

Pollutant Hot Spots - Priority Ranked Parcel Summary Report

Municipality: Nashua, NH

Date of Report: November, 2021

Purpose

The NH 2017 Small MS4 General Permit requires for permittees to create an inventory and priority ranking of permittee-owned properties that could be retrofitted with Best Management Practices (BMPs) to reduce stormwater discharges and address pollutant loading from catchments identified as having high loading for nitrogen and/or phosphorus. To aid in these efforts, the information presented in this report may be used to identify and prioritize measures to reduce pollutant loading to impaired waters from the permittee's MS4 area.

This information will assist in fulfilling the following permit requirements for Year 4:

1. MCM #5 Post Construction Stormwater Management
 - a. Inventory and priority ranking of permittee-owned property and existing infrastructure that could be retrofitted with BMPs designed to reduce frequency, volume and pollutant loads of stormwater discharges (page 48, section 2.3.6.e).
2. Appendix H - Requirements Related to Water Quality Limited Waters
 - a. Nitrogen Source Identification Report (Appendix H, page 3, section I.1.b).
 - b. Phosphorus Source Identification Report (Appendix H, page 6, section II.1.b).
3. Appendix F - Lake and Pond Phosphorus TMDLs
 - a. Information in this report may be used in the development of Lake Phosphorus Control Plans (LPCP), such as developing a priority ranking of areas and infrastructure for potential implementation of phosphorus control practices.

Methods

Geographic Information System (GIS) analysis of the municipality of Nashua, NH was performed in 2019 using publicly available GIS layers; the analysis yielded total suspended solids (TSS), total nitrogen (TN), and total phosphorus (TP) pollutant load "hot spot" data per parcel by utilizing layers for parcel boundaries, conservation areas, land use, and impervious cover (IC) coupled with the pollutant load export rates found in Table 2-1 of Appendix F of the NH MS4 permit*.

The results were sorted to identify non-conservation parcels owned by the municipality in descending order by acreage of impervious cover, which indicated the priority rank for BMP implementation on municipally owned properties. Parcels were ranked using impervious cover because it is a key metric representing the largest manageable load for pollutants commonly associated with stormwater. Because impervious cover is not evenly distributed on municipal parcels, the graph of cumulative percent of impervious cover for the resulting ranked parcels is non-linear with a typical "knee" which indicates

**<https://www.epa.gov/npdes-permits/new-hampshire-small-ms4-general-permit>*

the point of decreasing IC area per additional parcel to be managed. The knee represents the optimal number of parcels to be treated by BMPs as they will treat the most impervious cover on the least number of parcels. This method also generally optimizes the resulting TSS, TN, and TP reductions, and costs for treatment as they are all linked to the IC area.

Results

Figure 1 shows the graph of cumulative percent of IC for the resulting ranked, municipal, non-conservation parcels. The knee of the curve is called out as the goal for treatment.

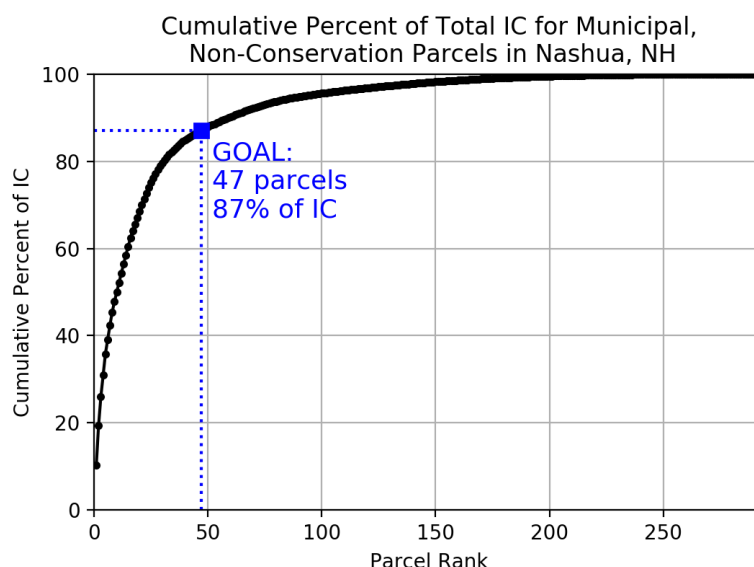


Figure 1: Cumulative percent of IC vs rank (priority) for municipal, non-conservation parcels.

Nashua's target for treatment is 47 parcels . Treating all the IC from these top 47 parcels accounts for 87% of all the municipally owned, non-conservation properties.

Pollutant reductions were estimated using the EPA performance curves for an infiltration basin BMP class** with a physical storage capacity of 0.4 inches and infiltration rate of 1.02 in./hr.. The curve yields 96% TSS reduction, 92% TN reduction, and 81% TP reduction. Table 1 is a summary table showing the IC, TSS reduction, TN reduction, TP reduction, and total estimated costs using the EPA costs outlined in UNH performance fact sheets** for the top 47 parcels and the percentage of the top parcels to the total municipal, non-conservation properties.

Table 1: Summary of priority municipal, non-conservation parcels. The total IC, TSS, TN, and TP reductions using the stated assumed treatment, and estimated cost of treatment are summarized for the priority parcels and their percentage of total municipal, non-conservation parcels.

	IC	TSS Red.	TN Red.	TP Red.	Cost
Top 47 Parcels Total	253 ac	162,948 lb/yr	3,328 lb/yr	359 lb/yr	\$11,640,000
Percent of Municipal, Non-Cons.	87%	82%	85%	86%	87%

**https://www.unh.edu/unhsc/sites/default/files/media/ms4_permit_nomographs_sheet_final_2020.pdf

Table 2 shows the priority list of the 47 municipal, non-conservation parcels with their NH GIS ID and street address.

*Table 2: Priority municipal, non-conservation parcels ranked by descending IC with NH GIS ID and street address.****

Treatment Priority	IC (ac)	NH GIS ID	Street Address
1	29.65	06147-0000F-001283	8 Titan Way
2	26.31	06147-00075-000271	36-38 Riverside St
3	19.14	06147-0000E-001359	9 Stadium Dr
4	14.48	06147-00011-000158	141 Burke St
5	14.13	06147-00063-000052	67 Amherst St
6	9.56	06147-00106-000003	27 Cleveland St
7	9.49	06147-00005-000026	2 Sawmill Rd
8	8.90	06147-00054-000052	207 Manchester St
9	7.05	06147-00098-000043	117 Elm St
10	6.34	06147-00106-000079	37 Blanchard St
11	6.31	06147-0000F-000124	390 Broad St
12	6.18	06147-0000A-000250	15 Osgood Rd
13	6.02	06147-00115-000066	48 Charlotte Ave ;60
14	6.00	06147-0000B-000028	296 East Dunstable Rd
15	5.74	06147-0000B-000062	39 Shady Ln
16	5.56	06147-00011-000160	101 Major Dr
17	4.85	06147-00087-000312	139-141 Ledge St
18	4.49	06147-0000F-000400	17 Birch Hill Dr
19	4.31	06147-00022-000005	36-38-50 Arlington St
20	4.13	06147-00138-000017	L Greenlay St
21	4.09	06147-0000E-000011	28 Officer James Roche Dr
22	3.96	06147-00080-000089	41 Central St
23	3.85	06147-00075-000017	9-11 Riverside St
24	3.70	06147-00025-000001	25 Crown St
25	3.52	06147-00087-000025	101 Kinsley St
26	3.06	06147-00087-000047	3-34 Eleventh St
27	2.89	06147-00095-000008	165 Pine St ;5
28	2.79	06147-00011-000002	101 Major Dr
29	2.33	06147-00011-000003	101 Major Dr
30	2.10	06147-00067-000027	10 Manchester St
31	1.89	06147-00060-000014	107 Amherst St
32	1.85	06147-00033-000104	2 Court St
33	1.69	06147-00087-000046	L Ledge St
34	1.50	06147-00081-000024	229 Main St
35	1.49	06147-00077-000003	7 Pine St Ext-Nrth

36	1.48	06147-00081-000094	14 Elm St
37	1.44	06147-00092-000122	177 Lake St
38	1.43	06147-00077-000030	1 Pine St Ext
39	1.29	06147-00071-000002	44 Broad St 3
40	1.23	06147-00109-000038	391 Main St 39
41	1.06	06147-00036-000071	70 East Hollis St
42	1.02	06147-00079-000128	15 High St
43	0.92	06147-00015-000002	80 Marshall St
44	0.91	06147-00030-000055	56 Tyler St
45	0.90	06147-0000B-000140	L Harris Rd ;146
46	0.79	06147-0000C-002861	L Cherrywood Dr
47	0.76	06147-00062-000008	7-7 1/2 Fairmount St

***For the complete prioritized spreadsheet including loads, reductions, and estimated costs, see:
https://www4.des.state.nh.us/nh-ms4/?page_id=1798