



Town of Hebron, Connecticut

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

Stormwater Management Plan

2015 Annual Report

Permit No. GSM000101

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2015 Minimum Control Measure Summary

The Town of Hebron continues to have several Qualifying Local Programs in most of the six Minimum Control Measures.

Minimum Control Measure No. 1 - Public Education and Outreach

In 2007, the ten Salmon River watershed towns, assisted by the Nature Conservancy, launched the Salmon River Watershed Partnership (SRWP). The partnership consists of representatives from the Salmon River watershed towns, The Nature Conservancy, the CTDEEP, Trout Unlimited, Colchester Land Trust and Friends of Silvio O. Conti Refuge on Haddam Neck.

The SRWP conducts public education outreach and activities throughout the year in the watershed. The SRWP includes the following ten municipalities: Bolton, Colchester, Columbia, East Haddam, East Hampton, Glastonbury, Haddam, Hebron, Lebanon and Marlborough. The following stormwater and water quality education and outreach activities were conducted in the Town of Marlborough by the SRWP:

Annual Newsletter - February 2015

An Annual Newsletter which describes town and partnership activities related to stormwater management and water quality monitoring among other topics. The newsletter is sent for general distribution to the ten Salmon River watershed towns and is also available to the general public at public education and outreach events. The Annual Newsletter is also posted on the SRWP website.

Hebron Maple Fest - March 2015

The SRWP set up a booth which displayed SRWP activities and also encouraged interested individuals to sign up for Salmon River watershed water quality monitoring to be conducted later in the year.

Town Leader Breakfast - May 2015

Watershed Town Leaders, Town Planners and SRWP Members met over breakfast to share projects that support healthy watershed decision making.

DEEP Great Park/Salmon River Forest Event - May 2015

Colchester Land Trust - June 2015

Haddam Neck Fair - August 2015

A booth was set up to display SRWP activities and also encouraged volunteers to sign up for Salmon River watershed water quality monitoring with a special focus on impacts of detrimental water quality on macroinvertebrates. Each of the three events was attended by over 100 people.

SRWP Facebook Page

Information pertaining to watershed monitoring efforts, opportunities for the public to participate and actions that citizens can do on a personal level that will help protect the water quality of the watershed are posted.

SRWP website

The SRWP website www.salmonriverct.org posts reports on water quality and water monitoring results and also offers information and web links to Best Management Practices (BMPs).

The following are listed under the Protecting the Watershed, Partnership Activities tab on the main page:

- Partnership Activities
 - How Are We Protecting the Watershed?
 - Establishing a Salmon River Watershed Partnership...
 - Signing a Conservation Compact....
 - Addressing Impact of Development....
 - Assessment Report
 - Monitoring Water Quality....
- River Bioassessments
 - Salmon River Watershed - Rapid Bioassessment Survey Report - 2008
 - 2008 CTDEEP Rapid Bioassessment in Wadeable Streams and Rivers by Volunteers
 - 2009 CTDEEP Rapid Bioassessment in Wadeable Streams and Rivers by Volunteers
 - 2010 CTDEEP Rapid Bioassessment in Wadeable Streams and Rivers by Volunteers
 - 2011 CTDEEP Rapid Bioassessment in Wadeable Streams and Rivers by Volunteers
 - 2012 CTDEEP Rapid Bioassessment in Wadeable Streams and Rivers by Volunteers
 - 2013 CTDEEP Rapid Bioassessment in Wadeable Streams and Rivers by Volunteers
 - Rapid Bioassessment for Volunteers PowerPoint Presentation
- Baseline Water Quality Monitoring Report
 - 2013 Baseline Water Quality Monitoring Report
 - 2014 Baseline Water Quality Monitoring Report
- Other Reports
 - 2013 Annual Newsletter
 - 2014 Annual Newsletter
 - 2015 Annual Newsletter

The following links are listed under the Protecting the Watershed, Homeowners tab on the main page:

- What Can Homeowners Do?
 - Design a Low Maintenance Lawn (with 5 website links)
 - Think Rain Barrels (with 2 website links)
 - Use Native Plants When Landscaping (with 2 website links)
 - Reduce Your Impervious Footprint (with 3 website links)
 - Create a Rain Garden (with 2 website links)
 - Compost for Healthy Soil and Plants (with 2 website links)
 - Mulching (with 2 website links)

The following links are listed under the Protecting the Watershed, Business Owners tab on the main page:

- Going Green is Good for Business!
- Won't Going Green Cost Me an Arm and a Leg? (with 3 website links)
- Green Cleaning (with a website link)
- Pump That Pool (with a Connecticut Department of Public Health website link)
- Are You Putting Poison Down the Drain?! (with 2 website links)
- Get Planting! (with 2 website links)
- Go Native! (with 2 website links)
- Non-Toxic Cleaning
- Treat Your Septic Tank
- What Are You Pouring Down the Drain?
- Get Planting!

The following links are listed under the Protecting the Watershed, Animal Owners tab on the main page:

- What Can Animal Owners Do?
- Check Your Local Regulations:
- Follow Recommended Best Management Practices:
 - Recommended Ordinances for Livestock
 - Good Horse Keeping
- Maintain Those Buffers:
 - What's in the Poop Anyway?
 - Wells and Water Resources

The following links are listed under the Protecting the Resources & Links tab on the main page:

- Links to each of the ten municipalities

Information on the Household Hazardous Waste, Recycling, Bulky Waste and the Electronics Collection Program was available on the Town website at <http://www.hebronct.com/>

Minimum Control Measure No. 2 - Public Participation/Involvement

The following outreach activities were conducted in the Town of Hebron by the Salmon River Watershed Partnership:

Baseline Water Quality Monitoring by Volunteers - June through August

In 2013 the SRWP initiated baseline water quality monitoring in the watershed. Eleven water quality assessment locations were sampled and analyzed for 10 consecutive weeks. In 2014 the baseline water quality monitoring continued at the eleven locations in the Salmon River watershed to establish baseline water quality data to track future water quality changes.

15 watershed town citizens were trained to operate hand-held water parameter equipment. For weekly determination of water temperature, pH, dissolved oxygen, conductivity, total dissolved solids and salinity.

The data was compiled as a 2014 Baseline Water Quality Monitoring Report presented graphically for use by all 10 Salmon River watershed towns. Both the initial 2013 Baseline Water Quality Monitoring Report and the 2014 Baseline Water Quality Monitoring Report are posted on the SRWP website under Partnership Activities.

Two of the eleven baseline water quality monitoring sites are located in the Town of Hebron. A water quality monitoring site is located on the Upper Jeremy River at the Connecticut Route 66 crossing and the other water quality monitoring site is located on the Raymond Brook just upstream from its confluence with the Upper Jeremy River.

Road Culvert Mapping and Data Collection - August through December

Road culverts were mapped and data was recorded as part of a partnership between student interns, CTDEEP Fisheries and local towns. Data collected included culvert size, streamflow barriers, general condition assessment, erosion assessment and notes on any other unusual conditions.

The collected data was uploaded to the UMass New England Culvert Database.

Benthic Macroinvertebrate Assessment - September through November

In 2008 under the guidance of The Nature Conservancy and the assistance of the CT RiverWatch Program the SRWP sponsored a session to train volunteers to sample and identify benthic macroinvertebrate to assess water quality.

Benthic Macroinvertebrate Assessment Monitoring has been conducted in the Fall of each year from 2008 through 2014 and the results are posted as Annual Water Quality Results and Reports on the SRWP website.

Salmon River Watershed Town Planner Working Sessions - December

In 2009 the Horsley Witten Group was contracted by The Nature Conservancy to assess municipal land use practices in each of the ten Salmon River watershed towns. An assessment report entitled *Salmon River Watershed Municipal Land Use Evaluation Project* was released by the Horsley Witten Group, Inc. in 2010. The report provided guidance and recommendations to each of the towns on topics including riparian setbacks, stormwater management, road design standards, forest management, open space acquisition and development standards. Each of the ten watershed towns have since reviewed the land use regulations relative to the report and have incorporated revisions to the land use regulations to incorporate best management practices (BMPs) and encourage Low Impact Development (LID).

The SRWP, The Nature Conservancy and CTDEEP Watershed Managers conducted an outreach working session to the planners of each of the ten towns to review how changes in land use regulations may have improved water quality and the overall health of the

Salmon River Watershed .

Town residents continued to be involved in the Household Hazardous Waste, Recycling, Bulky Waste Program and the Electronics Collection Day programs. Information on the programs is available at the Town website at: <http://www.hebronct.com/>.

Minimum Control Measure No. 3 - Illicit Discharge Detection and Elimination

An Illicit Discharge Detection and Elimination Ordinance was enacted on May 3, 2007 (Ordinance Number 2007-3, Article II, Illicit Discharge and Connection § 295-6 - § 295-26).

Information on the Household Hazardous Waste and the Electronics Collection Program was available on the Town website at: <http://www.hebronct.com/>.

Minimum Control Measure No. 4 - Construction Site Runoff Control

Continued to maintain the regulatory mechanism to regulate construction site stormwater runoff control. Section 8.13 - Soil Erosion and Sediment Control Regulations for Land Development of the Hebron Zoning Regulations and Section 5.5.D of the Town of Hebron Subdivision Regulations and Public Improvement Specifications provides the ability to regulate polluted runoff that emanates from construction sites with a cumulative disturbance of more than one-half acre.

Continued to retain Nathan L. Jacobson & Associates, Inc. to review Construction Site Development Plans and Construction Soil Erosion and Sediment Control Plans.

Continued to retain Nathan L. Jacobson & Associates, Inc. to conduct construction site inspections to ensure implementation of appropriate erosion and sediment control best management practices as contained in the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control and/or as experience dictates.

Minimum Control Measure No. 5 - Post-Construction Site Runoff Control

Continued to maintain the regulatory mechanism to require mitigation measures when the proposed development is likely to cause an increase in the volume or rate of storm water runoff so as to overload the existing drainage system, cause downstream flooding or downstream damage by Section 5.5.G.5 Stormwater Management Plan Standards and Criteria for Decision of the Town of Hebron Subdivision Regulations and Public Improvement Specifications, and Section 8.24. Stormwater Management Plan Standards and Criteria for Decision of the Hebron Zoning Regulations which include the following:

In order to approve any application for which a stormwater management plan is required, the commission shall find the stormwater management plan consistent with the following criteria. If such application is also subject to the requirements of an aquifer protection overlay

zone or any other requirements for non-point source pollution control, the more stringent requirements shall control.

- Direct channeling of untreated surface water runoff into adjacent ground and surface waters shall be prohibited.
- To the maximum extent feasible, no net increase in rates of urban stormwater runoff from the site shall result from the proposed activity.
- To the maximum extent feasible, design and planning for site development shall provide for minimal disturbance of pre-development natural hydrologic conditions, and shall reproduce such conditions after completion of the proposed activity.
- Pollutants shall be controlled at their source to the maximum extent feasible in order to contain and minimize contamination.
- Stormwater management systems shall be designed and maintained to manage site runoff in order to eliminate surface and groundwater pollution, prevent flooding and, where required, control peak discharges and provide pollution treatment.
- Stormwater management systems shall be designed to collect, retain and treat the first inch of rain on-site, so as to trap floating material, oil and litter.
- On-site retention or detention of stormwater shall be employed to the maximum extent feasible. On-site methods include but are not limited to landscaped depressions, grass swales, infiltration trenches and retention or detention basins.
- To the maximum extent feasible, post-development runoff volumes shall not exceed pre-development volumes. Stormwater runoff volumes shall be controlled by encouraging infiltration.
- Stormwater treatment systems shall be employed where necessary to ensure that the average annual loadings of total suspended soils (TSS) following the completion of the proposed activity at the site are no greater than such loadings prior to the proposed activity. Alternatively, stormwater treatment systems shall remove 80% of TSS discharge from the site on an average annual basis. Chemical treatment of stormwater is not acceptable.
- Where it is found necessary to utilize constructed, channelized drainage systems, the best available technology shall be employed in the design of such systems, including oil and sediment separation devices, filtration and discharge techniques and erosion control. Stormwater generated from impervious surfaces and collected and conveyed in such systems shall be initially treated in catch basins for removal of heavy particulates and then further treated in sediment and oil separation devices for secondary separation of particulates and oils.
- The design of all stormwater management facilities and the selection of stormwater management practices and techniques shall be such as to minimize, to the most practical extent possible, the requirements for maintenance.
- The Commission may withhold approval of a stormwater management plan if it fails to meet the criteria set forth above.

On September 29, 2015 Michael O'Leary, Town Planner and Kevin Kelly, Director of Public Works attended a Public Works Breakfast Planning Meeting which was a workshop that was organized and funded by Patricia Young, Watershed Coordinator of the Salmon River Watershed Partnership and Program Director for the Eightmile River Wild & Scenic Watershed and Michael

Dietz, University of Connecticut, Water Resources Educator, Center for Land Use Education and Research (CLEAR).

The emphasis of the planning workshop was on the integration of municipal Green Infrastructure (GI) to reduce stormwater impacts and to determine which types of GI were of specific interest to municipalities and what topics related to the GI would be most helpful (i.e. maintenance concerns and costs, cost effectiveness, infrastructure response during extreme weather and the need for special equipment). The workshop was targeted for Municipal Engineers and Department of Public Works personnel. Based on input from municipal representatives it was the consensus of the participants that a GI field walk and maintenance cost presentation at the University of Connecticut would expose the participants to the widest array of GI practices.

On November 17, 2015 Michael O’Leary, Town Planner and Kevin Kelly, Director of Public Works attended the Real Cost of Going Green Workshop which included a GI field review of rain gardens, bioswales, tree box filters, pervious concrete brick pavers, pervious bituminous concrete pavement, pervious concrete pavement, roof gardens and other GI installations. After the field walk participants were given a presentation on the maintenance costs associated with the GI practices by Katie Milardo of the UCONN Office of Environmental Policy.

Subsequent to the field walk and maintenance cost presentation, participants were provided with the following website links via a group e-mail on December 2, 2015:

1. *Guidance Document on LID Operation and Maintenance* that UCONN has used to begin to assign maintenance costs to existing infrastructure. The document contains descriptions of various treatments, maintenance considerations, key operations to preserve function, equipment needed and checklist for common LID/GI measures:

<http://www.ecy.wa.gov/programs/wq/stormwater/municipal/LID/TRAINING/LIDO&MGuidanceDocument.pdf>

2. UCONN campus Green Infrastructure on-line tour :

<http://uconnclear.maps.arcgis.com/apps/MapTour/index.html?appid=990a5036bb604c47af25dcd082e01ca9>

3. Link to an EPA website that has a number of topics and also includes links for *Cost-Benefit of Traditional vs. Green Infrastructure* and *Funding Options*.

<http://www2.epa.gov/green-infrastructure>

4. Mark Branse is updating an *Overview of the Legal Concerns Related to Inheriting and Managing Stormwater Treatment Measures* which will be forward to workshop attendees when it is completed.

Design work was completed on a municipal conventional bituminous concrete/permeable bituminous concrete parking lot southerly of the Hebron Library parking lot. Due to the poor soil hydraulic characteristics, including low soil permeability and high groundwater conditions, the

parking lot had to be hybridized to incorporate conventional impervious bituminous concrete pavement.

Continued to retain Nathan L. Jacobson & Associates, Inc. to review Post-Construction stormwater runoff management plans for all proposed developments and site plans.

Minimum Control Measure No. 6 - Pollution Prevention/Good Housekeeping

Kevin Kelly, Director of Public Works was a 2014 graduate of the CT Technology Transfer Center Connecticut Transportation Leadership Program.

Richard Wanat, an employee of the Department of Public Works, graduated from the 2014 Public Works Academy Program of the CT Technology Transfer Center. To graduate from the Road Master Program the participants must attend a series of six weekly sessions. One of the six sessions is entitled Safe Operation of a Snow plow and Winter Operations and Sander Calibration.

Frank Gazdzicki and Darren Norton, both employees of the Department of Public Works, are also 2012 graduates of the Public Works Academy Program of the CT Technology Transfer Center.

It is anticipated that additional Hebron DPW employees may pursue CT Technology Transfer Center training programs in calendar year 2016.

Road sweeping began in late March was completed in the first week of June. All roads are swept with two passes of the street sweeper. The town owns a Elgin Broom Bear street sweeper which typically starts in the southerly portion of town. The town also subcontracted Country Care Landscaping & Bobcat Services of Colchester for four weeks of road sweeping (April 13th to May 7th). The Country Care Landscaping & Bobcat Services sweeper starts in the northerly portion of town. The street sweeping operations converged in the center of town

All town owned catch basins, storm manholes, sedimentation structures and a hydrodynamic separator were vactored in 2015. The vactoring operations were conducted from the end of June to August. Shaw Vac Services of Plantsville, Connecticut was awarded the contract to vactor the catch basins. A Department of Public Works employee accompanied the vactor truck at all times to ensure that all of the drainage structures are completely cleaned. When more than one Shaw Vac Services vactor truck is cleaning the catch basins the DPW employee rotates between vactor trucks

In winter 2014-2015 the Town of Hebron treated approximately one half of the town roads with a conventional sand/salt deicing mix utilizing a sand/salt deicing mixture ratio of 4:1 and approximately half of the town is treated with a treated salt deicing mixture which is straight sodium chloride treated with Ice B'Gone at the rate of 6-8 gallons per ton. The Town of Hebron typically utilizes 1,200 tons to 1,500 tons of salt for road deicing.

The Ice B'Gone treated salt deicing mixture is typically applied approximately one hour before snowfall begins which serves to initially prevent the bond between snow/ice and pavement. An

application of the Ice B'Gone treated sand/salt deicing mixture is applied at a lower application rate immediately following the storm. Utilization of the Ice B'Gone treated salt has allowed the town to reduce the deicing mixture application rate per lane mile which has subsequently resulted in a reduction of sedimentation in the drainage structures.

The road deicing mixture is spread with eleven full-size snow plow/spreaders and two small snow plow/spreaders. Six of the snow plow/spreaders are equipped with computer controlled Epoke Sirius Combination Bulk Spreaders with a ground speed related delivery of deicing material to the spreader disc.

The automated road deicing mixture application allows the road deicing mixture to be uniformly applied at a minimum rate of 100 pounds per lane mile to a maximum of 900 pounds per lane mile. The road deicing mixture application rate is storm dependent. Pretreatment deicing material application rates typically range from a minimum application rate of 250 pounds per road mile to a maximum of 300 pounds per road mile. The deicing application rates are calibrated prior to every snow plowing season. The other seven snow plow/spreaders apply deicing material by a manually controlled system.

Stormwater Sampling

One round of MS4 stormwater sampling was conducted on October 28, 2015 to fulfill the MS4 2015 calendar year MS4 stormwater sampling requirements.

The round of six MS4 stormwater outfall samples was obtained from four residential MS4 stormwater outfalls and two general business MS4 stormwater outfalls.

The samples were obtained from the following locations:

General Business Zone N 41.66137 W -72.35850
Outfall West of Liberty Drive
15" Reinforced Concrete Pipe Flared End Section
Drainage Basin No. 4701 - Raymond Brook

General Business Zone N 41.65778 W -72.36272
Outfall West of Pendleton Drive Cul-de-Sac
15" Reinforced Concrete Pipe Flared End Section
Drainage Basin No. 4701 - Raymond Brook

Residential Zone N 41.68620 W -72.44367
Headwall West of Karlswood Drive Cul-de-Sac
15" Asphalt Coated Corrugated Metal Pipe
Drainage Basin No. 4707 - Blackledge River

