

**TOWN OF BELMONT**  
**PHOSPHORUS CONTROL PLAN (PCP) for Charles River Phosphorus TMDL**  
**PHASE I**

*Based on a document originally prepared by Kleinfelder for Charles River Watershed Association (CRWA) and MassDEP in June 2021. Updated June 2022, with additional information and feedback from MassDEP.*

## TABLE OF CONTENTS

<u>Section</u>		<u>Page</u>
<b>1</b>	<b>PHASE 1</b> .....	<b>3</b>
1.1	Overview of all PCP Phase 1 milestones .....	4
1.2	Watershed and Community Characterization .....	5
1.3	PCP Load Reduction Targets.....	6
1.4	Legal Analysis.....	6
1.5	Funding Source Assessment .....	6
1.6	Non-Structural Controls.....	7
1.7	Structural Controls .....	8
1.8	Description of Operation and Maintenance (O&M) Program .....	12
1.9	Phase 1 Implementation Schedule.....	12
1.10	Performance Evaluations.....	12
1.11	Public Comment .....	12

### APPENDICES

- A. Legal Analysis**
- B. Funding Source Assessment**
- C. Documentation of Public Comment Process and Comments Received**

# PHOSPHORUS CONTROL PLAN (PCP)

## 1 PHASE 1

The 2016 National Pollutant Discharge Elimination System General Permit for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems (MS4) in Massachusetts (“MS4 Permit” or “the Permit”) took effect on July 1, 2018. The Permit was subsequently modified on December 7, 2020. The MS4 Permit conditions the operation, regulation, and management of MS4s in subject Massachusetts municipalities. Terms and conditions include requirements across six Minimum Control Measures (also referred to as Maximum Extent Practicable or MEP provisions), and water quality-based effluent limitations (WQBEL), including requirements for water bodies with approved Total Maximum Daily Loads (TMDLs) and other water quality-limited waters.

There are two approved nutrient TMDLs for the Charles River; one for the Lower Charles River Basin, published in 2007<sup>1</sup>, and one for the Upper/Middle Charles River Basin, published in 2011<sup>2</sup>. As an element of the Permit’s WQBEL provisions, communities, such as the Town of Belmont, within the Charles River watershed are obligated to address phosphorus impairments through the development and implementation of a Phosphorus Control Plan (PCP). Appendix F of the MS4 Permit describes specific requirements of the PCP, implementation of which is anticipated to achieve the TMDL-established targeted phosphorus reductions over a 20-year timeframe. PCP implementation includes structural and non-structural best management practices (BMPs) executed through programs, projects, and policies. The PCP must be fully implemented within 20 years of the Permit effective date (i.e., by 2038), as illustrated in Table 1-1. The targeted phosphorus reductions are broken out into interim mandatory milestones, culminating in achievement of the allowable TMDL phosphorus loads for each municipality at the end of the 20-year schedule.

Table 1-1. General PCP Implementation Timeline for Charles River Watershed Communities

<b>1-5 years after permit effective date [2018-2023]</b>	<b>5-10 years after permit effective date [2023-2028]</b>	<b>10-15 years after permit effective date [2028-2033]</b>	<b>15-20 years after permit effective date [2033-2038]</b>
Create Phase 1 Plan	Implement Phase 1 Plan		
	Create Phase 2 Plan	Implement Phase 2 Plan	
		Create Phase 3 Plan	Implement Phase 3 Plan

<sup>1</sup> Massachusetts Department of Environmental Protection. 2007. Final TMDL for Nutrients in the Lower Charles River Basin. CN 301.1

<sup>2</sup> Massachusetts Department of Environmental Protection. 2011. Total Maximum Daily Load for Nutrients in the Upper/Middle Charles River Basin, Massachusetts. CN 272.0

## 1.1 OVERVIEW OF ALL PCP PHASE 1 MILESTONES

Phase 1 of the PCP must achieve the first 25% of the Town’s phosphorus load reduction requirement within 10 years (i.e., by June 30, 2028), with an interim milestone of achieving the first 20% of phosphorus load reduction by Year 8 (i.e., by June 30, 2026). The detailed components of the PCP due within Phase 1 are outlined in Table 1-2.

Table 1-2. Phase 1 Component Deadlines

Permit Year #	Year-End (June 30th)	PCP Component(s) Due
Year 1	2019	N/A
Year 2	2020	Legal Analysis
Year 3	2021	Funding Source Assessment
Year 4	2022	PCP Scope
Year 5	2023	Descriptions of the following Phase 1 items: <ul style="list-style-type: none"> <li>- Nonstructural controls</li> <li>- Structural controls</li> <li>- O&amp;M program for structural controls</li> <li>- Implementation schedule</li> <li>- Phase 1 cost estimate</li> <li>- Written Phase 1 PCP</li> <li>- Full implementation of nonstructural controls</li> </ul>
Year 6	2024	Performance Evaluation
Year 7	2025	Performance Evaluation
Year 8	2026	Performance Evaluation & Implementation of structural controls to achieve 20% of target phosphorus reduction
Year 9	2027	Performance Evaluation
Year 10	2028	Performance Evaluation & Implementation of structural controls to achieve 25% of target phosphorus reduction

The Town acknowledges that to meet the phosphorus reduction deadlines set forth in the MS4 Permit, significant preparation is required. In order to plan, allocate funds to, design, and construct structural controls to meet the Year 8 and Year 10 reduction deadlines, there is significant work to be completed during the initial years of PCP implementation. Some controls that rely on local bylaw or regulatory updates, or engaging landowners directly through incentives, may take even longer to implement. This is taken into account in the Phase 1 implementation schedule.

## 1.2 WATERSHED AND COMMUNITY CHARACTERIZATION

The Charles River collects water from a total land area of 308 square miles. The River twists and turns on an 80-mile route from Hopkinton to Boston Harbor. The River flows through 23 communities and the total watershed encompasses 35 communities, adding many political complexities to watershed management. Some 80 brooks and streams, and several major aquifers, feed the Charles River. The watershed contains many lakes and ponds, most of them manmade, many through the construction of dams. The river drops about 350 feet in its unhurried journey to the sea. Lacking speed and force, the slow-moving Charles River is naturally brownish in color, because the water steeps like tea through the abundant wetlands along its path.

The Charles River watershed is home to over a million residents. As an urban river, it is impaired by multiple pollutants and has many areas with altered and degraded habitat. Three Total Maximum Daily Loads (TMDLs) have been developed for the watershed: two for nutrients and one for bacteria. The river has borne the brunt of much of the development in the greater Boston area through damming, pollution, and disruption from traditional development practices. A nearly five-decade cleanup effort has resulted in water quality improvements, primarily from elimination of industrial discharges and a significant reduction in untreated sewage flowing into the river. The primary challenge facing the river today is stormwater runoff. Phosphorus loading in stormwater runoff is a particular challenge to the river, leading to summertime cyanobacteria blooms and overgrowth of invasive aquatic plants in many areas of the watershed.

The Town of Belmont is located within both the Charles River watershed and the Mystic River watershed. Approximately 28% (843 acres) of the Town is located within the Charles River watershed. This plan addresses this portion of the Town, as shown in Figure 1. The Town is fully within the Urbanized/Regulated Area<sup>3</sup>, therefore all portions of the Town are subject to the MS4 permit, and all portions located within the Charles River watershed are subject to this plan.

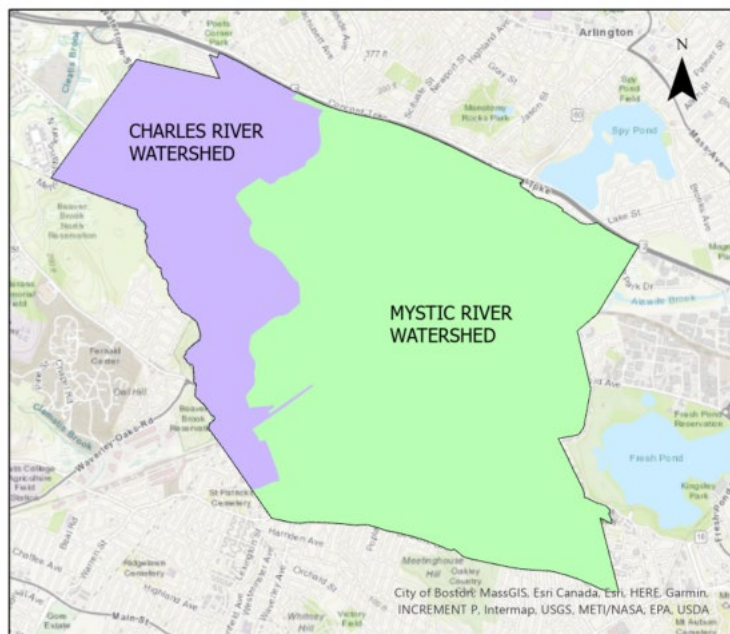


FIGURE 1

The area of Town located within the Charles River watershed is less developed (22% impervious) compared to the area located within the Mystic River watershed (44% impervious). The primary land uses<sup>4</sup> in Belmont within the Charles River watershed are residential (34%), forest (34%), open space (15%), and highway (10%). The remaining 7% comprises of commercial, industrial, agricultural, and water.

<sup>3</sup> Per U.S. Census data

<sup>4</sup> Per MassGIS 2016 Land Cover/Land Use

## 1.3 PCP LOAD REDUCTION TARGETS

### 1.3.1 PCP Area, Baseline Phosphorus Load, Allowable Phosphorus Load, and Stormwater Phosphorus Reduction Requirement from MS4 Permit

As discussed above, the Town is located partially in the Charles River Watershed and fully within the Urbanized/Regulated Area. The Town will implement the PCP within the entirety of the community that falls within the Charles River Watershed. The Allowable Phosphorus Load reported in Appendix F of the MS4 Permit for the Town is shown in Table 1-3.

Table 1-3. PCP Timeline of Phase 1 Reduction Requirements

Condition	Value
Baseline P-Load, lbs/yr	445 (202 kg/yr)
Allowable P-Load, lbs/yr	214 (97 kg/yr)
Stormwater P-Load Reduction Requirement, lbs/yr	231 (105 kg/yr)
Year 8 Milestone: 20% of Reduction, in lbs/yr	46 (21 kg/yr)
Year 10 Milestone: 25% of Reduction, in lbs/yr	58 (26 kg/yr)

To achieve the target of reducing phosphorus loads by 58 lbs/yr by the year 2028, the Town will be planning and implementing a series of structural and non-structural BMPs, updating regulatory mechanisms as necessary to aid with achieving these goals, evaluating funding mechanisms and costs, and developing its O&M and recordkeeping programs to ensure continued compliance and functionality of all installed BMPs.

### 1.3.2 Increases or Decreases to Baseline Phosphorus Load Since 2005

The Baseline Load displayed in Table 1-3 above was calculated using land use data from 2005. The permit allowed for adjustments to this load and subsequent reduction requirements if necessary, however, the Town has selected to remain consistent with the Permit and use the values provided therein.

## 1.4 LEGAL ANALYSIS

Appendix F of the MS4 Permit requires the Town to develop and implement an analysis that identifies existing regulatory mechanisms available to the MS4 such as bylaws and ordinances, and describes any changes to regulatory mechanisms that may be necessary to effectively implement the entire PCP (the "Legal Analysis"). The Town's Legal Analysis is attached as Appendix A. No new regulatory mechanisms were currently identified to implement the Phase I PCP, however additional requirements may be necessary in the future to fully implement phases 2 and 3 of the PCP.

## 1.5 FUNDING SOURCE ASSESSMENT

Appendix F of the MS4 Permit also requires the Town to describe known and anticipated funding mechanisms (e.g., general funding, enterprise funding, stormwater utilities) that will be used to

fund PCP implementation (the “Funding Source Assessment”). Several funding sources were identified and are summarized in Appendix B.

## 1.6 NON-STRUCTURAL CONTROLS

The Town’s approach for non-structural BMP implementation for PCP compliance is detailed in this section.

### 1.6.1 Current Non-Structural BMPs

Belmont is currently implementing non-structural BMPs, which can qualify for phosphorus reduction credits. These are presented in Table 1-4. Credits were calculated using the updated phosphorus load export rates reported in Attachment 2 to Appendix F of the MS4 Permit. These credits will count towards the required phosphorus reduction outlined in Table 1-3.

Table 1-4. Existing Non-Structural BMPs

Planned Non-Structural BMP	Implementation Levels (schedule, equipment, BMP details)	Average Annual P-Reduction (lbs/yr)
Street Sweeping	Mechanical Broom (weekly for business district, seasonal all other roadways)	0.36
CB Cleaning	All CBs, Annual (May/June)	0.0
Leaf Litter Program	Weekly April - Oct	0.0
Total Existing Non-Structural Credit		0.36

The existing non-structural controls have already contributed 0.364 lbs/yr to the Phase I (Year 10) annual phosphorus reduction requirement of 58 lb/yr.

### 1.6.2 Planned Non-Structural BMPs

Belmont is planning to make several changes to our non-structural controls as outlined in the bullets below. The changes will be phased-in starting in permit year 5 and fully implemented in permit year 10. The Town is phasing the implementation of non-structural controls for cost efficiency. For example, new regenerative street sweepers will be purchased once the Town’s existing mechanical sweepers have reached the end of their useful life. New total phosphorus reductions for the Town’s entire non-structural BMP program are presented in Table 1-5.

Street Sweeping:

- Change from mechanical broom sweeper to regenerative sweeper (anticipated FY2028)
- Add private roads to sweeping program
- Increase frequency from seasonal to monthly for 9 months (April through December)

CB Cleaning:

- Record sump storage capacity during cleaning (started FY2023)
- Add a second round of catch basin cleaning each year (anticipated FY2024)

Leaf Litter Program: The Town determined it is not cost effective to implement changes to the current leaf litter program based on the current phosphorus load export rates and BMP efficiency approved by EPA for this BMP type, as well as lack of co-benefits. If the EPA updates the credits associated with this BMP type in the future, the Town will reconsider implementing changes to the program.

Table 1-5. Planned Non-Structural Control Summary

Planned Non-Structural BMP	Average Annual Acres Managed	Implementation Levels (schedule, equipment, BMP details)	Average Annual P-Reduction (lbs/yr)	Anticipated Implementation
Street Sweeping	59.5	Weekly, regenerative	7.0	FY 2028
CB Cleaning	87.6	All CBs, Semi-annual	3.4	FY 2024
Leaf Litter Program	0	Weekly, April - Oct	0.0	NA
TOTAL NON-STRUCTURAL CREDIT:			10.4	

## 1.7 STRUCTURAL CONTROLS

Our community will employ structural BMPs to detain, treat, and better manage runoff from areas of impervious surface, such as roads, parking lots, or rooftops. Semi-structural BMPs are more passive stormwater management approaches that can still produce excellent water quality benefits such as rainwater harvesting, impervious area disconnection, conversion of impervious area to pervious, and enhancement of pervious areas. For the purposes of this document, the term structural controls refers to both structural and semi-structural BMPs.

Structural BMPs historically have been incorporated into Belmont via stormwater compliance projects (for public and private development projects), using various sources of grant funding, or as part of our capital infrastructure program. Structural BMPs presently in place are evaluated in Section 1.7.1.

Our planning in support of PCP development determined that a significant investment in structural BMPs will be required to achieve the required target phosphorus reductions. Structural BMP opportunities were evaluated to allow for adaptive management during the development and execution of the PCP, that is presented below.

The following sections describe the assessment, performance and implementation of Current Structural BMPs (those that were already built, or will be prior to development of this PCP) and Planned Structural BMPs (those that were newly identified for PCP compliance or will be implemented after this written PCP is submitted).

### 1.7.1 Current Structural BMPs

The Town already employs a mix of regulatory and capital improvement programs to implement structural BMPs. Constructed structural BMPs have resulted in phosphorus reductions outlined in



Table 1-6 (municipal parcels) and Table 1-7 (private parcels). The reductions are presented on a high-level for summary, and all of the calculations were performed following the equations and requirements in Attachment 3 to Appendix F of the Permit.

For private BMPs, soil infiltration rates were determined based on soil testing information when provided in approved stormwater reports. Higher infiltration rates were assigned for BMPs that included the addition of soil media to the site to improve the infiltration rates. For private BMPs that did not have soil testing information available and did not include the addition of soil media to the site, the infiltration rate was selected based on the USDA soil maps identification of hydrologic soil type and soil texture class.

The systems on private properties are being maintained to function as designed by property owners. The system on municipal property is maintained by the private developer that leased the land. These systems are being maintained in accordance with the Long-Term O&M Plan submitted with the Stormwater Management and Erosion Control Report and approved by the Town.

Table 1-6. Summary of Current Structural Controls on Municipal Property

<b>Existing Structural BMP (Address, Coordinates) or Site with Locations for Structural BMPs (Address)</b>	<b>BMP Type</b>	<b>Anticipated Acres Managed (Total Impervious and Pervious Area)</b>	<b>Potential/Estimated Annual P-Reduction (lbs/yr)</b>
Waverly Woods (Parcel ID 59-11-8)	Underground Detention System	1.29	0.57
<i>Total Phosphorus Credit from Existing Public Structural BMPs</i>			<b>0.57</b>

Table 1-7. Summary of Current Structural Controls on Private Property

<b>Current Structural BMP Type</b>	<b>Number of BMPs</b>	<b>Total Acres Managed</b>	<b>Total Annual P-Reduction (lbs/yr)</b>
Infiltration Trench	23		2.76
Infiltration Basin	1		0.02
Porous Pavement	4		0.15
<i>Total Phosphorus Credit from Existing Private Structural BMPs</i>			<b>2.93</b>

Existing structural BMPs have contributed to an annual load reduction of 3.5 lbs/yr. This only includes structural BMPs that were implemented since the Town's Stormwater ByLaw took effect and for which O&M plans are in place. There are additional known structural BMPs on private parcels including the McLean hospital, that were installed prior to the Stormwater ByLaw. As part of Phase I implementation, the Town will continue to gather information about BMPs installed prior to the Stormwater ByLaw and will confirm they are operating and being maintained properly. Additional phosphorus reduction will be calculated accordingly.

### 1.7.2 Planned Structural BMPs

Implementation of structural BMPs is dependent on physical constraints and opportunities. Figure 2 depicts the calculated phosphorus load from directly connected impervious area (DCIA) in Belmont within the Charles River Watershed. Much of the phosphorus load is coming from highway and residential land use types, which therefore provide the greatest opportunity.

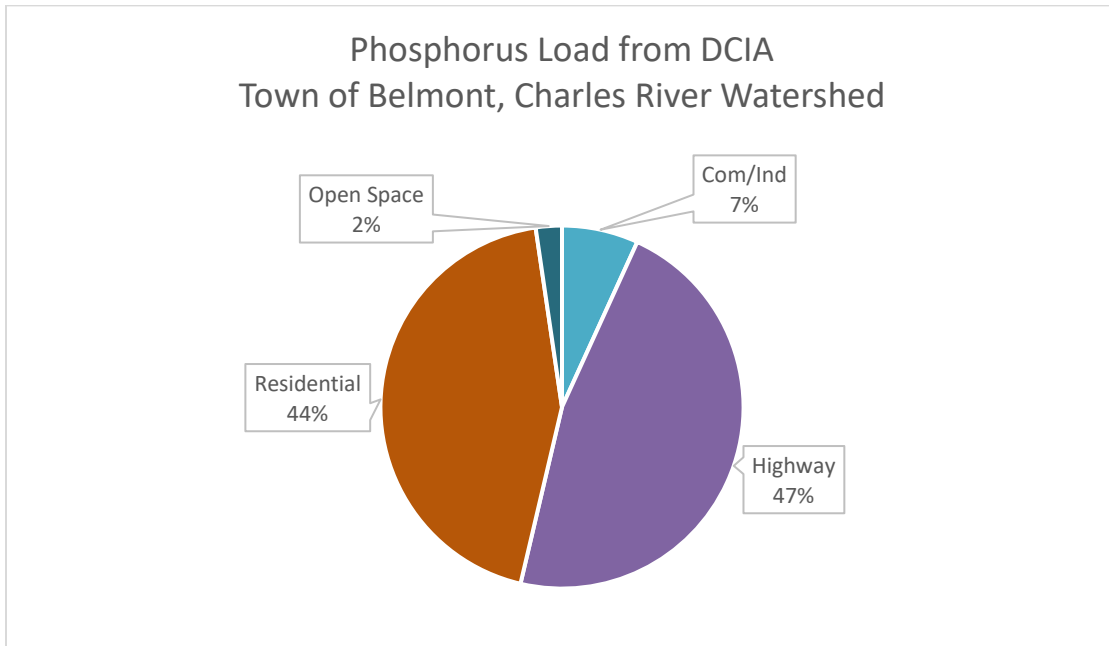


FIGURE 2

A notable constraint within the Charles River watershed portion of Belmont is the lack of large publicly owned parcels (defined as parcels >2 acres in size with >1 acre impervious). There are 18 Town-owned parcels within the Charles River watershed, of which 10 are infeasible for implementation of structural BMPs because they are small slivers of land along Beaver Brook behind residences and comprising almost entirely of wetlands. The remaining 8 parcels within the Charles River Watershed provide some opportunities but are limited due to the presence of wetlands and poor soils.

The Town developed a priority ranking of Town-owned parcels for potential implementation of structural phosphorus controls during Phase 1. The highest priority parcels selected for implementation of structural BMP's during Phase I are included in Table 1-8. In developing the priority ranking, for each Town-owned parcel the Town considered the phosphorus loading rate of the associated catchment, impairments associated with the immediate receiving waterbody, the hydrologic soil type, and depth to water table. Several other factors besides phosphorus reduction were used to determine structural BMP selection, siting, and prioritization such as location of environmental justice areas and aquifers.

Based on the assessment of phosphorus loads by land use and review of town-owned parcels, the Town concluded that the greatest opportunity to implement structural BMPs is within the right-of-way of Town-owned roadways and on private parcels.

During future roadway reconstruction projects, the Town will consider installing infiltration trenches within the roadway adjacent to catch basins that are located within areas with hydrologic soil type A. The University of New Hampshire Stormwater Center developed a standard design that has been implemented by several neighboring communities. A total of 112 Town-owned catch basins in the Charles River Watershed are located within soil type A presenting the opportunity to achieve significant phosphorus load reduction.

Implementation of structural BMPs on private parcels will continue through enforcement of the Town's Stormwater ByLaw which was updated in 2022 and Stormwater Regulations which are currently under review. The ByLaw and Regulations require stormwater BMPs to be implemented when new and re-development projects disturb 2,500 sf of total area or more. There is one significant new development in design currently at 115 Mill St (parcel 59-11-6).

The Town completed a flood study under an MVP Grant during 2022 and as a result, four (4) parcels within the Charles River watershed were identified for structural BMPs. This included one Town-owned parcel, one private parcel, and two state-owned parcels.

The planned structural BMPs are listed in Table 1-8.

Table 1-8. Planned Structural Control Summary

Site with Locations for Structural BMPs (Address)	Parcel Owner	BMP Type	Anticipated Acres Managed (Total Impervious and Pervious Area) <sup>5</sup>	Potential/ Estimated Annual P-Reduction (lbs/yr) <sup>6</sup>
Roadway ROW, various	Town/Private	Infiltration Trench	TBD	TBD
800 Concord Ave; Parcel 59-11-9; Lone Tree Hill Conservation Land (MVP-2)	Town	Bioretention	7.86	2.78
120 Lexington St; St. Luke's Parking Lot (MVP-17); Parcel 28-175	Private	Bioswale	2.98	0.58
66 Mill St; Parcel 60-1; Beaver Brook Reservation (MVP-1 & MVP-8)	State	Bioretention	1.72	0.52
638 Trapelo Rd; Parcel 33-89-A; Landscape Strip adjacent to Bever Brook Reservation Spray Deck and Playground (MVP-9)	State	Bioswale	0.84	0.16
248 Mill St; Parcel 64-1	Town	TBD	TBD	TBD
1034 Concord Ave (old incinerator site); 64-3	Town	TBD	TBD	TBD
McLean Hospital; Parcel 59-11-6	Private	TBD	TBD	TBD

<sup>5</sup> Assumed based on 1:25 loading ratio for above ground BMPs

<sup>6</sup> Calculated based on assumed average % impervious for the entire portion of the Town within the Charles River watershed.

## 1.8 DESCRIPTION OF OPERATION AND MAINTENANCE (O&M) PROGRAM

The existing structural BMPs on private properties are being maintained to function as designed by property owners. The system on municipal property is maintained by the private developer that leased the land. These systems are being maintained in accordance with the Long-Term O&M Plan submitted with the Stormwater Management and Erosion Control Report and approved by the Town. The O&M program will be further evaluated and improved throughout Phase I.

## 1.9 PHASE 1 IMPLEMENTATION SCHEDULE

By Year 10, non-structural BMPs are anticipated to reduce a total of 10.4 lbs/yr of phosphorus in Phase 1 of the PCP, or 18% of the target phosphorus reduction.

By Year 10, structural and semi-structural BMPs are anticipated to reduce a total of 47.6 lbs/yr of phosphorus in Phase 1 of the PCP, or 82% of the target phosphorus reduction using the mechanisms described above.

## 1.10 PERFORMANCE EVALUATIONS

Belmont will complete the required annual Performance Evaluations that assesses our PCP progress. Documentation of the Land Development Impacts and Phosphorus Credits for this effort will be included in the annual reports.

## 1.11 PUBLIC COMMENT

In conformance with the Permit's requirements for each Phase of the PCP, Belmont made the draft written Phase 1 PCP available for public comment. Appendix C provides documentation of public engagement, including:

- Select Board Meeting on 6/26/2023
- Website: [LINK](#)

Here is a summary of the comments received:

##insert summary of comments received in bulleted or paragraph form##

APPENDIX A  
LEGAL ANALYSIS

DRAFT

APPENDIX B  
FUNDING SOURCE ASSESSMENT

DRAFT

**APPENDIX C  
DOCUMENTATION OF PUBLIC COMMENT PROCESS AND  
COMMENTS RECEIVED**

DRAFT

To: Glenn Clancy, PE  
Homer Municipal building, 19 Moore  
Street, 2nd Floor, Belmont, MA 02478

From: Ashley Hall  
Jen Zoppo  
Stantec

Project/File: Town of Belmont MS4 Permit  
Support/195113465

Date: January 31, 2023

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**Reference: Phosphorus Control Plan: Legal Analysis****Background**

On October 17, 2007, EPA approved the Final TMDL for Nutrients in the Lower Charles River Basin (Lower Charles TMDL). There are several phosphorus reduction requirements to address phosphorus in MS4 discharges from the localities discharging to the Lower Charles River, including the Town of Belmont. These requirements include a legal analysis, funding source assessment, and scope of the Phosphorous Control Plan (PCP) load and reduction requirements. The Town of Belmont requested Stantec to assist in the completion of an analysis to identify existing regulatory mechanisms available to assist the Town in implementation of the PCP, as required by the Town's MS4 Permit, as part of the Phase 1 Phosphorus Control Plan (PCP) Components described in Appendix F, 1. A. 3):

*“Legal Analysis- The permittee shall develop and implement an analysis that identifies existing regulatory mechanisms available to the MS4 such as by-laws and ordinances, and describes any changes to regulatory mechanisms that may be necessary to effectively implement the entire PCP. This may include the creation or amendment of financial and regulatory authorities. The permittee shall adopt necessary regulatory changes by the end of the permit term.”*

As stated in the permit requirements above, new regulatory mechanisms, or changes to existing mechanisms, may be recommended to effectively implement the entire PCP (e.g. creation or amendment of financial and regulatory authorities). Any recommendations are anticipated to be adopted by the end of the permit term.

**Applicable Regulatory Mechanisms**

Stantec reviewed the Town's bylaws that relate to stormwater management in the Town, as well as the Town's Zoning By-Laws. To understand if the current bylaws are sufficient to implement the PCP, the Town must first understand what action will be taken to meet the goals of the PCP. To date, a general understanding that implementation of phosphorus reduction Best Management Practices (BMPs) and practices to remove phosphorus from stormwater will be necessary (structural and nonstructural BMPs). BMPs that may be considered include, but are not limited to, those listed below.



**Reference: Phosphorus Control Plan: Legal Analysis**

#### **Structural BMPs**

- Structural Pretreatment BMPs (forebays, filter strips, etc.)
- Treatment BMPs (constructed wetlands, media filters, basins, etc.)
- Conveyance BMPs (grass channels, swales, etc.)
- Infiltration BMPs (dry wells, basins, trenches, etc.)
- Dry detention basins
- Green Roofs
- Porous Pavement
- Rain Barrels and Cisterns

#### **Non-Structural BMPs**

- Enhanced street sweeping
- Enhanced catch basin Clean out
- Leaf litter collection
- Pet waste programs
- Impervious Disconnection
- Enhanced redevelopment program
- Enhanced ESC program

The Town's existing bylaws do not prohibit the implementation of stormwater BMPs and many of these BMPs will be able to be implemented through the City's Stormwater Management and Erosion Control bylaws (Section 60-325). For example, this section of the code requires permits for land disturbing activities, inclusive of a stormwater and erosion operation and maintenance plan. The bylaws also include compliance requirements with Stormwater Management Standards for all development.

Additional environmental practices are included in the Town's Zoning By-Law, such as requirements for trees in and along parking lots and driveways, outlined in General Regulations, 5.3 Landscaping. In addition to planting requirements, the Zoning By-Law also requires planting requirements to be met by maintaining the existing vegetation wherever possible.

A Conservation Commission also exists in the Town to advise town boards and officials on aspects of conservation and environmentally related issues. The Board also acts as the regulatory body for administering the performance standards of the Wetlands Protection Act, the Rivers Protection Act, and conservation areas within the Town.

The Town also performs an annual catch basin clean out effort and conducts street sweeping to remove potential contaminants from entering the storm sewer system and local waterbodies.

#### **Recommended Regulatory Mechanisms**

Currently, the Town's bylaws do not restrict the implementation of stormwater BMPs such as those listed above. Probable practices necessary for the PCP are not anticipated to require additional legal authority, nor are the current bylaws inhibiting to anticipated practices.

While the Town's current legal authorities are adequate to implement the PCP, additional bylaws to encourage or enhance BMPs for the PCP could be adopted. These include the potential for adopting a stormwater enterprise fund, which could then be discounted to entities that implement BMPs on their respective property. By-laws may also be revised to require parking restrictions for increased street sweeping efficiencies and a commitment to street sweeping and catch basin clean out requirements. Also for consideration, the Town could adopt a Guidance document for stormwater management to outline performance standards for BMPs.

**Reference: Phosphorus Control Plan: Legal Analysis**

Respectfully,

**STANTEC CONSULTING SERVICES INC.**

A handwritten signature in black ink that reads "Ashley Hall". The signature is written in a cursive, flowing style.

**Ashley Hall** PE, PMP  
Senior Engineer  
Mobile: 804-461-0878  
ashley.hall@stantec.com

To:	Glenn Clancy, PE Homer Municipal building, 19 Moore Street, 2nd Floor, Belmont, MA 02478	From:	Ashley Hall Jen Zoppo Stantec
Project/File:	Town of Belmont MS4 Permit Support/195113465	Date:	January 31, 2023 Revised May 17, 2023

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**Reference: Phosphorus Control Plan: Funding Assessment****Background**

On October 17, 2007, EPA approved the Final TMDL for Nutrients in the Lower Charles River Basin (Lower Charles TMDL). The TMDL requires MS4 permittees, such as the Town of Belmont, to limit discharges of phosphorus from the MS4, as well as prepare a legal analysis and funding source assessment to aid in implementation. The requirement for the funding source assessment is found in Appendix F, 1.A.3 of the permit:

*Funding source assessment – The permittee shall describe known and anticipated funding mechanisms (e.g. general funding, enterprise funding, stormwater utilities) that will be used to fund PCP implementation. The permittee shall describe the steps it will take to implement its funding plan. This may include but is not limited to conceptual development, outreach to affected parties, and development of legal authorities.*

The funding source assessment is presented below to the best of the Town's abilities; however, until the estimated cost of the Phosphorus Control Plan (PCP) is estimated (due in Year 5 of the permit), the understanding of future implementation costs is largely unknown. A wide range of funding mechanisms is presented here, as the anticipated cost could be significant.

**Existing Sources**

The primary funding mechanism available to the Town to support implementation of the PCP comes from the existing sewer fund that has an existing stormwater fund. The Department of Public Works (DPW) also maintains a budget for sewer and drain rehabilitation, which funds the Annual MS4 permitting program in addition to evaluation and mitigation of sewer and storm drain failures. The annual budget is \$700,000. All money from this fund is currently allocated, but may need to be supplemented to allow for phosphorus controls.

**Additional Potential Internal Sources**

Following the estimation of cost for the PCP, a stormwater gap analysis may be necessary to determine if additional internal sources are necessary, such as a stormwater utility. Two examples of potential internal sources for revenue include the creation of a Massachusetts Municipal Water Infrastructure Investment Fund or creation of a Stormwater Enterprise Fund, discussed further below.

**Reference: Phosphorus Control Plan: Funding Assessment**

*Massachusetts Municipal Water Infrastructure Investment Fund:*

Through Massachusetts General Law (MGL) Chapter 259, titled “An Act Improving Drinking Water and Wastewater Infrastructure,” municipalities are able to adopt a new revenue stream for funding of drinking water, wastewater, and stormwater infrastructure planning, operations, and improvements. This legislation allows communities to impose a surcharge on real property at a rate up to 3% of the real estate tax levy against real property.

*Stormwater Enterprise Fund:*

There are two pieces of legislation that allow municipalities to set up stormwater enterprise funds (utilities): MGL Chapter 83, Section 16 and MGL Chapter 40 Section 1A. MGL Chapter 83 Section 16 allows municipalities to set up a stormwater management utility and to charge utility fees for managing stormwater. MGL Chapter 40 Section 1A provides a definition of a district for the purpose of water pollution abatement, water, sewer, and/or other purposes. The Town would need to create an enterprise account and pass a bylaw to establish the authority to assess the fee for stormwater.

There are multiple ways to structure fees for a stormwater utility, such as assessed property value, flat fee, fee per stormwater equivalent residential unit, or tiered fees based on land use type. Each structure offers a different approach to equitably apply a stormwater utility and most require evaluation of properties to determine impervious area and tax-exemption status. Public education and outreach are recommended for any approach, followed by implementation through amendment to the Town’s bylaws. In addition, the billing system must be determined.

There are approximately twenty communities in Massachusetts that have established stormwater utility fees, with annual revenues ranging from \$357,000 to \$4.6 million.

**External Sources**

Should the existing DPW budget need to be supplemented for the PCP, additional funding mechanisms external to the Town were also identified. These sources are ranked in level of suitability in the table below and further summarized in the following text.

**Reference: Phosphorus Control Plan: Funding Assessment**

<b>Funding Source</b>	<b>Funding Information</b>	<b>Relevant Activities Funded</b>	<b>Anticipated Timeline<sup>1</sup></b>	<b>Matching Funds Required?</b>
Coastal Pollutant Remediation Grant	Maximum grant award \$175,000	Nonpoint source pollutant assessments  Design and permitting activities  Regulatory program development, technical assistance, and online tools/resources	Spring and Fall	At least 25%
Coastal Habitat and Water Quality Grant	Grants range from \$27,000 - \$800,000	Assessments and treatment stormwater impacts  Comprehensive habitat restoration planning	August	At least 25%
MS4 Municipal Assistance Grant Program	Grants range from \$50,000 - \$300,000	Activities to meet MS4 General Permit requirements for MS4 partnerships	September	Encouraged but not required
NFWF Five Star and Urban Waters Restoration Grant	Awards range from \$20,000 to \$50,000 with an average size of \$35,000 and about 50 grants awarded per year	Design and construction of green infrastructure BMPs, water quality monitoring/assessment, outreach and education	January	50% Match
Community Development Block Grant Entitlement Program	Formula based on population data	Flooding and drainage improvements, planning and capacity	September	Not required
MassWorks Infrastructure Program	Grants range from \$90,000 - \$4.1 million	Stormwater infrastructure improvement, BMP design, BMP construction	June	Not required
National Estuary Program Coastal Watershed Grant	\$1 million each year, with grant awards ranging between \$75,000 and \$250,000.	Projects targeting nutrient reductions and flooding/coastal erosion	May	33% Match

<sup>1</sup> Based on previous deadlines for years 2021 or 2022.

**Reference: Phosphorus Control Plan: Funding Assessment**

<b>Funding Source</b>	<b>Funding Information</b>	<b>Relevant Activities Funded</b>	<b>Anticipated Timeline<sup>1</sup></b>	<b>Matching Funds Required?</b>
Hazard Mitigation Grants	Soft cap of \$15 million per project	Stormwater and drainage infrastructure improvements	October	10% Match
Clean Water State Revolving Fund Loan	Low interest loan (0-2.4%)	Structural and nonstructural projects	August	N/A- Loan
EPA Healthy Communities Grant	Awards up to \$30,00-\$40,000 depending on project type	Projects that focus on pollution prevention, capacity building, and/or healthy outdoor environments	May	5%
Chapter 90 Program	100% reimbursement	Capital improvement projects on public ways	N/A	None
Section 604(b) Water Quality Management Program	Grants range from \$30,000 - \$50,000	Nonpoint source assessment and planning projects	August	No, but strongly recommended
Massachusetts Municipal Vulnerability Preparedness Grant	Grant awards expected to range from \$25,000 to \$2,000,000, with regional awards up to \$5,000,000	Planning, assessments, capacity-building, and regulatory updates  Design and permitting  Construction and on-the-ground implementation	May	25% cash, in-kind, or combination required
NFWF Resilient Communities Program	Grants from \$100,000 to \$500,000. In previous grant rounds, approximately \$1.5-\$3 million was available	Design and construction of wetland restoration, nutrient management, green stormwater infrastructure, stream buffer enhancements, conservation easements, etc.	April	50% Match
Section 319 Water Quality Management Planning Grant Program	\$2.8 million benchmarked in FY2022; \$1.6 million benchmarked for Categories 4a, 4c, and 5 MA Integrated Waters	BMPs in impaired waters watersheds, outreach and education	December	40% non-federal match required

**Reference: Phosphorus Control Plan: Funding Assessment**

*Coastal Pollutant Remediation Grant:*

The Coastal Pollutant Remediation (CPR) Grant Program, established in 1994, is administered through the Massachusetts Office of Coastal Zone management (CZM) for water quality Best Management Practices (BMPs) to treat nonpoint source pollution, including stormwater. CPR funds are used with in-kind services or monetary matches from the receiving community to implement water quality improvements, including design and construction of BMPs and drainage improvement projects. There are spring and fall grant rounds each year for municipalities within the Massachusetts coastal watershed. In the latest grant round (deadline January 2023), \$500,000 is available for grants.

*Coastal Habitat and Water Quality Grant:*

The Coastal Habitat and Water Quality Grant Program is a new funding mechanism in Massachusetts that provides financial resources for projects that assess and treat stormwater impacts and support comprehensive habitat restoration planning activities. The Program is administered through CZM. Eligible projects include pollutant characterization impacts, design and construction of BMPs, capacity-building activities (e.g. training, bylaw development), habitat restoration plans, and public outreach. Over \$2 million dollars was awarded through eight projects in the 2022 grant round.

*National Fish and Wildlife Foundation (NFWF) Five Star and Urban Waters Restoration Grant:*

The Five Star and Urban Waters Restoration Program, administered by NFWF, awards grants seeking to address water quality issues in priority watersheds, such as erosion due to unstable streambanks, pollution from stormwater runoff, and degraded shorelines caused by development. To date, the Foundation has funded more than 1,000 projects totaling over \$25 million. In 2022, \$2.6 million is allocated for awards. Eligible projects should address on-the-ground restoration, outreach, community partnerships, and sustainability.

*MS4 Municipal Assistance Grant Program:*

The Massachusetts Department of Environmental Protection (DEP) administers the MS4 Municipal Assistance Grant Program for innovative projects that will assist multiple communities in meeting the requirements of the 2016 Small MS4 General Permit. The funding is meant to enable Massachusetts municipalities to expand their efforts to meet 2016 MS4 permit requirements and reduce stormwater pollution through coordinated partnerships that emphasize resource sharing. In 2021 (fiscal year), a total of \$300,000 was available. Eligible applicants are groups of two or more Massachusetts municipalities that are subject to the 2016 Small MS4 General Permit, Regional Planning Agencies acting on behalf of two or more municipalities that are subject to the 2016 Small MS4 General Permit; Massachusetts stormwater coalitions representing two or more municipalities that are subject to the 2016 Small MS4 General Permit; or non-profit organizations acting on behalf of two or more municipalities that are subject to the 2016 Small MS4 General Permit.

*Clean Water State Revolving Fund Loan:*

The Massachusetts Clean Water State Revolving Fund (SRF) loan program provides low-interest loans (0-2.4%) to finance projects that help communities meet water quality standards and provide public health benefits, addressing the needs of the communities and watersheds. Funding is available for eligible activities such as combined sewer overflow (CSO) mitigation, infiltration/inflow correction, BMP construction, and green infrastructure planning. Projects are selected annually using a priority ranking system called the Intended Use Plan (IUP). IUP ranking is based upon protection of the public health and improved compliance together with affordability. In recent years, the program operated with \$400 to \$450 million per year, representing the financing of 50 to 70 projects.

**Reference: Phosphorus Control Plan: Funding Assessment**

*National Estuary Program (NEP) Coastal Watershed Grant Program:*

Restore America's Estuaries administers the NEP Coastal Watershed Grant to municipalities located within estuary watersheds (including the Town of Belmont). The program aims to reduce impacts of excessive nutrients and erosion from flooding. The goals of the program include achieving quantifiable improvements in habitat conditions, application of innovative approaches, and establishing local capacity. The annual solicitation awards roughly \$1 million each year, with grant awards ranging between \$75,000 and \$250,000.

*Hazard Mitigation Grant Program (HMGP):*

The Hazard Mitigation Grant Program (HMGP) is administered through the Massachusetts Emergency Management Agency and Massachusetts Department of Conservation and Recreation, to reduce or eliminate future risk to lives and property from natural hazards. The intent for funding of hazard mitigation plans and projects is to reduce the need for the reliance on taxpayer-funded federal assistance for disaster recovery. Projects that mitigate flood risks, such as stormwater upgrades, as well as drainage and culvert improvements, are eligible for funding. In 2022, \$110 million was available for grant allocations.

*Healthy Communities Grant Program:*

The EPA New England's Healthy Communities Grant Program is a grant program meant to work directly with communities to reduce environmental risks, as well as protect and improve human health and the quality of life. The goal of the program is to combine available resources and best identify competitive projects that will achieve measurable environmental and public health results in communities in New England. Funded projects include those that assess environmental risks, increase collaboration, build capacity for environmental problems and achieve environmental benefits. In 2022, the allocation for water infrastructure projects was \$450,000.

*MassWorks Infrastructure Program:*

MassWorks Infrastructure Program is a grant program that provides funds for public infrastructure projects. It is authorized under MGL Chapter 23A, Section 63 and is administered by the Executive Office of Housing and Economic Development (EOHED). The program is focused on creating success and sustainability of developing communities, particularly on multi-family housing areas. The program was established in 2015, and has invested over \$600 million in public infrastructure projects through 326 grant awards. Funds can be used for design and construction of projects such as stormwater infrastructure improvement, BMP design, and BMP construction.

*Chapter 90 Program:*

Authorized through MGL Chapter 90, Section 34, the Chapter 90 Program provides funding to municipalities for the implementation of capital improvements on local public ways. The purpose of the Program is to provide municipalities with an annual funding source for improvements to and investments in local transportation networks. The Program allows municipalities to evaluate their unique transportation needs and goals and allocate funding dollars accordingly. The amount of funding a municipality receives is based on local road mileage, population, and employment. The estimated apportionment for Belmont for Fiscal Year 2023 is \$546,469. Contracts generally have a duration of ten years and eligible expenses are construction, equipment, consultant services to create or extend the life of local capital facilities. Projects such as permeable pavement, tree planting, and outfall stabilization may be eligible for this grant and used to meet PCP practices. Funds are paid after expenses have been incurred. Project requests can be made to MassDOT at any time.

*Section 604(b) Water Quality Management Planning Grant Program:*



**Reference: Phosphorus Control Plan: Funding Assessment**

The DEP administers the Section 604(b) Water Quality Management Planning Grant Program to conduct watershed-based projects addressing nonpoint source pollution such as stormwater. Eligible projects include water quality assessments, watershed management planning, and BMP design. Projects are required to have a public awareness component. Matching funds are not required, but encouraged. In the Fall 2022 grant round, approximately \$160,000 was available.

*Massachusetts Municipal Vulnerability Preparedness Grant Program:*

The Massachusetts Office of Energy and Environmental Affairs (EEA) administers the Municipal Vulnerability Preparedness (MVP) Grant Program's MVP Action Grants to provide financial and technical assistance to designated "MVP Communities" to implement priority adaptation actions identified through the MVP planning process, or similar climate change vulnerability assessment and action planning that has led to MVP designation. Approximately \$10 million was available for Fiscal Year 2022. Eligible applicants are municipalities who have completed the Community Resilience Building process and received "MVP Community" designation from EEA. Applications from regional partnerships of multiple municipalities are eligible provided that the lead applicant is an MVP designated community. To be competitive for MVP funding, projects will need to embody and reflect the MVP program's core principles. Grants may cover projects such as green infrastructure and nature-based design and construction.

*NFWF Resilient Communities Program:*

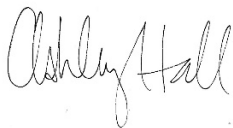
The Resilient Communities Program was started by NFWF and Wells Fargo in 2017, to focus on water quality and quantity, as well as forest health and sea level rise. It is meant to build on the Environmental Solutions for Communities program, also established by NFWF. The program prioritizes community demonstration and capacity-building projects, as well as nature-based resilience solutions. Projects fall into categories of adaptation through conservation; community capacity building and demonstration; and affordable housing and small businesses. Grants from \$100,000 to \$500,000 are generally awarded. In previous grant rounds, approximately \$1.5 million was available for awards. Project types have included wetland restoration, living shorelines, nutrient management, green stormwater infrastructure, stream buffer enhancements, conservation easements, and invasive species management.

*Community Development Block Grant (CDBG) Entitlement Program:*

The CDBG Entitlement Program provides annual grants administered through the Housing and Urban Development (HUD) exchange. Eligible grantees are entitlement communities, determined by population data provided by the Census. The amount of each grantee's annual funding is also determined by population data provided by the Census. HUD determines the amount of each grantee's annual funding using formulas based on the population of the community. Eligible projects include those that enhance the community, such as flooding and drainage improvements and planning and capacity building.

Respectfully,

**STANTEC CONSULTING SERVICES INC.**



October 4, 2022  
Glenn Clancy, PE  
Page 8 of 8

**Reference: Phosphorus Control Plan: Funding Assessment**

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