

Spectacle Pond, Wilbraham

Year 4 Lake and Pond Phosphorus Control Plan Requirements

Introduction

Several communities in the Connecticut River Watershed have Lake and Pond Phosphorus TMDL requirements associated with the EPA MS4 permit, Appendix F, Section II. Through MassDEP's FY21 MS4 Permit Assistance Grant in which PVPC partnered with the Neponset River Watershed Association, PVPC assisted two communities with Year 4 requirements. This assistance tied specifically to the Lake and Pond Phosphorus Control Plan requirements.

For Spectacle Pond in Wilbraham and Minechoag Pond in Ludlow, PVPC completed the following two deliverables for Year 4:

- Defined Lake and Pond Phosphorus Control Plan Area
- Calculated baseline phosphorus loading rate, allowable phosphorus load, and load reduction requirement

To facilitate the ongoing work associated with these TMDL requirements, PVPC created an ArcGIS on-line data viewer that can further serve Wilbraham and Ludlow. See:

<https://tinyurl.com/MS4-NSI-PVPC>

Data Sources and Analytical Methods for Identifying Phosphorus Loading

Several existing datasets were used to complete this work. Table 2 below lists the utilized data sets and their origin.

Table 1. Data Sources

Existing Data Set	Origin	Date Published/Updated	Link
2016 Land Cover/Land Use	MassGIS	May 2019	https://docs.digital.mass.gov/dataset/massgis-data-2016-land-coverland-use
Soil Survey Geographic (SSURGO) Database for Hampden and	USDA	June 2020	Downloaded through Web Soil Survey (https://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm).

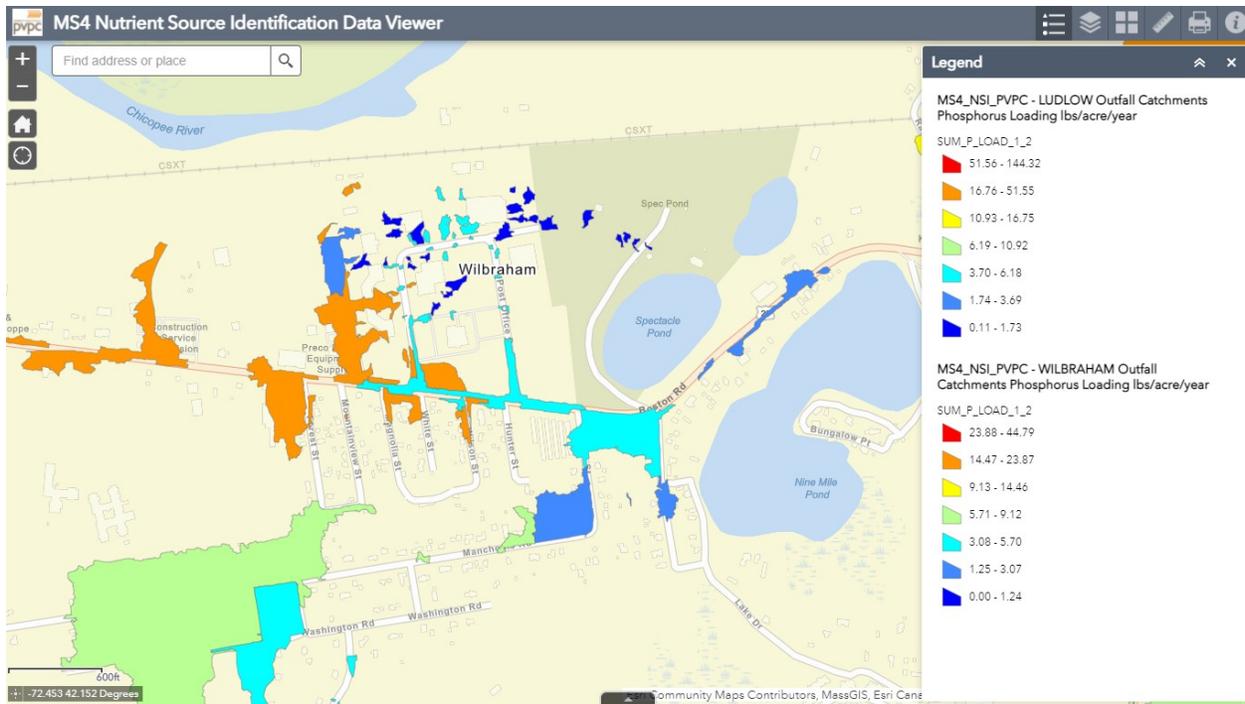
Existing Data Set	Origin	Date Published/Updated	Link
Hampshire Counties, Massachusetts			Hydrologic soil groups extracted using Soil Data Viewer Version 6.1 (https://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/survey/geo/?cid=nrcs142p2_053619)
Wilbraham Town Catchments	Town of Wilbraham GIS Files With Assistance from PVPC	Current as of 3/18/21	N/A

To estimate the pollutant loads for phosphorous in each catchment, estimated pollutant loading rates for different combinations of land use type, land cover type, and soil type were applied in accordance with guidance in the EPA 2016 MS4 Permit. The individual loading rates for these unique subsections were summed based on catchment, which produced an overall estimated catchment pollutant loading rate.

For a more detailed description of the analytical methods used for this project, please refer to the Appendix to this report on Methods.

Lake and Pond Phosphorous Control Plan Area

The control plan area is defined as the catchment area draining to the Pond and specifically the infrastructure that delivers storm flows to the Pond.



Phosphorous Loading Calculations

(baseline phosphorus loading rate, and load reduction requirement)

Using the methods described in Attachment 1 to Appendix F of the 2016 Massachusetts Small MS4 General Permit, the town's catchment delineations, and the data included in the 2016 Land Cover/Land Use data set and the SSURGO Database for Hampden and Hampshire Counties, estimates of phosphorus loading rates and required reduction were created for each of the town's catchments.

To obtain these values, the land use (the "USEGENNAME" attribute in the 2016 Land Cover/Land Use data set) of each area was matched to a phosphorus load export rates based on the values in Table 1-2 in Attachment 1 to Appendix F of the Permit. Calculated area, DCIA estimates, and soil hydrologic groups were then incorporated to calculate the estimated phosphorus load from each individual area. Phosphorus loads for all areas within a given catchment were then totaled to determine the estimated loading for that catchment.

Phosphorus loading reduction rates were determined by using methods described in Attachment 1 to Appendix F of the 2016 Massachusetts Small MS4 General Permit. To determine these values, calculated catchment area loading rates were multiplied by the predetermined reduction value from (Appendix F Table F-6). Table 2 below shows the lake and pond phosphorus control

