



## MEMORANDUM

**To:** Wayne Chouinard, Bill Copithorne, and Emily Sullivan, Town of Arlington

**From:** Jennifer Relstab and Gemma Kite, Horsley Witten Group (HW), and Arleen O'Donnell, Eastern Research Group (ERG)

**Date:** 6/28/19

**Re:** Stormwater Local Bylaw Review

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The Town of Arlington is located within the Mystic River Watershed, and thus, stormwater discharges from the Town contribute to nutrient pollution (e.g., phosphorus) in the Mystic River. Arlington's municipal separate storm sewer system (MS4) discharges are regulated under the *General Permits for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems in Massachusetts* (hereafter, the MS4 General Permit), effective July 1, 2018. A portion of the Town of Arlington is also located in the Charles River Watershed, which has a Massachusetts Department of Environmental Protection (MassDEP) approved TMDL for phosphorus. The TMDL provides for additional phosphorus reduction requirements in MS4 discharges.

The Town of Arlington is seeking to meet its regulatory requirements, improve local water quality as well as maintain and recharge groundwater resources by incorporating green infrastructure practices into their stormwater management program. Green infrastructure practices improve stormwater runoff quality, reduce quantity, and provide multiple benefits such as decreasing impervious cover, increasing infiltration capacity, decreasing maintenance and related costs, increasing pedestrian safety, and increasing property values. However, implementation of these practices is often hindered by local codes, ordinances, and guidance documents that conflict with green infrastructure goals. However, implementation of these practices is often hindered by local bylaws, regulations and policies that fall short of embracing, allowing and/or requiring the full range (both large and small scale) of green infrastructure techniques that can be implemented. The Town is now actively seeking and seizing opportunities to incorporate green infrastructure into new development, redevelopment and roadway improvements, and are interested in aligning their regulatory framework with those goals and to ensure compliance with state and federal requirements.

While the MS4 General Permit is the main regulatory driver for stormwater management, the Town of Arlington is required to adhere to the Commonwealth of Massachusetts requirements, which have historically been more stringent than federal rules. The Town's Conservation Commission administers

the Massachusetts Wetlands Protection Act (MGL Ch. 131 Section 40) and accompanying regulations (310 CMR 10.00). The Wetlands Protection Act and regulations govern activities in and near wetlands, riverfront areas, floodplains, and other water bodies. To implement the Wetlands Protection Act, as well as the Massachusetts Water Quality Regulations (314 CMR 9.00) and Section 6217 of the Coastal Zone Act Reauthorization Amendments. MassDEP first adopted stormwater guidance (called Stormwater Handbook and Standards) in 1996. The Handbook, since updated in 2008, contains ten stormwater management standards (hereafter, the MassDEP stormwater standards) for management of runoff during site preparation, new construction and redevelopment. The MassDEP stormwater standards are intended to ensure that stormwater discharges meet the state's wetlands and water quality standards to the maximum extent practicable. They are designed to increase recharge of stormwater to maintain streamflow, reduce pollutant load, remove illicit discharges, prevent groundwater pollution, improve operation and maintenance and promote best management practices. Since the MassDEP stormwater standards have been in place since 1996, the Town of Arlington is aware of these standards and corresponding Massachusetts Stormwater Handbook (hereafter, Stormwater Handbook). However, some of the requirements in the MS4 General Permit are more stringent than the MassDEP stormwater standards, thus, Arlington will have to update their current bylaws to reflect the more stringent requirements in the MS4 General Permit.

ERG and the Horsley Witten Group, Inc. (HW) met with town officials to discuss their priorities and were provided local bylaws and regulations governing stormwater and compared the Town's bylaws to the MS4 General Permit requirements and the MassDEP stormwater standards. The consultant team reviewed the local bylaws to suggest areas of improvement for compliance with these standards, and for incorporating green infrastructure (GI)/low-impact development (LID) opportunities. The findings in this memo are intended to highlight areas for the Town's consideration and to target areas for future in-depth analysis. This memo does not include specific language recommendations. Discussions with the Town's departments (Planning, Conservation, Public Health, Department of Public Works, Engineering and Town Counsel) as well as a more detailed review are recommended to provide a comprehensive evaluation of the Town's stormwater management program. An in-depth review could include a line-by-line review and recommendations for new or amended provisions including streamlining the process, complying with new standards and possibly opportunities to exceed standards. The Town of Arlington is required under the MS4 General Permit to review their codes and develop or modify bylaws or other regulatory mechanisms to contain provisions that are at least as stringent as what is in the MS4 permit. While this does not have to be done until July 1, 2020 (two years of the effective date of the permit), this review can help provide direction for that comprehensive review.

The following documents were reviewed:

- By-Laws of the Town of Arlington (updated October 2015) (hereafter, the By-Laws);
- Zoning Bylaw (adopted on February 12, 2018); and
- Regulations for Wetlands Protection (March 1, 2018) (hereafter, the Wetlands Regulations).

## Summary of Existing Regulations

### General Stormwater Policy

- **Stormwater Management Article (Article 15) in the By-Laws Title V** applies to all new development of a previously undeveloped vacant lot, resulting in a structure where building footprint and other impervious surfaces exceeds 500 square feet, and redevelopment projects of a developed property resulting in an increase to the impervious area of a lot by more than 350 square feet. The standard states that no project subject to the bylaw can increase the surface water runoff rate relative to the predevelopment runoff rate.
- **Article 15 in the By-Laws Title V** asserts that the Town will utilize the policy, criteria, and information, including specifications and standards, of the latest edition of the Massachusetts MassDEP's revised Surface Water Discharge Permit Regulations at 314 CMR 3.06(11)(b)5 Storm Water Management Policy for execution of the provisions of this bylaw. The bylaw does not mention applicants must adhere to the Massachusetts Stormwater Handbook.

### Stormwater Design and Treatment

- **Wetlands Regulations (Section 33)** states that stormwater management systems subject to Arlington's Wetlands Protection Bylaw should meet, at a minimum and to the extent practicable, the best management practices for stormwater management as set forth in the MassDEP stormwater standards.

### Post Construction Site Runoff Control

- **Stormwater Management Article (Article 15) in the By-Laws Title V** requires that no project subject to the bylaw can increase the surface water runoff rate relative to the predevelopment runoff rate.
- **Wetlands Regulations (Section 12B and Section 33)** states that the Conservation Commission may require applicants to provide a runoff plan and calculations using the Rational Method or "the Cornell" method, and based on the ten-year, fifty-year and one-hundred-year-flood frequency event period. It also states that calculations should show existing and proposed runoff conditions for comparative purposes.
- **Zoning Bylaws (Section 3.4.4)** includes Environmental Design Review Standards that the Board uses to review plans. The standards include a provision that stormwater drainage will be given to proper site surface drainage so that removal of surface waters will not adversely affect neighboring properties or the public storm drainage system. Available Best Management Practices for the site should be employed and include site planning to minimize impervious surface and reduce clearing and re-grading. Best Management Practices may include erosion control and stormwater treatment by means of swales, filters, plantings, roof gardens, native vegetation, and leaching catch basins. Stormwater should be treated at least minimally on the development site; that which cannot be handled on site shall be removed from all roofs, canopies, paved and pooling areas and carried away in an underground drainage system.

- **Section 31 of the Town's Wetlands Regulations** states that applicants consider the project's adaptation to potential climate change impacts by addressing project stormwater surface runoff, which may increase due to storm surges and extreme weather events, and how this will be managed / mitigated to prevent pollution (including nutrients from fertilizers, roadway runoff, etc.) from entering the resource area with consideration of eliminating impervious surfaces as feasible.

#### Construction Site Stormwater Runoff Control

- **Wetlands Regulation (Section 12B)** require plans include methods to control erosion during and after construction.
- **Zoning Bylaw (Section 3.4.4)** require that available best management practices for surface water drainage should be employed, which may include erosion control.

#### Operation and Maintenance

- **Zoning Bylaws (Section 3.4.4)** may require applicants to provide security satisfactory, or fund, to the Board to ensure the maintenance of all stormwater facilities such as catch basins, leaching catch basins, detention basins, swales, etc. within the site. It also states that the Board may use funds provided by such security to conduct maintenance that the applicant fails to do.

#### **Compliance with Existing Regulations**

The following section focuses on observations and suggestions for the Town to consider to be in compliance with the MS4 General Permit and the MassDEP stormwater standards. The overall schedule for compliance is summarized below:

- **Current (required as part of the MS4-2003 permit)**: Develop of an ordinance or regulatory mechanism that requires the use of erosion and sediment control (ESC) practices at construction sites. This shall be implemented through an ESC plan, which should include provisions to address short- and long-term maintenance of practices.
- **End of Year 2 (6/30/2020)**: Develop or amend the existing ordinance or regulatory mechanism to address sites that disturb one or more acres including LID planning and site design strategies; design of treatment practices following guidance provided in the Massachusetts Stormwater Handbook; and stormwater management treatment requirements for both new and redevelopment.
- **End of Year 4 (6/30/2022)**: Develop a report that assesses the current street design, parking lot guidelines and other requirements that affect the creation of impervious cover. Develop a report that assesses the feasibility of allowing the use of green infrastructure practices.
- **Beyond Year 4**: Recommendations from both assessment reports shall be implemented in accordance with the schedules contained in the assessment.

### General Stormwater Policy

- The Town currently has codes referencing stormwater management in multiple locations, including the By-Laws, Wetlands Regulations, and the Zoning Bylaw. **Arlington should consider developing a comprehensive standalone stormwater ordinance that consolidates all stormwater regulations and standards to meet the MS4 General Permit and Wetlands Protection Act. This will help remove inconsistent language in multiple bylaws and documents. It will help applicants better understand and comply with stormwater management requirements.**
- The Town references the Stormwater Handbook in terms of the design and performance standards for stormwater BMPs for projects subject to the Town's Wetlands Regulations. However, some of the requirements in the MS4 General Permit are more stringent than the corresponding stormwater standard detailed in the Stormwater Handbook. The references to the Stormwater Handbook are no longer adequate for some standards, mainly for evaluating loss of annual recharge (Standard #3), treatment (Standard #4), and redevelopment projects (Standard #7). **The Town will need to update their bylaws to be consistent with the MS4 General Permit by July 1, 2020 (within two years of the permit effective date). This may include editing the reference to the Stormwater Handbook, as necessary, if the Handbook has not been updated by July 1, 2020.**

### Applicability

- The MS4 General Permit (Section 2.3.5.a) requires that permittees develop a program to address post-construction stormwater runoff from all new development and redevelopment sites that, at a minimum, disturb one or more acres and discharge into the permittee's MS4. The program will include sites less than one acre if the site is a part of a larger common plan of development or redevelopment that disturbs at least one acre. The Town currently has minimum thresholds defined under Stormwater Management Article (Article 15) in the By-Laws Title V of 500 square feet for new development and 350 square feet increase of impervious area for redevelopment. **The Town should consider evaluating appropriate thresholds that reflect the typical alterations to parcels and impervious area within the Town. The Town can adjust the site plan review requirements as is reasonable for the thresholds selected.**
- The MS4 General Permit and Wetlands Protection Act (WPA) define redevelopment area differently. The MS4 General Permit specifies that redevelopment sites contain both areas already developed and areas not yet developed, whereas the WPA defines a redevelopment site as only the portion of the land that already developed,. This means that the applicability of the MS4 permit requirements in areas under WPA jurisdiction will need to be clearly defined for the Applicants. **The Town should provide definitions for redevelopment projects.**

### Stormwater Design and Treatment

- New Development: The treatment requirement for new development sites will need to be updated to reflect requirements in the MS4 General Permit. The following requirements need to be developed and implemented within two years of the effective permit date (July 1, 2020) in accordance with Section 2.3.6.a.ii of the MS4 General Permit.
  - a. In addition to requiring the stormwater management systems be compliant with Massachusetts Stormwater Management Standards 1, 2, 3, 5, 6, and 9, it also requires stormwater management systems to be designed to:
    - Retain the volume of runoff equivalent to, or greater than, one inch multiplied by the total post-construction impervious surface area on the site AND/OR
    - Remove 90% of the average annual load of Total Suspended Solids generated from the total post-construction impervious area on the site AND 60% of the average annual load of Total Phosphorus generated from the total post-construction impervious surface area on the site.

As stated above, the Storm Drain Regulations currently reference the Massachusetts Stormwater Handbook, which specifies that stormwater management systems must be designed to treat a required water quality volume of either 1.0 inch of runoff times the total impervious area (near critical areas) or 0.5 inch for all other discharges and remove 80% of the average annual load of the TSS. **The Town should consider updating the treatment requirement to specify the required retained volume AND/OR Total Phosphorus (TP) and Total Suspended Solids (TSS) reductions required under the MS4 General Permit Section 2.3.6.a.ii for new development. The use of 'AND/OR' in the MS4 General Permit provides flexibility for the Town to decide how best to meet this requirement. For example, the Town may require both the retention of one inch and the TSS and TP reductions, allow either the retention of the one inch or the TSS and TP reductions (to be selected by the Applicant), or specify one of the treatment requirements.**

- Redevelopment: The treatment requirement for redevelopment sites will need to be updated to reflect requirements in the MS4 General Permit. The following requirements need to be developed and implemented within two years of the effective permit date (July 1, 2020) in accordance with Section 2.3.6.a.ii of the MS4 General Permit.
  - b. In addition to the requiring the stormwater management systems on redevelopment meet Massachusetts Stormwater Management Standards 1, 2, 3, 5, and 6 to the maximum extent possible, it requires systems to improve existing conditions on site by requiring the system to:
    - Retain the volume of runoff equivalent to, or greater than, 0.80 inch multiplied by the total post-construction impervious surface area on the site AND/OR
    - Remove 80% of the average annual post-construction load of Total Suspended Solids generated from the total post-construction impervious area on the site AND

50% of the average annual load of Total Phosphorus generated from the total post-construction impervious surface area on the site.

This includes roadway widening or improvements that increase the amount of impervious area on the redevelopment site by greater than or equal to a single lane width.

As stated above, the Storm Drain Regulations currently reference the Massachusetts Stormwater Handbook, which specifies that stormwater management systems must be designed to treat a required water quality volume of either 1.0 inch of runoff times the total impervious area (near critical areas) or 0.5 inch for all other discharges and remove 80% of the average annual load of the TSS. **The Town should consider updating the treatment requirement to specify the required retained volume AND/OR TP and TSS reductions required under the MS4 General Permit Section 2.3.6.a.ii for redevelopment projects. Similar to the provision stated under New Development, the use of 'AND/OR' in the MS4 general permit provides flexibility to the Town to decide how best to meet this requirement.**

- The MS4 General Permit Section 2.3.6.a.ii also states that the ordinance must include a provision that Low Impact Development (LID) site planning and design strategies be used to the maximum extent feasible. **Arlington should consider adopting a LID site-planning checklist, like what the Town of Winchester has adopted, that will ensure the applicant has considered all LID practices possible when planning for the project. Additional information on LID principles and techniques can be found on MAPC's LID Toolkit website (<https://www.mapc.org/resource-library/low-impact-development-toolkit/>).**
- Since the Town of Arlington MS4 discharges to phosphorus impaired waters, the MS4 General Permit (Appendix H, Section II.1.a.i.2) requires that the permittee adopt or amend an ordinance or other regulatory mechanism to include a requirement that new development and redevelopment stormwater management BMPs be optimized for phosphorus removal. **The Town should consider including this specification into the Town By-Laws and the Wetlands Regulations and providing a list of BMPs and design recommendations that optimize phosphorus removal. Methods for calculating phosphorus reduction credits for BMPs are provided in the MS4 General Permit Appendix F.**
- The bylaws were reviewed for compliance with the Stormwater Management Standards. Our review did not uncover any bylaws pertaining to stormwater discharges from land uses with higher potential pollutant loads (Stormwater Standard #5) or stormwater discharges within the Zone II or Interim Wellhead Protection Area of a public water supply, or near any critical area (Stormwater Standard #6). **The Town should consider specifying in its By-Laws and Wetlands Regulations the design requirements for stormwater discharges within these areas, as detailed in the Massachusetts Stormwater Handbook.**

- The MS4 General Permit (Section 2.3.6.a.ii.4) allows for the use of off-site mitigation within the same USGS HUC 10 watershed for a developer to meet equivalent retention or pollutant removal requirements of a redevelopment site. However, the MS4 General Permit does not mention this provision for new construction projects. Off-site mitigation can allow the Town to provide flexibility for redevelopment sites and prioritize management of stormwater runoff on sites that may be more beneficial for the community, either as identified through a watershed plan, a Municipal Vulnerability Preparedness (MVP) program, or a Hazard Mitigation Plan. Whereas the MS4 General Permit allows off-site stormwater management, or mitigation, the Wetland Protections Act does not allow mitigation to occur physically off-site. **The Town should consult available resources, including the *Guidance for Developing Off-site Stormwater Compliance Program for Redevelopment Projects in Massachusetts* (<https://www3.epa.gov/region1/npdes/stormwater/ma/ma-off-site-mitigation-guidance-manual.pdf>) to determine if such a program would be applicable and how best to develop a program. If feasible and appropriate, the Town could include off-site mitigation in its bylaws where redevelopment projects are addressed. Example language is provided in the reference noted above; however, the Town could include language to provide permit off-site mitigation on a case-by-case basis if a full program is not feasible.**

#### Construction Site Stormwater Runoff Control

- The MS4 General Permit (Section 2.3.5) requires that an ordinance or other regulatory mechanism be adopted that requires the use of sediment and erosion control practices at construction sites. This includes controls for other wastes on construction sites (e.g., litter, sanitary wastes, demolition debris). **As noted above, the Wetlands Regulations mention that methods to control erosion during and after construction are required to be submitted. However, it does not specify what should be addressed. The Town should consider specifying requirements for ESC, including requirements for an ESC plan, into Article 15 of the By-Laws Title V and in the Wetlands Regulations.**
- The MS4 General Permit (Section 2.3.5.c.iii) requires that construction site operators include BMPs appropriate for the conditions at the site when implementing a sediment and erosion control program. Examples of BMPs include:
  - Minimize the amount of disturbed area and protect natural resources;
  - Stabilize sites when projects are complete or operations have temporarily ceased;
  - Protect slopes on the construction site;
  - Protect all storm drain inlets and armor all newly constructed outlets;
  - Use perimeter controls at the site;
  - Stabilize construction site entrances and exits to prevent off-site tracking;
  - Inspect stormwater controls at consistent intervals.

**The Town should consider including this requirement into the Article 15 of the Town By-Laws Title V and in the Wetlands Regulations as well as provide an example list of BMPs.**



- The MS4 General Permit (Section 2.3.5.c.ii and 2.3.5.c.v) requires that the Town develop written procedures for site inspections and enforcement of sediment and erosion control measures. The procedures need to clearly define
  - who is responsible for site inspections and who as the authority to implement enforcement procedure,
  - inspections occur during construction of BMPs as well as after construction,
  - procedures for inspections including qualifications necessary to perform the inspections and the use of mandated inspection forms if appropriate,
  - procedures for tracking the number of site reviews, inspections, and enforcement actions.

**The Town does not specify whether inspections and enforcement of sediment and erosion control measures is done. However, the Town has developed a Site Inspection Form and conducts inspections. While it is not required to be included in Town By-Laws, the Town should consider outlining the inspection requirements and enforcement provision in Article 15 of the By-Laws Title V. An inspection checklist may also help enforce applicants to conduct regular inspections and follow clearly defined inspection procedures.**

#### Operation and Maintenance

- The Zoning Bylaw mentions that the Board may require financial security from the applicant to ensure maintenance of stormwater facilities is conducted. However, no specifications or requirements on long-term operation and maintenance are described. The Stormwater Handbook currently provides a list of required components for a long-term operation and maintenance plan under Standard 9. **The Town should consider including a requirement that the applicant submit a long-term operation and maintenance plan in Article 15 of the By-Laws Title V and in the Wetlands Regulations. The Town can consider including the requirements for O&M plans as stated in the MassDEP stormwater standards, which include specifying routine and non-routine maintenance tasks to be done after construction is complete and a schedule for implementing the tasks, and an estimated operations and maintenance budget.**

#### **Beyond Compliance: Opportunities for Green Infrastructure (GI) and Low Impact Development (LID)**

The Town of Arlington bylaws were evaluated to identify opportunities for reducing impervious cover, integrating LID, and removing barriers to installing GI practices. The following goals are highlighted to further promote the use of GI and LID practices within the Town.

- As noted above, the Stormwater Management Article (Article 15) in the By-Laws Title V outlines the applicability thresholds of 500 square feet for new development and 350 square feet increase of impervious area for redevelopment. **The Town could further include a provision in**

**the regulations to include parcels permitted by right as well as parcels where buildings are razed and/or built upon in the same footprint (where there is no change in impervious cover).**

- As noted above, the Town's Zoning Bylaws include Environmental Design Review Standards (Section 3.4.4). One mentions that projects are encouraged to incorporate best practices related to sustainable sites, water efficiency, energy and atmosphere, materials and resources, and indoor environment quality. The Surface Water Drainage standard mentions that best management practices should be employed to treat stormwater by means of swales, filters, plantings, roof gardens, native vegetation, and leaching catch basins. The code also states that minimizing impervious surface and reducing clearing and grading are best management practices. **Best management practices can include the use of permeable pavement options for some areas including parking lots, sidewalk and driveways, if desired by the Town. Permeable pavement is porous material that helps to promote infiltration and reduce runoff volume. Permeable pavement is appropriate for low-speed, low-traffic areas, such as walkways, plazas, parking stalls, and overflow parking areas. Common types of permeable paving include porous asphalt and pervious concrete, paving stones, and grass pavers (MAPC, 2010).**
- The Surface Water Drainage Standard in the Town's Zoning Bylaws also state that stormwater should be "treated at least minimally on the development site; that which cannot be handled on site shall be removed from all roofs, canopies, paved and pooling areas and carried away in an underground drainage system." **The Town should promote redirection of clean roof runoff to landscaped areas or BMPs to increase infiltration and reduce impervious area.**
- **The Town should consider developing local provisions for the external use of stormwater (e.g., rain barrels and rainwater harvesting) to encourage residents and businesses to intercept and store stormwater runoff from roofs.**
- The Town does not specify any minimum standards for curbing except for parking lots on private property abutting a public sidewalk (By-Laws, Title III, Section 27). **The Town should consider maintaining flexibility in the requirements to allow curbing as needed, as this may be a barrier to use of GI/LID practices that may have been considered, such as bioswales or bioretention areas in parking lots. Reverse curbing and curb cuts into green infrastructure features can reduce runoff and improve water quality.**
- The Town does not include any design specifications for sidewalks. **The Town should maintain flexibility in the requirements to allow sidewalks as needed to reduce impervious area where possible.**
- The Town's Zoning Bylaw (Section 6.1.4) provides the minimum number of parking spaces for off-street parking per dwelling unit or per gross floor area of the building for each type of land use. **The Town should consider introducing flexibility in parking standards by providing a**

**maximum parking ratio standard to minimize excessive impervious area while providing adequate parking.**

- The Town's Zoning Bylaw (Section 3.4.4) states that available best management practices for the site should be used to minimize impervious surface. Section 6.1 requires that off-street parking, loading areas, and access driveways be surfaced by pervious or impervious materials. **The Town should consider including pre-approved permeable pavement options. The Town could also consider including a bylaw that would require pervious paving for overflow parking and parking area sidewalks.**

Preserve the hydrologic function of natural features

This goal can include minimizing building, driveway and right-of-way footprints, and preserving topsoil, trees, existing topography, open space, and wetlands. It can also include minimizing clearing and grading, and locating sites in less sensitive areas.

**The Town should consider including more specific elements of GI and LID design planning. Requiring applicants to complete a LID Site Design and Planning Checklist will ensure that applicants fully consider and review LID and GI practices. The Checklist may include the following:**

- Strategies to avoid impacts such as preservation of undisturbed areas, buffers and floodplains, minimize clearing and grading, and locating sites in less sensitive areas;
- Strategies to reduce impacts such as reducing impervious cover; and
- Strategies to manage impacts such as disconnecting impervious area, stream/wetland restoration, mitigation of runoff at the generation point, and source control.

Allow and encourage multi-functional stormwater controls

This goal includes promoting green infrastructure in landscaped areas, open spaces, on roofs, and in rights-of-way. It also includes redirecting stormwater from gray to green infrastructure where possible. Encouraging green infrastructure language in the bylaws and other town documents also helps meet this goal.

- The Town's Zoning Bylaw defines "open space landscaped" as open space that may include landscaped elements. **The Town should consider encouraging the use of GI practices by allowing them to count towards the fulfillment of open space requirements.**
- The Town's Zoning Bylaw, Section 5, provides for various minimum setbacks (e.g., Section 5.4.2.A) for yard setbacks and lot frontage. **The Town should consider reducing or eliminating the minimums in areas where there are nearby environmental resources or in areas where the Town's open space goals may be met.**
- The Town's Zoning Bylaw, 6.1.11.D states parking areas with more than 25 spaces should include landscaped areas in at least 8% of the total paved portion of the parking area. **The Town**

**should consider encouraging stormwater management BMPs as part of this planting requirement.**

- The Town's Zoning Bylaws provide a narrative description of the goals of the of the bylaw. **The Town should consider including the Town's GI and LID goals/objectives. This will help reiterate to applicants and residents alike the important of meeting or exceeding the requirements in the MS4 General Permit and the MassDEP stormwater standards.**

### **Other Resources for GI and LID Bylaw Reviews**

There are several existing resources available to complete a detailed review of the Town's Bylaws to promote the use of LID and GI practices. These include checklists and descriptions of the types changes to local bylaws that are most effective for LID and GI.

- Metropolitan Area Planning Council (MAPC): <https://www.mapc.org/resource-library/do-your-local-codes-allow-lid/>.
- Center for Watershed Protection (CWP): <https://www.cwp.org/updated-code-ordinance-worksheet-improving-local-development-regulations/>
- Mass Audubon: <https://www.massaudubon.org/our-conservation-work/advocacy/shaping-the-future-of-your-community/publications-community-resources/bylaw-review>
- Other resources available through EPA: <https://www.epa.gov/npdes-permits/stormwater-tools-new-england>

The Town should consider reviewing other Town or City stormwater management design guidance or guidebooks developed to help further evaluate opportunities for environmentally sensitive site design and green infrastructure practices. These resources could help Arlington develop and promote goals and objectives for stormwater management, which could include the preservation and conservation of open space, reduction of pollutant loads to the Mystic River, and reduction of phosphorus.

### **References**

Center for Watershed Protection. 2018. Guidance for Developing an Off-site Stormwater Compliance Program for Redevelopment Projects in Massachusetts. June 2018.

Massachusetts Department of Environmental Protection. The Massachusetts Stormwater Handbook. Revised February 2008.

Massachusetts Department of Environmental Protection. Wetlands Protection Act. Massachusetts General Laws Chapter 131, Section 40.

Metropolitan Area Planning Council. 2010. Fact Sheet: Permeable Paving. <https://www.mapc.org/resource-library/fact-sheet-permeable-paving/>.

United States Environmental Protection Agency. 2018. General Permits for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems in Massachusetts. Issue date: April 4, 2016. Effective date: July 1, 2018. Modification date: November 7, 2018.

Town of Arlington. NPDES PII Small MS4 General Permit Annual Report. Reporting Period April 1, 2017 – March 31, 2018.