 2018	February 22, 2018	No public comments were received by the Office of the Town Manager
	Completed	The Draft 2018 MS4 Annual Report will be made available for public review and comment on the town website at: http://hebronct.com/	Will comply with Requirements The 2018 MS4 Annual Report will be made available to the public for review and comment.	Andrew J. Tierney, Town Manager	Feb 15, 2019	February 2X, 2019	No public comments were received by the Office of the Town Manager
	Completed	The Draft 2019 MS4 Annual Report will be made available for public review and comment on the	Will comply with Requirements	Andrew J. Tierney, Town Manager	Feb 15, 2020	April 24, 2020	

		town website at: http://hebronct.com/	The 2019 MS4 Annual Report will be made available to the public for review and comment.				
2-3 Gay City State Park Biofilter Project	Completed	<p>2017 - The biofilter and vegetated buffer areas were designed and constructed to restore vegetated buffer areas as a biofilter and aid in deterring Canada geese and filtering direct stormwater runoff to the waterbody. The project was a partnership between UConn Master Gardener and CT DEEP Parks.</p> <p>2018 Planting of an additional 296 native shrubs and perennials</p> <p>2019 Planting of an additional 150 native shrubs and perennials</p>	Public education and an improvement in water quality.	CT DEEP Parks and UConn Master Gardeners	Not Applicable	Ongoing	
2-4 Town Planners Workshop	Completed	2017 - May Town Planners Workshop with town land use staff to review upcoming large projects to incorporate stormwater quality measures	Improvement in water quality.	SRWP	Not Applicable	May 2017	

2-5 Water Quality Monitoring	Continuing	<p>2017 through 2019</p> <p>2017 3 College student interns, 2 community volunteers and town land use members participated in water temperature readings on the Upper Jeremy Brook and Raymond Brook stations.</p> <p>2018 3 College student interns, 2 community volunteers participated in water temperature readings on the Upper Jeremy Brook and Raymond Brook stations.</p> <p>2019 2018 College student interns participated in water temperature readings on the Upper Jeremy Brook and Raymond Brook stations</p>	Public education and an improvement in water quality.	Pat Young, SRWP Coordinator	Not Applicable	Ongoing	
2-6 Education Program	Continuing	<p>2017 - October</p> <p>Pond Life and Water Quality. Presentation and field netting, identification and discussion on impacts of water quality on pond life.</p>	Public education and an improvement in water quality.	Pat Young, SRWP Coordinator	Not Applicable	Ongoing	<p>90 RHAM Middle School Students, Teachers and Parents</p> <p>15 Marlborough Boy Scouts</p>
		<p>2019 - October</p> <p>Pond Life and Water Quality. Presentation and field netting,</p>	Public education and an improvement	Pat Young, SRWP Coordinator	Not Applicable	Ongoing	80 RHAM Middle School Students

		identification and discussion on impacts of water quality on pond life.	in water quality.				
	Continuing	2018 - August Hebron Day Celebration 2019 - August Hebron Day Celebration	Public education and an improvement in water quality.	Pat Young, SRWP Coordinator	Not Applicable	Ongoing	100+ area residents
2-7 SRWP Outreach	Continuing	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.

The Salmon River Watershed Partnership was formed in 2007 and has been conducting public outreach and participation activities which is anticipated to continue through 2020.

2.3 Public Involvement/Participation reporting metrics

Metrics	Implemented	Date	Posted
Availability of the Stormwater Management Plan announced to public	Yes	03/28/2017	Town Website
Availability of 2017 Annual Report announced to public	Yes	02/26/2018	Town Website
Availability of 2018 Annual Report announced to public	Yes	02/22/2019	Town Website
Availability of 2019 Annual Report announced to public	Yes	04/24/2020	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	Andrew J. Tierney, Town Manager and Nathan L. Jacobson & Associates, Inc., Town Engineer	July 01, 2018	Anticipate completing by the 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	Completed	MS4 stormwater outfall mapping was conducted in 2007. 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 2016 Integrated Water Quality Report if applicable. The stormwater outfalls in the impaired waters will be identified.	Development of an ESRI GIS map layer with MS4 stormwater outfalls.	Andrew J. Tierney, Town Manager and Nathan L. Jacobson & Associates, Inc., Town Engineer	July 01, 2019	Prior to July 01, 2019	

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	Kevin J. Kelly, Director, Department of Public Works	July 01, 2017	Anticipate completing by July 01, 2019.	The Department of Public Works will be the listed contact.
3-4 Establish legal authority to prohibit illicit discharges	In Progress	An Illicit Discharge Detection and Elimination Ordinance and Citation Hearing Procedure was enacted at a Town Meeting on May 03, 2007.	Completed	Andrew J. Tierney, Town Manager	July 01, 2018	May 03, 2007	
3-5 Develop record keeping system for IDDE tracking	In Place	Ani information regarding IDDE is included in the DPW road files	Completed	Kevin J. Kelly, Director, Department of Public Works	July 01, 2018	July 01, 2019.	
3-6 Address IDDE in areas with pollutants of concern	Not Applicable There are no Impaired Waters in Hebron other than Gay City State Park.	None Required	Not Applicable	Not Required	July 01, 2018	Not Applicable	Not Applicable

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

The written IDDE Program will be developed and 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	Not Applicable	Not Applicable
2018 - None Reported	Not Applicable	Not Applicable
2019 - None Reported	Not Applicable	Not Applicable

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 Hebron has 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 - Citizen illicit discharge reporting system was not in place. No illicit discharges were reported.
2018 - Citizen illicit discharge reporting system was not in place. No illicit discharges were reported.
2019 - Citizen illicit discharge reporting system was not in place. No 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 - 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
2019 - Jim Karrenberg, Sanitarian II 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

3.7 IDDE reporting metrics

Metrics	
Estimated or actual number of MS4 outfalls	293+
Estimated or actual number of interconnections	To Be Determined
Outfall mapping complete	95%
Interconnection mapping complete	0%
System-wide mapping complete (detailed MS4 infrastructure)	40%
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.

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

4.1 BMP Summary

BMP	Status	Activities in current reporting period	Measurable goal	Responsible Person and Department	Due	Date completed or projected completion date	Additional details
4-1 Implement, upgrade, and enforce land use regulations or other legal authority to meet requirements of MS4 General Permit	To be Initiated in 2019	None	Moving to Compliance	Michael K. O'Leary, AICP, Town Planner, Planning and Development Department	July 01, 2019		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.
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	Michael K. O'Leary, AICP, Town Planner, Planning and Development 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	Thomas H. Fenton, P.E., Town Engineer, Nathan L. Jacobson & Associates, Inc.	July 01, 2017	Ongoing	
4-4 Conduct site inspections	Ongoing	The town conducts construction site inspections for proper implementation and maintenance of soil	Compliance with Approved Plans	Thomas H. Fenton, P.E., Town Engineer, Nathan L. Jacobson & Associates, Inc.	July 01, 2017	Ongoing	

		erosion and sediment control measures.					
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	Michael K. O'Leary, AICP, Town Planner, Planning and Development 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.	Awareness of the need to register for the General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities	Thomas H. Fenton, P.E., Town Engineer, Nathan L. Jacobson & Associates, Inc.	July 01, 2017	Ongoing	

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

5. Stormwater Management (Section 6(a)(5) / page 27)

5.1 BMP Summary

BMP	Status	Activities in current reporting period	Measurable goal	Responsible Person and Department	Due	Date completed or projected completion date	Additional details
5-1 Establish and/or update legal authority and guidelines regarding LID and runoff reduction in site development planning	Under Development	The land use regulations will be revised to incorporate the requirements contained in Minimum Control Measure No. 4 - Construction Site Runoff Control and Minimum Control Measure No. 5 - Post-Construction Runoff Control.	The requirements contained in Minimum Control Measure No. 5 - Post-Construction Runoff Control will be forwarded to the Town Planner.	Michael K. O'Leary, AICP, Town Planner, Planning and Development Department	July 01, 2021	Prior to 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	Continuing	Continuing		Thomas H. Fenton, P.E., Town Engineer, Nathan L. Jacobson & Associates, Inc.	July 01, 2019	July 01, 2017	
5-3 Identify retention and detention ponds in priority areas	Under Development The detention pond and retention pond inventory will be completed in 2020.	Retention Ponds, Detention Ponds and Hydrodynamic Separators are being inventoried. A GIS Map Layer will be created after the inventory. Part of the inventory process will be facility operation and maintenance requirements.	Moving to Compliance	Kevin J. Kelly, Director, Department of Public Works and Thomas H. Fenton, P.E., Town Engineer, Nathan L. Jacobson & Associates, Inc.	July 01, 2019	Calendar Year 2020	

5-4 Implement long-term maintenance plan for stormwater basins and treatment structures	To Be Implemented in 2020	After the Retention Ponds, Detention Ponds and Hydrodynamic Separators have been inventoried a long term Operation and Maintenance Plan will be implemented.	Accumulated Sediment is removed from all detention basins, retention basins and sedimentation structures annually.	Kevin J. Kelly, Director, Department of Public Works	July 01, 2019		<i>A Post-Construction Stormwater Management Facility Operation & Maintenance Plan Manual</i> with an Effective Date of July 01, 2019 was prepared.
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 2016 Integrated Water Quality Report and in watersheds with a DCIA of greater than 11 percent will start in 2018.	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 Applicable There are no Impaired Waters in Hebron other than Gay City State Park.	While there are no Impaired Waters in Hebron, all post-construction stormwater management issues are corrected to address the concerns of Kevin J. Kelly and Thomas H. Fenton, P.E	Stormwater outfalls discharging to waters identified as impaired in the 2016 Integrated Water Quality Report and in watersheds with a DCIA of greater than 11 percent will be subject to enhanced	Kevin J. Kelly, Director, Department of Public Works and Thomas H. Fenton, P.E., Town Engineer, Nathan L. Jacobson & Associates, Inc.	Not specified	July 01, 2017	

			water quality treatment.				
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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)	7.00 Acres
DCIA disconnected (redevelopment plus retrofits)	2012-2016 - To Be Determined 2017 - 0 acres 2018 - 0 acres 2019 - 0 acres
Retrofits completed	2012-2016 - To Be Determined 2017 - 0 2018 - 0 2019 - 0
DCIA disconnected	2012-2016 - To Be Determined 2017 - 0% 2018 - 0% 2019 - 0%
Estimated cost of retrofits	\$0
Detention or retention ponds identified	All ponds will be identified in 2020.

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

Based on information contained in the Factsheet: *Town of Hebron Water Quality and Stormwater Summary*, prepared by the CT DEEP, 839.55 acres of the town has an impervious area exceeding 12% which is approximately 3.51% of the town. 364.47 acres have an impervious cover of ranging from 12% to 25%, 362.17 acres have an impervious cover ranging from 26% to 50%, 84.29 acres have an impervious cover ranging from 51% to 75% and 28.62 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 210.15 acres of buildings, 330.46 acres of roads and 420.20 acres of other impervious surfaces for a total impervious surface area of 960.81 acres.

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	Responsible Person and Department	Due	Date completed or projected completion date	Additional details
6-1 Develop/implement formal employee training program	Ongoing	See 6.3 Below DPW Employees are encouraged to attend formal training programs.	Continuing	Kevin J. Kelly, 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		Continuing	Kevin J. Kelly, Director, Department of Public Works	July 01, 2018	July 01, 2017	
6-3 Implement coordination with interconnected MS4s	Ongoing	The Town of Hebron continued to coordinate MS4 responsibilities with the Towns of Bolton, Andover, Columbia, Lebanon, Colchester, Marlborough and Glastonbury as well as Conn DOT.	Continuing	Kevin J. Kelly, 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			Thomas H. Fenton, P.E., Town Engineer/ Nathan L. Jacobson & Associates, Inc.	July 01, 2017		

6-5 Evaluate additional measures for discharges to impaired waters*	Not Applicable			Thomas H. Fenton, P.E., Town Engineer/ Nathan L. Jacobson & Associates, Inc.	July 01, 2017		
6-6 Track projects that disconnect DCIA	To Be Developed			Kevin J. Kelly, 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			Kevin J. Kelly, 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			Kevin J. Kelly, 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			Kevin J. Kelly, 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 Hebron currently implements a road sweeping program whereby all town roads are swept at one time per year.		Kevin J. Kelly, Director, Department of Public Works	July 01, 2017		
6-11 Develop/implement catch basin cleaning program	Ongoing	The Town of Hebron currently implements a catch basin cleaning program whereby all catch basins are cleaned every year		Kevin J. Kelly, Director, Department of Public Works	July 01, 2020		
6-12 Develop/implement snow management practices		See 6.3 Below		Kevin J. Kelly, Director, Department of Public Works	July 01, 2018		

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	<p>DPW Employees are encouraged to attend CT Technology Transfer Center training programs.</p> <p>2017 - Rob Schadtler completed the Road Master Program which included training on Planning and Managing Local Road Snow and Ice Control Activities.</p> <p>Dillon Fournier completed the Public Works Academy which included training on Winter Operations and Safe Snow Plowing.</p>

	<p>2018 - Shawn Covell and Zachary Smith completed the Public Works Academy which included training on Winter Operations and Safe Snow Plowing.</p> <p>2019 - Austin Wosleger completed the Public Works Academy which included training on Winter Operations and Safe Snow Plowing.</p>
Street Sweeping	
Lane miles swept	154.46
Volume (or mass) of material collected	<p>2017 - Was Not Estimated</p> <p>2018 - 250± C.Y.</p> <p>2019 - 250± C.Y.</p>
Catch Basin Cleaning	
Total catch basins in priority areas	To Be Determined
Total catch basins in MS4	1,573
Catch basins inspected	<p>2017 - 1,573</p> <p>2018 - 1,573</p> <p>2019 - 1,573</p>
Catch basins cleaned	<p>2017 - 1,573</p> <p>2018 - 1,573</p> <p>2019 - 1,573</p>
Volume (or mass) of material removed from all catch basins	<p>2017 - 300-400 C.Y.</p> <p>2018 - 250-300 C.Y.</p> <p>2019 - 250-300 C.Y.</p>
Volume removed from catch basins to impaired waters (if known)	Not Applicable
Snow Management	
Type(s) of deicing material used	<p>Deicing Mix:</p> <p>Majority of Town:</p> <p>NaCl Salt treated with Ice B'Gone at the rate of 6-8 gallons per ton</p> <p>Amston Lake Area:</p> <p>4 Parts Sand to 1 Part NaCl Salt treated with Ice B'Gone at the rate of 6-8 gallons per ton</p>
Total amount of each deicing material applied	<p>Winter 2017 to 2018 - 1,400 Tons Treated NaCl and 50 C.Y. Sand</p> <p>Winter 2018 to 2019 - 513 Tons Treated NaCl Salt, 69 Tons of Sand/Treated NaCl Salt Mix and 10 Tons of untreated NaCl Salt.</p>
Type(s) of deicing equipment used	<p>Eleven Large Snow Plows/Spreaders and two small Snow Plows/Spreaders.</p> <p>Four of the eleven spreaders are ground speed controlled set at an application rate of 250-300 pounds per lane mile.</p> <p>The manually controlled spreaders are also calibrated annually before plowing season to an application rate of 250-300 pounds per lane mile.</p>
Lane-miles treated	154.46

Snow disposal location	Road Shoulders
Staff training provided on application methods & equipment	2017 - Yes 2018 - Yes 2019 - Yes
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

6.4 Catch Basin Cleaning Program

Briefly describe the method used to optimize your catch basin inspection and cleaning schedule.

There are 1,573 catch basins in the Town of Hebron.
 2017 - 1,573 catch basins, a hydrodynamic separator and sedimentation tanks were cleaned.
 2018 - 1,573 catch basins, a hydrodynamic separator and sedimentation tanks were cleaned.
 2019 - 1,573 catch basins, a hydrodynamic separator and sedimentation tanks were cleaned.

As all structures are cleaned annually, no optimization methods are required.

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.

Based on information contained in the CT DEEP *Factsheet: Town of Hebron Water Quality and Stormwater Summary*, 839.55 acres of the town has an impervious area exceeding 12%

The DCIA for the town was computed to be 7.00 acres using methods contained in the paper entitled *Estimating Change in Impervious Area (IA) and Directly Connected Impervious Area (DCIA) for Massachusetts Small MS4 Permit*. The 2% reduction in DCIA will require a DCIA reduction of 0.140 acre 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.

DRAFT

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

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 only impaired water in the Town of Hebron is the unnamed pond in Gay City State Park. A partnership was formed with the Salmon River Watershed Partnership, Gay City State Park, UConn Master Gardeners and CT DEEP Parks whereby a vegetated buffer biofilter to deter Canada Geese and to filter stormwater runoff was constructed.

Additional funds are being pursued for additional plantings and the installation of permanent public educational signage.

In that the impaired water is in a State Park, the Town of Hebron does not need to investigate and monitor the bacteria impairment.

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?

There are no Impaired Waters in the Town Hebron other than the State owned Gay City State Park Pond which is being addressed by the State.

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?

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

There are no Impaired Waters in the Town Hebron other than the State owned Gay City State Park Pond which is being addressed by the State.

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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)

DRAFT

Part III: Additional IDDE Program Data

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
4701-04-1	11.35% Impervious	1

DRAFT

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 than 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 than poor owner maintenance).

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: Andrew J. Tierney, Town Manager	Print Name: Wade M. Thomas, CPMSM
Signature:	Signature:
Date:	Date:
June , 2020	June , 2020