MEMORANDUM

TO: Catherine Woodbury, City of Cambridge

FROM: Adria Fichter and Betsy Frederick, Kleinfelder

DATE : June 30, 2020

SUBJECT: **FY20 MS4 Services, Task 5 - Phosphorus Control Plan Legal Analysis and Funding Source Assessment**

CC: Andrew Goldberg and Kirsten Ryan, Kleinfelder

1.0 Background

The City of Cambridge is a Charles River Watershed community and as such, is subject to the Massachusetts Department of Environmental Protection's (MassDEP) 2007 *Final TMDL for Nutrients in the Lower Charles River Basin.* It is additionally subject to specific phosphorus reduction requirements in the 2016 General Permit for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems in Massachusetts (the MS4 Permit) detailed in Permit Appendix F, Part A.I. To address phosphorus reduction requirements, the City must develop a Phosphorus Control Plan (PCP) in three (3) distinct phases, each with multiple milestones and deadlines. The focus of this memorandum is on the initiation of Phase I of the PCP plan which is to be completed by the City in Permit years 1 through 5 (July 1, 2018 – June 30, 2023). This memorandum satisfies the first and second requirements of the PCP, a "Legal Analysis" and "Funding Source Assessment" and provides guidance and recommendations for subsequent requirements.

2.0 Legal Analysis

The first element of the PCP, the legal analysis (**Item 1-1**), is required two (2) years after the Permit effective date or by June 30, 2020. The requirement is as follows:

> ***Legal Analysis: A.I.1.a.3 MS4 Permit***
> *'Legal analysis identifies existing regulatory mechanisms available to the MS4 such as by-laws and ordinances, and gaps (changes to regulatory mechanisms) that may be necessary to implement PCP. Adoption of necessary regulatory changes is required prior to the end of the permit term.'*

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2.1 Applicable Regulatory Mechanisms

The City has several different documents, regulations, ordinances, guidance documents, and permits that relate to the proper management of stormwater in the City. To understand current requirements, the following documents were reviewed:

- *Wastewater and Stormwater Management Guidance, May 2008*
  Appendix A: Best Management Practices – Draft – March 2008
  Appendix B: Common Pollutants – Draft – January 2008
  Appendix C: TMDL Information – Draft – January 2008
  Appendix D: Technical Basis for Quantity Guidelines - Draft – January 2008
  Appendix E: Example Calculations for Water Quality Runoff Volume – Draft – January 2008
  Appendix F: NRCS Design Storm Distributions – Draft – January 2008
  Appendix G: Stormwater Control Permit Checklists – September 2019

- *Stormwater Control Permit*

- *Chapter 13.16 Wastewater and Stormwater Drainage System*

- *Department of Public Works Land Disturbance Regulations*

- *Cambridge Zoning Ordinance*

Beyond the existing regulations, proposed amendments to the Zoning Ordinance have been in progress since January 2019. A Zoning Task Force was created to assess climate resiliency opportunities based on feedback from citizens advocating for decreased development in the Alewife Area. The Task Force has investigated multiple climate resiliency strategies on a city-wide basis and will likely issue a memorandum with their findings in Summer 2020. The memorandum is not expected to include legal language but will be used to inform the amendments to the Zoning Ordinance which are expected in Fall 2020. The City should ensure that amendments to the Zoning Ordinance do not hinder the implementation of the PCP.

To adequately understand if the current regulatory mechanisms are sufficient, the City will need to outline specific actions to be implemented to meet phosphorus reduction requirements. The Permit set a specific phosphorus reduction target for the City and included potential best management practices (BMPs) for which phosphorus reduction credits would be obtained upon implementation. Note that the legal analysis must address all aspects of “the entire” PCP implementation, which extends through additional phases over a period of 20 years. Realistically, this analysis can only address the likely approach undertaken by the City in this initial phase. Phase 2 (beginning 5 – 10 years after the permit’s effective date) includes an obligation to update the legal analysis given then-current conditions and programs.

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2.2 Potential PCP Components

The Permit describes structural and non-structural BMPs, implementation of which will qualify for phosphorus credits. (**Attachments 2 and 3 to Appendix F**). It is important that these BMPs are not legally restricted. Potential BMPs that the City may select and the current relevant action that the City is taking, the local regulations that allow for the BMP, and an assessment of the adequacy of the enabling regulations are included in **Table 1**.

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Table 1: Potential Best Management Practices

Potential Best Management Practices for the City's Phosphorus Control Plan	Applicable Action or Regulation	
Non-Structural BMPs		
Enhanced Sweeping Program: *Increasing the frequency and selecting a more effective sweeper technology*	City is already mechanically sweeping once per month and vacuum sweeping three times per year.	Current mechanism sufficient to allow enhancement if selected
Catch Basin Cleaning: *Increasing the frequency of catch basin cleaning when necessary to ensure that no catch basin is ever more than 50% full*	City is developing a catch basin cleaning optimization program.	
Organic Waste and Leaf Litter Collection Program: *Removing all landscaping wastes, organic debris, and leaf litter at least weekly from September 1st to December 1st*	City offers free weekly pick-up of yard waste from April through mid-December	
Structural BMPs		
Infiltration Trench	*Wastewater and Stormwater Management Guidance Version 1, May 2008*	Current mechanism sufficient to allow action if selected
Infiltration Basin or other surface infiltration practice	*Wastewater and Stormwater Management Guidance Version 1, May 2008*	
Bio-filtration practice	*Wastewater and Stormwater Management Guidance Version 1, May 2008 (Referred to as Bioretention Area and Grassed Channel/Biofilter Swale)*	
Gravel Wetland System	*Wastewater and Stormwater Management Guidance Version 1, May 2008*	
Porous Pavement	*Wastewater and Stormwater Management Guidance Version 1, May 2008*	
Wet Pond or wet detention basin	*Wastewater and Stormwater Management Guidance Version 1, May 2008 (Referred to as a Wet Basin)*	
Dry pond or detention basin	*Wastewater and Stormwater Management Guidance Version 1, May 2008*	
Dry water quality swale/grass swale	*Wastewater and Stormwater Management Guidance Version 1, May 2008*	
Semi-Structural/Non-structural BMPs		
Impervious area disconnection through storage (e.g., rain barrels, cisterns, etc.)	*Wastewater and Stormwater Management Guidance Version 1, May 2008*	Current mechanism sufficient to allow action if selected
Impervious area disconnection	*Cambridge Zoning Ordinance*	
Conversions of Impervious Area to Permeable Pervious Area	*Cambridge Zoning Ordinance*	
Soil Amendments to Enhance Permeability of Pervious Areas	This is not explicitly restricted	

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As summarized in the **Table 1**, many of these BMPs are already included in the City's management of stormwater and their infrastructure. The City operates a robust street cleaning program that includes mechanically sweeping each street in the City once per month from April through December, and three times-yearly vacuum sweeping. The City developed and is actively working to implement a catch basin cleaning optimization program to meet the Permit requirements that none are ever over 50% full. Beyond street sweeping, City squares are cleaned daily with sweepers and by hand. Many structural BMPs are already in use throughout the City

The PCP allows the City to receive credit for phosphorus reduction performed by third parties that install stormwater BMPs, such as private property owners and non-MS4 permit holders. The continued operation and maintenance of these BMPs is imperative to successful phosphorus reduction. Permittees under the City's Stormwater Control Permit must submit a Stormwater Control Checklist (Appendix G of the Stormwater Control Permit). As part of the Checklist, the permittee must sign the Owner's Certification that includes accepting responsibility for maintenance of the BMPs, in the event of transfer of ownership, informing prospective new owners and filing a new O&M plan, funding the O&M activities, and understanding that City DPW staff is authorized to conduct inspections and determine regulatory compliance.

The Wastewater and Stormwater Management Guidance Document (Guidance Document), which informs the Stormwater Control Permittee and the Land Disturbance Permittee, specifically includes performance standards for all the possible structural BMPs and for the use of rain barrels/cisterns included in Section 1. Furthermore, the Zoning Ordinance includes requirements and restrictions for Green Areas and Permeable Open Space in specific overlay districts. Although these requirements are not city-wide, they illustrate the City's ability to include and promote these public use spaces with dual stormwater management benefits. At this time, the City's regulations do not inhibit the implementation of any of the BMPs included in Section 2.2 of the Guidance Document. The Permit does require that this legal analysis be updated as part of Phase II of the PCP if necessary.

3.0 Funding Source Assessment

As part of Phase I of the PCP, a funding source assessment (**Item 1-2**) is required three years after the permit effective date (June 2021). The requirement is as follows:

> ***Funding Source Assessment: A.I.1.a.3 MS4 Permit***
> "*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."*

Although the funding source assessment is not required this year, the City has addressed this requirement and established how they plan to afford the design and implementation of the PCP.

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The City is currently able to fund its stormwater management activities through diligent planning and budgeting using standard revenue streams (i.e. General Fund). The City plans to continue their current practices to pay for the PCP and anticipates existing revenue sources can provide the necessary future funding. If additional funding sources are determined to be necessary based on future required investments, the City may consider a combination of the following funding mechanisms:

- General Fund
- Bonds
- Shared Costs/Private Development
- Inspection Fees / Fines
- Grants
- Chapter 90

The City already employs several of these funding mechanisms to some degree, primarily on an opportunistic basis. Initial steps to evaluate any necessary gap funding would address scaling one or more of these approaches to a greater contributing percentage of the overall need. At this time the City does not intend to enact any enterprise system or utility specifically for stormwater management. At the end of year 5 of the permit term, the City must estimate the cost for implementing Phase I of the PCP (**Item 1-9**) and establish if the preferred funding mechanism (i.e. existing planning and budget processes) will be sufficient to pay for the PCP. That re-evaluation will determine if any of the mechanisms cited above must be revisited as a more integral and formalized element of funding strategies to maintain appropriate program funding.

4.0 Define Scope of PCP Baseline Phosphorus Load and Reduction Requirement

In December 2019, the EPA issued proposed permit modifications to the 2016 MS4 General Permit. Currently, these modifications are in draft form. However, EPA has requested permit certification from MassDEP and expects that these modifications will be certified in the coming months (the comment period ended on June 8, 2020). These changes do have implications regarding the final PCP, the timeline of certain items such as the implementation of nonstructural controls, and specific phosphorus reduction requirements.

During the development of the 2014 Draft MS4 Permit, EPA issued an attachment to Appendix F that details how phosphorus loads and reductions were calculated. EPA estimated that illicit sanitary discharges accounted for approximately 10% of the phosphorus load to the Charles River, but noted that this value would be re-evaluated and refined if necessary. Furthermore, EPA stated that although specific illicit phosphorus loads were calculated for each community, the calculated illicit load reductions should be viewed as watershed-wide credits that are not specific to the community.

The proposed permit modifications increase the required phosphorus reduction target. EPA removed the presumptive watershed-wide Illicit Discharge Detection and Elimination (IDDE) phosphorus reduction which results in the increased reduction requirements for all permittees. EPA will recalculate the watershed-wide phosphorus reduction associated with IDDE program

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implementation by each permittee following the completion of each permittee's Program, 10 years after the permit effective date (July 1, 2018 – June 30, 2028). This part of the PCP (**Item 1-3**) is not due until June 2022, but the changes to the reduction requirements may frame the City's approach to addressing required phosphorus reduction moving forward.

5.0 Next Steps

Based on the types of potential BMPs and the City's current procedures, the City does not require additional legal support for their PCP at this time. It is possible that enhancing regulations such as the Zoning Ordinance could promote new/redevelopment and increase the use of the structural BMPs and ultimately yield additional phosphorus reduction credits for the City. Additionally, the City plans to continue funding their stormwater management program through their current budgeting practices and extend this funding to cover the PCP.

Due to the size and complexity of Cambridge, many BMPs could be necessary to meet the Permit prescribed phosphorus reductions. Creating and maintaining a way to manage and track these BMPs will be critical to a successful program. The City is implementing their own BMP inspection program, and this is a good opportunity to track progress through GIS and Cartegraph. We recommend a meeting to discuss updates to the guidance documents to promote the City's internal regulatory review process.

As discussed, Appendix F of the MS4 Permit specifies a detailed, sequential list of items for the City's development of their PCP. This memorandum meets the requirements for items, 1-1 and 1-2, the legal analysis and funding source assessment. The memorandum also provides the framework for the development of the first Phase of the PCP, specifically item 1-3, defining the scope and required reductions of the PCP, which we recommend that the City continues to develop to meet the deadlines established in the Permit.

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