

**Year 3 Annual Report**  
**Massachusetts Small MS4 General Permit**  
**Reporting Period: July 1, 2020-June 30, 2021**

*\*\*Please DO NOT attach any documents to this form. Instead, attach all requested documents to an email when submitting the form\*\**

*Unless otherwise noted, all fields are required to be filled out. If a field is left blank, it will be assumed the requirement or task has not been completed. Please ONLY report on activities between July 1, 2020 and June 30, 2021 unless otherwise requested.*

**Part I: Contact Information**

Name of Municipality or Organization: Town of Ludlow

EPA NPDES Permit Number: MAR041014

**Primary MS4 Program Manager Contact Information**

Name: James Goodreau

Title: Assistant Town Engineer

Street Address Line 1: 198 Sportsmen's Road

Street Address Line 2:

City: Ludlow

State: MA

Zip Code: 01056

Email: jgoodreau@ludlow.ma.us

Phone Number: (413) 583-5625

**Stormwater Management Program (SWMP) Information**

SWMP Location (web address): <http://www.ludlow.ma.us/html/dpw/more.htm>

Date SWMP was Last Updated: Sep 28, 2021

If the SWMP is not available on the web please provide the physical address:

## Part II: Self-Assessment

First, in the box below, select the impairment(s) and/or TMDL(s) that are applicable to your MS4. Make sure you are referring to the most recent EPA approved Section 303(d) Impaired Waters List which can be found here: <https://www.epa.gov/tmdl/region-1-impaired-waters-and-303d-lists-state>

|   |   |  |  |
|---|---|--|--|
| <b>Impairment(s)</b>  |   |  |  |
| <input checked="" type="checkbox"/> Bacteria/Pathogens              | <input type="checkbox"/> Chloride                           | <input type="checkbox"/> Nitrogen                            | <input type="checkbox"/> Phosphorus          |
| <input type="checkbox"/> Solids/ Oil/ Grease (Hydrocarbons)/ Metals |   |  |  |
| <b>TMDL(s)</b>  |   |  |  |
| <i>In State:</i>  | <input type="checkbox"/> Assabet River Phosphorus           | <input type="checkbox"/> Bacteria and Pathogen               | <input type="checkbox"/> Cape Cod Nitrogen   |
|   | <input type="checkbox"/> Charles River Watershed Phosphorus | <input checked="" type="checkbox"/> Lake and Pond Phosphorus |  |
| <i>Out of State:</i>  | <input type="checkbox"/> Bacteria/Pathogens                 | <input type="checkbox"/> Metals                              | <input checked="" type="checkbox"/> Nitrogen |
|   |   |  | <input type="checkbox"/> Phosphorus          |
|   |   |  | Clear Impairments and TMDLs                  |

Next, check off all requirements below that have been completed. **By checking each box you are certifying that you have completed that permit requirement fully.** If you have not completed a requirement leave the box unchecked. Additional information will be requested in later sections.

### Year 3 Requirements

- Inspected and screened all outfalls/interconnections (excluding Problem and Excluded outfalls)
- Updated outfall/interconnection priority ranking based on the information collected during the dry weather inspections as necessary
- Post-construction bylaw, ordinance, or other regulatory mechanism was updated and adopted consistent with permit requirements

*Optional:* If you would like to describe progress made on any incomplete requirements listed above, provide any additional information, and/or if any of the above year 3 requirements could not be completed due to the impacts of COVID-19, please identify the requirement that could not be completed, any actions taken to attempt to complete the requirement, and reason the requirement could not be completed below:

The bylaw has been updated but has not been adopted. Additionally, Town DPW staff worked a reduced schedule which impacted inspections and screening of outfalls.

### Annual Requirements

- Provided an opportunity for public participation in review and implementation of SWMP and complied with State Public Notice requirements
- Kept records relating to the permit available for 5 years and made available to the public
- The SSO inventory has been updated, including the status of mitigation and corrective measures implemented
  - This is not applicable because we do not have sanitary sewer
  - This is not applicable because we did not find any new SSOs

- The updated SSO inventory is attached to the email submission
- The updated SSO inventory can be found at the following website:  
<http://www.ludlow.ma.us/html/dpw/more.htm>

- Properly stored and disposed of catch basin cleanings and street sweepings so they did not discharge to receiving waters
- Provided training to employees involved in IDDE program within the reporting period
- All curbed roadways were swept at least once within the reporting period
- Updated system map due in year 2 as necessary
- Enclosed all road salt storage piles or facilities and implemented winter road maintenance procedures to minimize the use of road salt
- Implemented SWPPPs for all permittee owned or operated maintenance garages, public works yards, transfer stations, and other waste handling facilities
- Updated inventory of all permittee owned facilities as necessary
- O&M programs for all permittee owned facilities have been completed and updated as necessary
- Implemented all maintenance procedures for permittee owned facilities in accordance with O&M programs
- Implemented program for MS4 infrastructure maintenance to reduce the discharge of pollutants
- Inspected all permittee owned treatment structures (excluding catch basins)

*Optional:* If you would like to describe progress made on any incomplete requirements listed above, provide any additional information, and/or if any of the above annual requirements could not be completed due to the impacts of COVID-19, please identify the requirement that could not be completed, any actions taken to attempt to complete the requirement, and reason the requirement could not be completed below:

SWMP has been posted online; however, the Town did not receive any comments from the public.

### **Bacteria/ Pathogens** (Combination of Impaired Waters Requirements and TMDL Requirements as Applicable)

#### Annual Requirements

##### *Public Education and Outreach\**

- Annual message was distributed encouraging the proper management of pet waste, including noting any existing ordinances where appropriate
- Permittee or its agents disseminated educational material to dog owners at the time of issuance or renewal of dog license, or other appropriate time
- Provided information to owners of septic systems about proper maintenance in any catchment that discharges to a water body impaired for bacteria

*\* Public education messages can be combined with other public education requirements as applicable (see Appendix H and F for more information)*

*Optional:* If you would like to describe progress made on any incomplete requirements listed above or provide any additional details, please use the box below:

**Nitrogen** (Combination of Impaired Waters Requirements and TMDL Requirements as Applicable)

Annual Requirements

*Public Education and Outreach\**

- Distributed an annual message in the spring (April/May) that encourages the proper use and disposal of grass clippings and encourages the proper use of slow-release fertilizers
- Distributed an annual message in the summer (June/July) encouraging the proper management of pet waste, including noting any existing ordinances where appropriate
- Distributed an annual message in the fall (August/September/October) encouraging the proper disposal of leaf litter

*\* Public education messages can be combined with other public education requirements as applicable (see Appendix H and F for more information)*

*Good Housekeeping and Pollution Prevention for Permittee Owned Operations*

- Increased street sweeping frequency of all municipal owned streets and parking lots subject to Permit part 2.3.7.a.iii.(c) to a minimum of two times per year (spring and fall)

*Potential structural BMPs*

- Any structural BMPs listed in Table 3 of Attachment 1 to Appendix H already existing or installed in the regulated area by the permittee or its agents was tracked and the nitrogen removal by the BMP was estimated consistent with Attachment 1 to Appendix H. The BMP type, total area treated by the BMP, the design storage volume of the BMP and the estimated nitrogen removed in mass per year by the BMP were documented.

- The BMP information is attached to the email submission
- The BMP information can be found at the following website:

*Optional:* If you would like to describe progress made on any incomplete requirements listed above or provide any additional details, please use the box below:

Currently, the Town sweeps all streets and parking lots, curbed and uncurbed, once per year. Streets in critical areas and in the downtown area swept twice per year. The Town's street sweeping schedule will be updated to include to include sweeping of Town-owned parking lots twice per year.

The BMP inventory including the required information was not completed by 6/30/2021, but has been completed by the time of the annual report submission (9/28/2021).

**Lake and Pond Phosphorus TMDL**

- Completed the funding source assessment

*Optional:* If you would like to describe progress made on any incomplete requirements listed above or provide any additional details, please use the box below:

The funding source assessment was not completed by 6/30/2021, but has been completed by the time of the annual report submission (9/28/2021).

*Optional:* Use the box below to provide any additional information you would like to share as part of your self-assessment:

### **Part III: Receiving Waters/Impaired Waters/TMDL**

Have you made any changes to your lists of receiving waters, outfalls, or impairments since the NOI was submitted?

- Yes
- No

If yes, describe below, including any relevant impairments or TMDLs:

### Part IV: Minimum Control Measures

Please fill out all of the metrics below. If applicable, include in the description who completed the task if completed by a third party.

#### MCM1: Public Education

Number of educational messages completed during this reporting period: 24

Below, report on the educational messages completed during this reporting period. For the measurable goal(s) please describe the method/measures used to assess the overall effectiveness of the educational program.

##### **BMP: Pollution Prevention for Business**

Message Description and Distribution Method:

Post pollution prevention document for businesses on Town website.

Targeted Audience: Businesses, institutions and commercial facilities

Responsible Department/Parties: DPW Operations

Measurable Goal(s):

This document has been posted on the Town of Ludlow website, under the Department of Public Works  
Additional Information.

Message Date(s): June 2019 - ongoing

Message Completed for: Appendix F Requirements  Appendix H Requirements

Was this message different than what was proposed in your NOI? Yes  No

If yes, describe why the change was made:

##### **BMP: Storm Water Management for Developers**

Message Description and Distribution Method:

Post Storm water Management for Developers document on Town website.

Targeted Audience: Developers (construction)

Responsible Department/Parties: DPW Construction

Measurable Goal(s):

This document has been posted on the Town of Ludlow website, under the Department of Public Works  
Additional Information.

Message Date(s): June 2019 - ongoing

Message Completed for: Appendix F Requirements  Appendix H Requirements

Was this message different than what was proposed in your NOI? Yes  No

If yes, describe why the change was made:

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**BMP: Construction Storm Water Tips**

Message Description and Distribution Method:

Post Construction Storm water Tips document on Town website.

Targeted Audience: Developers (construction)

Responsible Department/Parties: DPW Operations

Measurable Goal(s):

This document has been posted on the Town of Ludlow website, under the Department of Public Works

Additional Information

Message Date(s): June 2019 - ongoing

Message Completed for: Appendix F Requirements  Appendix H Requirements

Was this message different than what was proposed in your NOI? Yes  No

If yes, describe why the change was made:

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**BMP: Storm Water Pollution Prevention for Industrial Sites**

Message Description and Distribution Method:

Post Stormwater Pollution Prevention for Industrial Sites document on Town website.

Targeted Audience: Industrial facilities

Responsible Department/Parties: DPW Operations

Measurable Goal(s):

This document has been posted on the Town of Ludlow website, under the Department of Public Works

Additional Information.

Message Date(s): June 2019 - ongoing

Message Completed for: Appendix F Requirements  Appendix H Requirements

Was this message different than what was proposed in your NOI? Yes  No

If yes, describe why the change was made:

**BMP: Maintaining BMPs at Industrial Facilities**

Message Description and Distribution Method:

Post Maintaining your BMPs document on Town website.

Targeted Audience: Industrial facilities

Responsible Department/Parties: DPW Operations

Measurable Goal(s):

This document has been posted on the Town of Ludlow website, under the Department of Public Works  
Additional Information.

Message Date(s): June 2019 - ongoing

Message Completed for: Appendix F Requirements  Appendix H Requirements

Was this message different than what was proposed in your NOI? Yes  No

If yes, describe why the change was made:

**BMP: Storm Water Pollution Prevention for Homeowners**

Message Description and Distribution Method:

Post Overall Storm water Pollution Prevention Guide for Homeowners document on Town website.

Targeted Audience: Residents

Responsible Department/Parties: DPW Operations

Measurable Goal(s):

This document has been posted on the Town of Ludlow website, under the Department of Public Works  
Additional Information.

Message Date(s): June 2019 - ongoing

Message Completed for: Appendix F Requirements  Appendix H Requirements

Was this message different than what was proposed in your NOI? Yes  No

If yes, describe why the change was made:

**BMP: Education for Residents on Lawn Fertilizing**

Message Description and Distribution Method:

Post Storm water Pollution Education: Fertilizing the Lawn document on Town website. Distribute an annual message in the Spring (April/May) that encourages the proper use and disposal of grass clippings and encourages the proper use of slow-release fertilizers.

Targeted Audience: Residents

Responsible Department/Parties: DPW Operations

Measurable Goal(s):

The "Fertilizing the Lawn" document has been posted on the Town DPW website, under additional information and will be posted as an announcement on the local cable access station. The document will remain on the Town DPW website year-around.

Message Date(s): June 2019 - ongoing

Message Completed for: Appendix F Requirements  Appendix H Requirements

Was this message different than what was proposed in your NOI? Yes  No

If yes, describe why the change was made:

**BMP: Dog Waste and Surface Water Quality**

Message Description and Distribution Method:

Post Dog Waste and Surface Water Quality document on Town website. Provide educational material on pet waste and surface water quality to dog owners at time of issuance and renewal of dog licenses. The message will remain on the Town website and will be available throughout the year. The message will encourage the proper management of pet waste.

Targeted Audience: Residents

Responsible Department/Parties: DPW Operations

Measurable Goal(s):

The "Dog Waste and Surface Water Quality" document has been posted on the Town DPW website, under additional information. This message will remain on the Town DPW website year-round to encourage the proper management of pet waste. The Town Clerk has educational materials on pet waste and surface water quality available to dog owners at time of issuance and renewal of dog licenses.

Message Date(s): June 2019 - ongoing

Message Completed for: Appendix F Requirements  Appendix H Requirements

Was this message different than what was proposed in your NOI? Yes  No

If yes, describe why the change was made:

**BMP: EPA & DEP General Storm Water Information**

Message Description and Distribution Method:

Post links to EPA and DEP General Storm water Information on Town website.

Targeted Audience: Residents

Responsible Department/Parties: DPW Operations

Measurable Goal(s):

The EPA and DEP links have been posted on the Town of Ludlow website, under the Department of Public Works Additional Information.

Message Date(s): June 2019 - ongoing

Message Completed for: Appendix F Requirements  Appendix H Requirements

Was this message different than what was proposed in your NOI? Yes  No

If yes, describe why the change was made:

**BMP: Hazardous Waste Collection Day**

Message Description and Distribution Method:

Host a hazardous waste collection day.

Targeted Audience: Residents

Responsible Department/Parties: DPW Operations

Measurable Goal(s):

A Hazardous Waste Collection Day was held in 2018. The Town directs residents to nearby facilities to encourage residents to dispose of hazardous properly. No Hazardous Waste Collection was held in 2020 or 2021 due to difficulties in holding in-person event during COVID-19 pandemic.

Message Date(s): June 2019 - ongoing

Message Completed for: Appendix F Requirements  Appendix H Requirements

Was this message different than what was proposed in your NOI? Yes  No

If yes, describe why the change was made:

**BMP: Maintenance of Septic Systems in Impaired Water Body Catchment**

Message Description and Distribution Method:

Provide information on proper maintenance to owners of septic systems within any catchment that discharges to the Chicopee River (MA36-24), which has a fecal coliform impairment.

Targeted Audience: Residents

Responsible Department/Parties: DPW Operations

Measurable Goal(s):

Message Date(s): June 2019 - ongoing

Message Completed for: Appendix F Requirements  Appendix H Requirements

Was this message different than what was proposed in your NOI? Yes  No

If yes, describe why the change was made:

**BMP: Annual Leaf Litter Disposal Message**

Message Description and Distribution Method:

Distribute an annual message in the fall (August/September/October) encouraging the proper disposal of leaf litter

Targeted Audience: Residents

Responsible Department/Parties: DPW Operations

Measurable Goal(s):

This document has been posted on the Town of Ludlow website, under the Department of Public Works Additional Information. A public service announcement was run on the local cable access channel over a month in October 2020.

Message Date(s): October 2020

Message Completed for: Appendix F Requirements  Appendix H Requirements

Was this message different than what was proposed in your NOI? Yes  No

If yes, describe why the change was made:

**BMP: Think Blue Connecticut River Website**

Message Description and Distribution Method:

The Think Blue Connecticut River website is at the core of all regional messaging about stormwater. The website at [www.thinkblueconnecticutriver.org](http://www.thinkblueconnecticutriver.org) does the following:

- ♦ Covers major areas of messaging about reducing polluted storm-water flows, including lawn and yard care, pet waste management, car care, controlling soil erosion, soaking up the rain, and septic system care
- ♦ Addresses the key 4 audiences plus educators
- ♦ Serves as the “landing place” for information on nearly all social media messaging

Targeted Audience: Residents, business/institutional/commercial, developers, and industrial

Responsible Department/Parties: PVPC staff and Connecticut River Stormwater Committee members

Measurable Goal(s):

A total of 3,196 people visited the Think Blue Connecticut River website during Year 3 and spent an average of 1 minute, 38 seconds on viewing a total of 3,940 pages on stormwater best practices.

Message Date(s): July 1, 2020 through June 30, 2021

Message Completed for: Appendix F Requirements  Appendix H Requirements

Was this message different than what was proposed in your NOI? Yes  No

If yes, describe why the change was made:

Ludlow is a member of the Connecticut River Stormwater Committee and therefore participates in MS4 measures completed by this organization in addition to the Town's NOI.

**BMP: Cigarette Butts - Residents**

Message Description and Distribution Method:

Materials and messaging for this campaign to reduce cigarette butt litter were developed within the reporting period. Due to general sense that messaging would get lost in the mix given far greater public concern with the Covid-19 pandemic, actual launch of campaign messaging was postponed from Year 2 to Year 3. The campaign includes:

- Image of baby bird with cigarette butt in its mouth with message
- Large decals (2x3 feet) for public works vehicles throughout the region
- Web page with additional information on cigarette butt litter and link to informational video from Canadian public broadcasting
- Press release to local media
- Facebook advertisement and post shared with MA Audubon and the Connecticut River Conservancy that links to resources on Think Blue Connecticut River website

Targeted Audience: Residents

Responsible Department/Parties: PVPC staff and Connecticut River Stormwater Committee members

Measurable Goal(s):

Decals on Public Works vehicles and public spaces had a roughly estimated 40,000 views per month in each community. Stormwater Committee members counted views of decals using a simple Excel calculator tool that PVPC developed based on methodology from the outdoor advertising sector (see calculator tool in table next page). Several members commented that the calculator seems to yield high numbers. The Facebook advertisement reached 17,720 people identified as “smokers” and was shown 31,937 times; 152 smokers clicked on the link to check out the landing pages and there were 62 reactions. Facebook estimates that 4,330 viewers recall the campaign advertisement. The posting on PVPC’s Facebook page shows 20 shares that include Stormwater Committee members, the Connecticut River Conservancy, and Massachusetts Audubon Society’s Arcadia Sanctuary. The Springfield Republican, which printed an article and followed with an editorial estimates its audience at 83,000 readers.

Message Date(s): The press release to local media was published in the Springfield Republican in their Business Section on August 3, 2020, and then picked up as an editorial in the same paper on August 6, 2020. Decals were displayed throughout Year 3 in each member municipality. Facebook ad ran for 9 days, from May 20 to 28, 2021 PVPC’s Facebook post went up on May 21, 2021.

Message Completed for: Appendix F Requirements  Appendix H Requirements

Was this message different than what was proposed in your NOI? Yes  No

If yes, describe why the change was made:

Ludlow is a member of the Connecticut River Stormwater Committee and therefore participates in MS4 measures completed by this organization in addition to the Town's NOI.

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**BMP: Dumpster Waste and Avoiding Contaminated Flows Message - Businesses**

**Message Description and Distribution Method:**

Materials and messaging for this campaign on dumpster waste and avoiding contaminated flows were developed in Year 2, but strategy further evolved in Year 3 given constraints presented with messaging to Boards of Health during a pandemic. Rather than try to meet regionally or individually, strategy pivoted to notifying Boards of Health about the issue and availability of flyers through the membership of the Massachusetts Health Officers Association. The campaign includes:

**Update to the Think Blue Connecticut River Website to include:**

- Flyer to inform Boards of Health on proactive regulatory and educational steps to curb stormwater pollution from dumpsters
- Flyer for Boards of Health for use as part of routine interactions with retail complexes, restaurants/food establishments, and apartment complexes
- Check list for Boards of Health (developed by Town of Palmer Conservation Agent) to use when inspecting restaurants and looking at dumpsters and oil storage

An article prepared for the Massachusetts Health Officers Association (MHOA). Initially planned for publication in MHOA's newsletter, MHOA sent the article as a special e-mail blast to their 650 members. They also sent the information with a request for distribution to members of the Massachusetts Environmental Health Association (MEHA), Massachusetts Association of Health Boards (MAHB), and Western Massachusetts Public Health Association (WMPHA).

A presentation that was to be given at Western Mass Health Officers Association/MassDEP annual spring seminar focused on environmental health was not used in the end, but remains at the ready once the pandemic subsides.

**Targeted Audience:** Business, institutions, and commercial facilities

**Responsible Department/Parties:** PVPC staff and Connecticut River Stormwater Committee members

**Measurable Goal(s):**

An e-mail about Think Blue Connecticut River resources on dumpsters for Boards of Health went to the full membership of the Massachusetts Health Officers Association, 650 people. Analytics from the Think Blue Connecticut River website show a total of 84 people retrieved PDF resources posted on dumpster waste.

**Message Date(s):** The article went to the 650 members of the MHOA on March 24, 2021.

**Message Completed for:** Appendix F Requirements  Appendix H Requirements

**Was this message different than what was proposed in your NOI?** Yes  No

**If yes, describe why the change was made:**

Ludlow is a member of the Connecticut River Stormwater Committee and therefore participates in MS4 measures completed by this organization in addition to the Town's NOI.

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**BMP: New MS4 Development Standards and Erosion and Sediment Control - Developers**

Message Description and Distribution Method:

PVPC staff hosted a Think Blue Connecticut River table at the day-long virtual Western Massachusetts Developers' Conference held on October 21, 2020. The 3-d virtual booth featured hyperlinks to key documents, video, and websites, along with an opportunity for attendees to chat and collect documents for their "swag bags" from booths. The Think Blue Connecticut River booth was well attended by developers with a total of 71 visiting the virtual booth. Through participation in this conference, PVPC now has a list of the developers who attended the conference, which will prove helpful for future outreach.

Targeted Audience: Developers

Responsible Department/Parties: PVPC staff and Connecticut River Stormwater Committee members

Measurable Goal(s):

Following are statistics from the Western MA Developers Conference:

Think Blue Connecticut River Booth Summary

- Total Visits: 71
- Documents Viewed: 68
- Videos Viewed: 7

Message Date(s): October 21, 2020

Message Completed for: Appendix F Requirements  Appendix H Requirements

Was this message different than what was proposed in your NOI? Yes  No

If yes, describe why the change was made:

Ludlow is a member of the Connecticut River Stormwater Committee and therefore participates in MS4 measures completed by this organization in addition to the Town's NOI.

**BMP: Fleet Maintenance to Avoid Spills and Leaks - Industrial Facilities**

Message Description and Distribution Method:

This message is aimed at ensuring that industrial operators with vehicle fleets take care to manage vehicles so as to avoid spills and leaks. PVPC staff adapted the Think Blue Massachusetts flyer developed by Water Words that Work for the Think Blue Connecticut River region. After several attempts to acquire MSGP permittees through various on-line sources, PVPC obtained the list of MSGP permittees in Massachusetts directly from EPA Region 1 staff. PVPC staff mailed the flyer to all 126 MSGP permittees in the region on April 16, 2021.

Targeted Audience: Industrial facilities

Responsible Department/Parties: PVPC staff and Connecticut River Stormwater Committee members

Measurable Goal(s):

Mailing to 126 MSGP permittees in the region.

Message Date(s): April 16, 2021

Message Completed for: Appendix F Requirements  Appendix H Requirements

Was this message different than what was proposed in your NOI? Yes  No

If yes, describe why the change was made:

Ludlow is a member of the Connecticut River Stormwater Committee and therefore participates in MS4 measures completed by this organization in addition to the Town's NOI.

**BMP: Proper Disposal of Leaf Litter - Residents**

Message Description and Distribution Method:

Messaging for this campaign was adapted from a series of four Be a Leaf Hero social media posts developed by the Cape Cod Commission, which PVPC customized for the Connecticut River Stormwater Committee. The social media posts provide a series of tips and all tips contain a link to a page on the Think Blue Connecticut River website with more in-depth content and links. See website page at: <https://thinkblueconnecticutriver.org/be-a-leaf-hero/>. The content seeks to promote better practices with leaf litter and build understanding about potential contamination of stormwater with leaf litter. Initial efforts to run 4 boosted Facebook posts failed, so the Committee’s consultant ran one ad on Google instead. PVPC did run the 4 leaf litter posts as part of its regional Facebook page, but these could not be boosted by zip code as had been done previously due to new restrictions. Shares on these posts included stormwater committee member municipalities and the Massachusetts Audubon Society’s Arcadia Sanctuary in the region. PVPC had also prepared a door hanger for member communities to print and distribute in areas where leaf litter is problematic. While most communities did not make use of door hangers in Year 3 given the continuation of the Covid-19 pandemic, one community did hand out the door hangers at their transfer station.

Targeted Audience: Residents

Responsible Department/Parties: PVPC staff and Connecticut River Stormwater Committee members

Measurable Goal(s):

Google ad that had a total of 78,056 impressions and which drew 110 clicks to the website landing page. There were 244 views of the Leaf Hero landing page with analytics indicating that the average time spent by visitors on that resource page was an average of 3 minutes and 10 seconds. There were a total of 192 clicks to download posted PDF resources.

Message Date(s): Google ad ran from October 28 to November 4; PVPC Facebook posts began on October 29 and ran through November 4.

Message Completed for: Appendix F Requirements  Appendix H Requirements

Was this message different than what was proposed in your NOI? Yes  No

If yes, describe why the change was made:

Ludlow is a member of the Connecticut River Stormwater Committee and therefore participates in MS4 measures completed by this organization in addition to the Town's NOI.

**BMP: Importance of Soil Test, Proper Use of Fertilizers, Disposal of Grass Clippings - Residents**

**Message Description and Distribution Method:**

Social media ad and post, using idea of keeping lawns safe for families. The link provided in the social media post connects to the Think Blue Connecticut River web page on lawn and yard care, which lays out important best practices and links to useful resources, including a video by Paul Tukey, organic lawn care celebrity, as well as guides to popular lawn care chemicals and their hazards. Link to Think Blue Connecticut River is: <https://thinkblueconnecticutriver.org/lawn-and-yard-care/>. PVPC also provided members with a flyer to distribute locally. As they were able, committee members put flyers in Town Hall or Building Inspection Services.

Targeted Audience: Residents

Responsible Department/Parties: PVPC staff and Connecticut River Stormwater Committee members

**Measurable Goal(s):**

The Facebook ad reached 38,160 individuals in Stormwater Committee communities who match “gardening,” “home improvement,” or “do it yourself” identifiers. Of this number, Facebook estimates that 7,200 people will recall the ad. Ninety-nine people clicked on the “Learn More” button to go the Think Blue Connecticut River landing page on lawn care. The Facebook post in the region was shared by several Stormwater Committee communities, helping to drive the number of views on the website landing page to a total of 161 with analytics indicating that the average time spent by visitors on that resource page was 1 minute and 42 seconds. There were a total of 132 downloads on the posted PDF resources.

Message Date(s): Facebook ad ran for 6 days, from June 25th to June 30th; PVPC posted the regional Facebook message on June 23.

Message Completed for: Appendix F Requirements  Appendix H Requirements

Was this message different than what was proposed in your NOI? Yes  No

If yes, describe why the change was made:

Ludlow is a member of the Connecticut River Stormwater Committee and therefore participates in MS4 measures completed by this organization in addition to the Town's NOI.

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**BMP: Proper Management of Pet Waste - Residents and Businesses**

Message Description and Distribution Method:

Pet waste messaging in Year 3 was multifaceted at both the time of licensing and summer messaging. All messaging is based on the “Think picking up Spike’s poop is gross? Try swimming in it,” and aimed at driving people to the pet waste pick up pledge on the Think Blue Connecticut River website. Before time of licensing messaging, PVPC surveyed municipal clerks/dog officers to understand what might be the most effective methods for messaging through their licensing process. Based on the responses, PVPC provided a variety of tools directly to municipal clerks to help them in getting out the pet waste message during time of licensing, including flyers in different sizes based on envelope sizes used in corresponding with dog owners, and an electronic message to be placed on the local licensing web page (something we learned that most municipalities now have). While several communities made use of the flyers, PVPC noted that uptake of the electronic element on local licensing web pages in Year 3 was limited across member communities. The lesson learned to be advanced in Year 4, will be for committee members to make the push directly with their clerks/dog officers in making better use of this element at time of licensing Elements for Year 3 also included a social media ad on Google at time of licensing. For summer messaging, internal and external ads have been running on the PVTA buses in the region. This investment is aimed at covering both the residential and business audience in Year 3. PVTA bus ads ran on buses operating out of three different garages in the region: Springfield Garage, Northampton Garage, and UMass Garage. There were a total of 6 panels run on the outside of buses and 12 panels in the interiors. To supplement the summer messaging on pet waste, a Facebook ad will run just after Labor Day, in early September.

Targeted Audience: Residents and Businesses (for Year 3)

Responsible Department/Parties: PVPC staff and Connecticut River Stormwater Committee members

Measurable Goal(s):

The Google ad placed at time of licensing reached 19,227 people identified as dog owners in targeted communities with 34 people clicking through to the pet waste pick up pledge. It is not clear yet whether this poorer performance in Year 3 compared to Year 2 has to do with the difference between Google and Facebook or advertising versus boosting posts by zip code (with 4 Facebook posts boosted by zip code in Year 2, we reached 15,552 people who followed through with 406 clicks). PVTA estimates that the bus panels displayed through a three-month period have produced more than 1.5 million impressions. Numbers from the supplemental Facebook ad are not yet available. During Year 3, Think Blue Connecticut River pet waste page on the website had 700 page views with the analytics indicating that the average time spent by visitors on that resource page was 2 minutes and 3 seconds. Of the total 390 people who clicked on the pet waste pledge, there were about 100 new people who made the commitment to pick up pet waste in Year 3. PVPC’s social media consultant has recommended a few adjustments to the pledge form to help increase likelihood of people pledging: better explain why important to pledge, and how data requested will be used. These changes have been made for Year 4.

Message Date(s): - Time of licensing, Google ad ran for 11 days, February 8 through 19, 2021  
 - PVTA bus ads ran late June to September 2021  
 - Facebook ad ran week of September 13 through 17, 2021

Message Completed for: Appendix F Requirements  Appendix H Requirements

Was this message different than what was proposed in your NOI? Yes  No

If yes, describe why the change was made:

Ludlow is a member of the Connecticut River Stormwater Committee and therefore participates in MS4 measures completed by this organization in addition to the Town's NOI.

**BMP: Proper Septic System Care - Residents**

## Message Description and Distribution Method:

PVPC again timed messaging on septic system care to coincide with EPA's Septic Smart Week with two posts on its Facebook page. These posts provide a link to a great infographic on septic system maintenance developed by Whatcome County Public Works and Health Department. Unfortunately, these posts could not be boosted given the difficulties with Facebook prior to the national election, but member communities with septic system users were encouraged to share posts on their local Facebook sites. PVPC also reissued a draft letter for distribution by Boards of Health to septic system owners. Several communities used this letter in Year 2, and another community used the letter in Year 3. Others noted that it remains difficult for Boards of Health to help with such messaging give the Covid-19 pandemic. It is important to note too that among the Connecticut River Stormwater Committee, there are several member communities that are highly urbanized with no properties presumed to be using septic systems for sanitary waste disposal.

Targeted Audience: Residents

Responsible Department/Parties: PVPC staff and Connecticut River Stormwater Committee members

## Measurable Goal(s):

Facebook posts drew a total of 20 "shares." There were a total of 42 views of the Think Blue Connecticut River website septic system landing page with people spending an average of 50 seconds. Of that total, 32 people clicked to the septic system infographic to learn more.

Message Date(s): September 16 and September 17, 2020

Message Completed for: Appendix F Requirements  Appendix H Requirements

Was this message different than what was proposed in your NOI? Yes  No

If yes, describe why the change was made:

Ludlow is a member of the Connecticut River Stormwater Committee and therefore participates in MS4 measures completed by this organization in addition to the Town's NOI.

**BMP: Proper Disposal of Leaf Litter - Business**

## Message Description and Distribution Method:

Mailing to landscapers in the region that promotes best practices and identifies locations for proper disposal of leaf litter. Best practices noted in letter are:

- Keep leaves off of driveways and roadways where they can easily wash into storm drains and contribute to higher nutrient flows during the fall season.
- Use a mulching mower. By mulching the leaves into the lawn, you avoid having to rake/blow and bag and you offer a way to manage autumn leaves while providing your client with free fertilizer. Mulched leaves put nutrients back into the ground and reduce the overall need for more soluble fertilizer products, which present greater problems for our local waterways.
- Alternatively, if your client has an existing compost pile, you can recommend that they consider allowing you to add leaves to the pile. Leaves provide a critically important element (carbon) to the composting process, making for a more soil enriching product to be used in the next growing season. Be sure compost piles are located away from streams, lakes, or storm drains as these decomposing materials and nutrients could easily leach to these water resources.

Targeted Audience: Businesses/institutions/commercial facilities

Responsible Department/Parties: PVPC staff and Connecticut River Stormwater Committee members

Measurable Goal(s):

Mailing to 150 professional land care companies operating in Stormwater Committee member municipalities

Message Date(s): October 30

Message Completed for: Appendix F Requirements  Appendix H Requirements

Was this message different than what was proposed in your NOI? Yes  No

If yes, describe why the change was made:

Ludlow is a member of the Connecticut River Stormwater Committee and therefore participates in MS4 measures completed by this organization in addition to the Town's NOI.

**BMP: Importance of soil test, proper use of fertilizers, disposal of grass clippings - businesses**

Message Description and Distribution Method:

Rather than continue with idea of hosting stand-alone workshop for land care companies in the region (which would likely draw only a few professionals), PVPC staff coordinated with UMass-Amherst Cooperative Extension to “piggyback” by presenting messaging at the "Virtual Spring Kickoff for Landscapers Education Program 2021” on March 26, 2021. The aim was to reach the businesses that are caring for lawns in the Connecticut River region and across Massachusetts. PVPC spoke about the condition of rivers and streams, the ongoing work to reduce stormwater pollutions, the water quality implications of lawn care nutrients, and the importance of better practices. Better practice messaging for landscapers focused on two practices that Cooperative Extension staff advised would be most resonant:

- Test your client’s soil before applying any fertilizers
- Mulch mow grass clippings into the lawn in order to help soil retain moisture and to recycle nutrients, which can help reduce need for future fertilizer applications

Targeted Audience: Business/institutions/commercial facilities

Responsible Department/Parties: PVPC staff and Connecticut River Stormwater Committee members

Measurable Goal(s):

80 lawn care professionals from across MA attended the session

Message Date(s): March 26

Message Completed for: Appendix F Requirements  Appendix H Requirements

Was this message different than what was proposed in your NOI? Yes  No

If yes, describe why the change was made:

Ludlow is a member of the Connecticut River Stormwater Committee and therefore participates in MS4 measures completed by this organization in addition to the Town's NOI.

**BMP: Fowl Water Messaging Through State-wide Campaign**

Message Description and Distribution Method:

On behalf of the members of the Connecticut River Stormwater Committee, Think Blue Massachusetts ran an educational advertising campaign using the 30-second video entitled, "Fowl Water." The "Fowl Water" advertisement helps viewers visualize how stormwater runoff carrying motor oil, pet waste, and trash pollutes local waterways. Each campaign entailed sponsored video on Facebook and Instagram and pre-roll advertisements on YouTube. See the video at: <http://bit.ly/tbm-fowl-water>. To measure the effectiveness of this campaign, Water Words that Work conducted an on-line panel survey of residents in areas where advertisements ran. The full survey is available at: [https://5f19efc0-6724-487e-8188-1ad9d05d4ac5.filesusr.com/ugd/e78125\\_f42fdf228ee24360a4c569be2bfcf8f7.pdf](https://5f19efc0-6724-487e-8188-1ad9d05d4ac5.filesusr.com/ugd/e78125_f42fdf228ee24360a4c569be2bfcf8f7.pdf)

Targeted Audience: Residents and businesses/institutions/commercial facilities

Responsible Department/Parties: Think Blue Massachusetts and Water Words that Work

Measurable Goal(s):

Water Words that Work reports that within the Connecticut River Stormwater Committee region the campaign resulted in an estimated:

- 211,881 Facebook and Instagram impressions
- 471,252 YouTube ad impressions
- 83,101 Spanish language impressions

Message Date(s): May 17 to June 4, 2021

Message Completed for: Appendix F Requirements  Appendix H Requirements

Was this message different than what was proposed in your NOI? Yes  No

If yes, describe why the change was made:

Ludlow is a member of the Connecticut River Stormwater Committee and therefore participates in MS4 measures completed by this organization in addition to the Town's NOI.

Add an Educational Message

**MCM2: Public Participation**

Describe the opportunity provided for public involvement in the development of the Stormwater Management Program (SWMP) **during this reporting period:**

SWMP has been posted to the Town's website; however, the Town has been unable to conduct a public meeting for discussion on the SWMP due to the ongoing COVID-19 pandemic.

Was this opportunity different than what was proposed in your NOI? Yes  No

Describe any other public involvement or participation opportunities conducted **during this reporting period:**  
The Town of Ludlow's goal was to hold a public cleanup in the Spring. The Town did not hold their own cleanup; however, the Boy Scouts of America held a cleanup at the Riverwalk along the Chicopee River in the spring.

### **MCM3: Illicit Discharge Detection and Elimination (IDDE)**

#### **Sanitary Sewer Overflows (SSOs)**

*Check off the box below if the statement is true.*

This SSO section is NOT applicable because we DO NOT have sanitary sewer

*Below, report on the number of SSOs identified in the MS4 system and removed **during this reporting period.***

Number of SSOs identified: 0

Number of SSOs removed: 0

#### **MS4 System Mapping**

*Optional:* Provide additional status information regarding your map:

The Town further refined the storm sewer and drainage network based on available information and field inspections.

#### **Screening of Outfalls/Interconnections**

*If conducted, please submit any outfall monitoring results from this reporting period. Outfall monitoring results should include the date, outfall/interconnection identifier, location, weather conditions at time of sampling, precipitation in previous 48 hours, field screening parameter results, and results from all analyses. Please also include the updated inventory and ranking of outfalls/interconnections based on monitoring results.*

- No outfalls were inspected
- The outfall screening data is attached to the email submission
- The outfall screening data can be found at the following website:

*Below, report on the number of outfalls/interconnections screened during this reporting period.*

Number of outfalls screened: 0

*Below, report on the percent of outfalls/interconnections screened to date.*

Percent of outfalls screened: 19

*Optional:* Provide additional information regarding your outfall/interconnection screening:

During the ongoing pandemic, the Town DPW staff worked a reduced schedule which impacted outfall screenings.

### **Catchment Investigations**

*If conducted, please submit all data collected during this reporting period as part of the dry and wet weather investigations. Also include the presence or absence of System Vulnerability Factors for each catchment.*

- No catchment investigations were conducted
- The catchment investigation data is attached to the email submission
- The catchment investigation data can be found at the following website:

*Below, report on the number of catchment investigations completed during this reporting period.*

Number of catchment investigations completed this reporting period: 2

*Below, report on the percent of catchments investigated to date.*

Percent of total catchments investigated: 2

*Optional:* Provide any additional information for clarity regarding the catchment investigations below:

### **IDDE Progress**

*If illicit discharges were found, please submit a document describing work conducted over this reporting period, and cumulative to date, including location source; description of the discharge; method of discovery; date of discovery; and date of elimination, mitigation, or enforcement OR planned corrective measures and schedule of removal.*

- No illicit discharges were found
- The illicit discharge removal report is attached to the email submission
- The illicit discharge removal report can be found at the following website:

*Below, report on the number of illicit discharges identified and removed, along with the volume of sewage removed during this reporting period.*

Number of illicit discharges identified: 0

Number of illicit discharges removed: 0

Estimated volume of sewage removed: 0 gallons/day

*Below, report on the total number of illicit discharges identified and removed to date. At a minimum, report on the number of illicit discharges identified and removed since the effective date of the permit (July 1, 2018).*

Total number of illicit discharges identified: 0

Total number of illicit discharges removed: 0

*Optional:* Provide any additional information for clarity regarding illicit discharges identified, removed, or planned to be removed below:

#### **Employee Training**

Describe the frequency and type of employee training conducted **during this reporting period:**

This reporting period, the SWMP Team attended a webinar titled 'Illicit Discharge Detention and Elimination (IDDE) Training Workshop held by Central Massachusetts Regional Stormwater Coalition on May 7, 2020. The video of the webinar can be found at <https://www.centralmastormwater.org/toolbox/pages/2020-idde-workshop-ms4-assistance-grant>

#### **MCM4: Construction Site Stormwater Runoff Control**

*Below, report on the construction site plan reviews, inspections, and enforcement actions completed during this reporting period.*

Number of site plan reviews completed: 29

Number of inspections completed: 40

Number of enforcement actions taken: 0

*Optional:* Enter any additional information relevant to construction site plan reviews, inspections, and enforcement actions:

## **MCM5: Post-Construction Stormwater Management in New Development and Redevelopment**

### **As-built Drawings**

*Below, report on the number of as-built drawings received during this reporting period.*

Number of as-built drawings received: 0

*Optional:* Enter any additional information relevant to the submission of as-built drawings:  
No projects completed during reporting period.

### **Street Design and Parking Lots Report**

Describe the status of the street design and parking lots assessment due in year 4 of the permit term, including any planned or completed changes to local regulations and guidelines:

The Town of Ludlow is on track to complete this work for Year 4 and will review several resources to help in developing the report, including EPA's technical support document entitled, "Assessing Street and Parking Design Standards to Reduce Excess Impervious Cover in New Hampshire and Massachusetts," at the following link: <https://www3.epa.gov/region1/npdes/stormwater/assets/pdfs/ImperviousAssessment.pdf>

### **Green Infrastructure Report**

Describe the status of the green infrastructure report due in year 4 of the permit term, including the findings and progress towards making the practice allowable:

The Town of Ludlow is on track to complete this work for Year 4 and will review several resources to help in developing the report, including MassAudubon's checklist entitled, "Supporting LID in Your Community: How to Compare Local Land Use Regulations with Best Practices" at <https://www.epa.gov/npdes-permits/stormwater-tools-new-england#pcsm>; and guidance developed by Pioneer Valley Planning Commission within the Green Infrastructure Toolkit at: <http://www.pvpc.org/content/green-infrastructure-toolkit>.

### **Retrofit Properties Inventory**

Describe the status of the inventory, due in year 4 of the permit term, of permittee-owned properties that could be modified or retrofitted with BMPs to mitigate impervious areas and report on any properties that have been modified or retrofitted:

The Town of Ludlow is on track to complete this work for Year 4 and will review the methodologies developed by the Pioneer Valley Planning Commission for the initial screening of properties.

## **MCM6: Good Housekeeping**

### **Catch Basin Cleaning**

*Below, report on the number of catch basins inspected and cleaned, along with the total volume of material removed from the catch basins during this reporting period.*

Number of catch basins inspected: 33

Number of catch basins cleaned: 28

Total volume or mass of material removed from all catch basins: 14                      cubic yards

*Below, report on the total number of catch basins in the MS4 system.*

Total number of catch basins: 2,488

*If applicable:*

Report on the actions taken if a catch basin sump is more than 50% full during two consecutive routine inspections/cleaning events:

### **Street Sweeping**

*Report on street sweeping completed during this reporting period using one of the three metrics below.*

- Number of miles cleaned: 130
- Volume of material removed: 780                      cubic yards
- Weight of material removed: 1,053                      tons

### **Stormwater Pollution Prevention Plan (SWPPP)**

*Below, report on the number of site inspections for facilities that require a SWPPP completed during this reporting period.*

Number of site inspections completed: 1

Describe any corrective actions taken at a facility with a SWPPP:

No corrective actions were taken at a facility with a SWPPP (the DPW Yard).

### **Additional Information**

#### **Monitoring or Study Results**

*Results from any other stormwater or receiving water quality monitoring or studies conducted during the reporting period not otherwise mentioned above, where the data is being used to inform permit compliance or permit effectiveness must be attached.*

- Not applicable
- The results from additional reports or studies are attached to the email submission
- The results from additional reports or studies can be found at the following website(s):

If such monitoring or studies were conducted on your behalf or if monitoring or studies conducted by other entities were reported to you, a brief description of the type of information gathered or received shall be described below:

#### **Additional Information**

*Optional:* Enter any additional information relevant to your stormwater management program implementation during the reporting period. Include any BMP modifications made by the MS4 if not already discussed above:

#### **COVID-19 Impacts**

*Optional:* If any of the above year 3 requirements could not be completed due to the impacts of COVID-19, please identify the requirement that could not be completed, any actions taken to attempt to complete the requirement, and reason the requirement could not be completed below:

The COVID-19 pandemic has presented a range of challenges to the Town of Ludlow. The Department of Public Works has been impacted, as:

- Face-to-face interactions were not possible for several months and are currently limited
- The DPW operations group was substantially reduced with minimal staff for approximately 3 months during the COVID-19 period.

Impacted activities by the reduction of workforce have been identified throughout the annual report.

**Activities Planned for Next Reporting Period**

Please confirm that your SWMP has been, or will be, updated to comply with all applicable permit requirements including but not limited to the year 4 requirements summarized below. (Note: impaired waters and TMDL requirements are not listed below)

Yes, I agree

- Develop a report assessing current street design and parking lot guidelines and other local requirements within the municipality that affect the creation of impervious cover
- Develop a report assessing existing local regulations to determine the feasibility of making green infrastructure practices allowable when appropriate site conditions exist
- Identify a minimum of 5 permittee-owned properties that could potentially be modified or retrofitted with BMPs to reduce impervious areas

#### Annual Requirements

- Annual report submitted and available to the public
- Annual opportunity for public participation in review and implementation of SWMP
- Keep records relating to the permit available for 5 years and make available to the public
- Properly store and dispose of catch basin cleanings and street sweepings so they do not discharge to receiving waters
- Annual training to employees involved in IDDE program
- Update inventory of all known locations where SSOs have discharged to the MS4
- Continue public education and outreach program
- Update outfall and interconnection inventory and priority ranking and include data collected in connection with the dry weather screening and other relevant inspections conducted
- Implement IDDE program
- Review site plans of construction sites as part of the construction stormwater runoff control program
- Conduct site inspection of construction sites as necessary
- Inspect and maintain stormwater treatment structures
- Log catch basins cleaned or inspected
- Sweep all curbed streets at least annually
- Continue investigations of catchments associated with Problem Outfalls
- Implemented SWPPPs for all permittee owned or operated maintenance garages, public works yards, transfer stations, and other waste handling facilities
- Review inventory of all permittee owned facilities in the categories of parks and open space, buildings and facilities, and vehicles and equipment; update if necessary
- Review O&M programs for all permittee owned facilities; update if necessary
- Implement all maintenance procedures for permittee owned facilities in accordance with O&M programs
- Implement program for MS4 infrastructure maintenance to reduce the discharge of pollutants
- Enclose all road salt storage piles or facilities and implemented winter road maintenance procedures to minimize the use of road salt
- Review as-built drawings for new and redevelopment to ensure compliance with post construction bylaws, regulations, or regulatory mechanism consistent with permit requirements
- Inspect all permittee owned treatment structures (excluding catch basins)


Provide any additional details on activities planned for permit year 4 below:

## Part V: Certification of Small MS4 Annual Report 2021

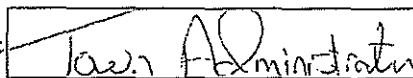
### 40 CFR 144.32(d) Certification

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, I certify that the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name:

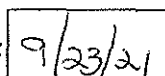


Title:



Signature:

Date:



*[Signatory may be a duly authorized representative]*

*Note: When prompted during signing, save the document under a new file name.*

### **Annual Report Submission**

Please submit the form electronically via email to both EPA and MassDEP by clicking on one of the links below or using the email addresses listed below. Please ensure that all required attachments are included in the email and not attached to this PDF.

EPA: [stormwater.reports@epa.gov](mailto:stormwater.reports@epa.gov)

MassDEP: [laura.schifman@mass.gov](mailto:laura.schifman@mass.gov)

### **Paper Signature:**

*If you did not sign electronically above, you can print the signature page by clicking the button below.*

*Optional: If you did not sign electronically above, you may lock the form by clicking the "Lock Form" button below which will prompt you to save the locked version of the form. Save this locked version under a new file name.*