

**Quinsigamond Community College
Stormwater Policy**

Last Updated September 2023

The Quinsigamond Community College (QCC) Stormwater Policy (the Policy) outlines specific requirements for campus construction projects to reduce the discharge of pollutants found in stormwater. As required under the Massachusetts 2016 Small Municipal Separate Storm Sewer System (MS4) Permit, the Policy addresses two specific facets of stormwater management:

- **Construction-Site Runoff Controls** to minimize or eliminate erosion and maintain sediment on site so that it is not transported in stormwater and allowed to discharge to a receiving water or the stormwater system.
- **Post-Construction Runoff Controls** to reduce the discharge of pollutants found in stormwater through the retention or treatment of stormwater on new or redeveloped sites.

The Policy will promote consistency and effectiveness in meeting stormwater management requirements associated with project planning, design, and construction, as well as long-term operation and maintenance of stormwater best management practices (BMPs). This document will be referenced by QCC Standard Specifications, Request for Proposals, and Design Standards for new projects, renovations, and ongoing maintenance on campus.

The effective date for this Stormwater Policy is June 30, 2021.

1.0 Massachusetts 2016 Small MS4 Permit Program

This Policy was developed by QCC to address the requirements of the United States Environmental Protection Agency's (USEPA's) 2016 National Pollutant Discharge Elimination System (NPDES) General Permit for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems (MS4) in Massachusetts, hereafter referred to as the "2016 Small MS4 Permit" or "the Permit."

In compliance with the provisions of the Clean Water Act (CWA) and the Massachusetts Clean Waters Act, as amended (M.G.L. Chap.21 §§ 26-53), the 2016 Small MS4 Permit was signed by EPA and the Massachusetts Department of Environmental Protection (MassDEP) on April 4, 2016 and became effective on July 1, 2017. The 2016 Small MS4 Permit replaces the 2003 Small MS4 Permit to regulate activities related to stormwater discharges and requires significantly more detail than the previous permit.

As an entity owned and operated by the Commonwealth of Massachusetts, Quinsigamond Community College is considered a non-traditional MS4. The requirements for non-traditional MS4s vary slightly from municipal MS4s as outlined in Section 5.0 of the 2016 Small MS4 permit. This Policy was developed to align with the intent of the Permit for non-traditional MS4s.

The 2016 Small MS4 Permit requires that QCC address six Minimum Control Measures. These measures include the following:

1. Public Education and Outreach
2. Public Involvement and Participation
3. Illicit Discharge Detection and Elimination (IDDE) Program
4. Construction Site Stormwater Runoff Control

5. Stormwater Management in New Development and Redevelopment (Post Construction Stormwater Management); and
6. Good Housekeeping and Pollution Prevention for Permittee Owned Operations.

To meet the Permit requirements, the QCC stormwater program includes:

- Site Plan Review Procedures - QCC reviews Site Plans for proposed projects during design phases to ensure minimum stormwater requirements and to identify potential problem areas before the site plan is finalized and approved. Refer to Section 4.0 – Site Plan Review Procedures. QCC coordinates with project teams during the Site Plan Review process to review required local, state, and federal permits. All required permits, including coverage under the NPDES Construction General Permit, should be obtained prior to the start of construction.
- Construction Site Inventory - QCC maintains a record inventory of active construction projects to identify sites for inspection.
- Construction Requirements and BMPs - QCC provides contractors with guidance on the appropriate selection and design of stormwater BMPs. Refer to Section 2.1 Construction Period Stormwater Controls.
- Construction Site Inspections – This Policy, in coordination with the NPDES Construction General Permit, provides minimum requirements for inspection frequency for each active construction site in coordination with the Project Team and General Contractor. Refer to Section 2.2 Stormwater Construction Inspection Plan
- Post-Construction Documentation – QCC requires the submittal of a Post-Construction Operation and Maintenance Plan and as-built drawings at the completion of construction projects.
- Training and Education - QCC provides annual training to staff and/or contractors conducting inspections to convey regulatory requirements, BMPs, inspections, and enforcement.
- Public Input - QCC holds Public Engagement Meetings annually each spring to comply with the Permit requirement to allow the public to provide comment on the QCC Stormwater Management Program, including the Stormwater Policy.

1.1 Applicability

This Stormwater Policy is applicable to all new development and redevelopment sites that disturb one or more acres and discharge into the QCC stormwater system. For project sites disturbing less than one (1) acre, QCC requires that the project prepare an alternatives analysis to document the strategies and order-of-magnitude cost estimate to meet the Policy.

1.2 Statement of Responsibilities

QCC has identified that the Executive Director of Facilities Operations is responsible for implementing the Policy. Responsibility for complying with the Stormwater Policy will be shared by QCC staff, project design teams, and contractors.

The Stormwater Policy will be used by QCC to guide the planning, design, and review of campus projects. Project design teams, including architects, engineers, and other design professionals, are responsible for the selection, design, and construction of stormwater management controls for new projects and renovations. General contractors and subcontractors are responsible for all activities on their construction sites, including compliance with construction-phase stormwater regulatory requirements and stormwater pollution prevention.

Appendix C of this policy contains a Stormwater Management Design Review Checklist and Certification to be completed for campus projects by the QCC Project Team (including the Engineer of Record) and reviewed and approved by the Executive Director of Facilities Operations.

1.3 Definitions

For the purposes of this Policy, the following definitions apply:

- Site:** the area extent of construction activities, including but not limited to the creation of new impervious cover and improvement of existing impervious cover (i.e. repaving not exclusively limited to the maintenance and improvement of existing roadways as defined under Section 2.3.6.a.ii.4.b in the Permit)
- New Development:** any construction activities or land alteration resulting in total earth disturbances equal to or greater than 1 acre (or activities that are part of a larger common plan of development disturbing greater than 1 acre) on an area that has not previously been developed to include impervious cover.
- Redevelopment:** any construction, land alteration, or improvement of impervious surfaces resulting in total earth disturbances equal to or greater than 1 acre (or activities that are part of a larger common plan of development disturbing greater than 1 acre) that does not meet the definition of new development.
- Infeasible:** not technologically possible, or not economically practicable and achievable in light of best industry practices.

Refer to the additional Definitions provided as Appendix A.

1.4 Receiving Waters and Regulatory Jurisdiction

The QCC stormwater system discharges into the City of Worcester MS4 system located in West Boylston Street. The Worcester MS4 system appears to discharge into Weasel Brook approximately 1,500 feet south of the QCC campus. Based on record information, Weasel Brook discharges into Indian Lake, which has a Final Total Maximum Daily Load (TMDL) for phosphorus.

The Design Team is responsible for confirming local regulatory requirements and obtaining necessary approvals for the stormwater management system.

2.0 CONSTRUCTION PERIOD STORMWATER REQUIREMENTS

QCC has developed this Section of the Policy to implement and enforce a program to reduce pollutants in any stormwater runoff discharged to the MS4 from all construction activities that result in a land disturbance of greater than or equal to one acre within the regulated area. Disturbances less than one acre are also covered by the Policy if that disturbance is part of a larger common plan of development or sale that would disturb one or more acres.

The objective of construction period stormwater controls is to minimize or eliminate erosion and maintain sediment on site so that it is not transported in stormwater and allowed to discharge to a receiving water or the stormwater system. In addition to addressing sediment and erosion control, the Policy includes controls for other wastes on construction sites such as demolition debris, litter, and sanitary wastes.

This Policy is intended to be coordinated with the requirements of EPA's Construction General Permit (including the development of a Stormwater Pollution Prevention Plan or SWPPP) and the 2008 Massachusetts Stormwater Handbook, as well as requirements set forth by the City of Worcester.

2.1 Construction Period Stormwater Controls

QCC projects shall prepare Erosion and Sediment Control Plans that employ the following strategies, at a minimum, to reduce the discharge of sediment from construction sites on campus:

- **Minimize the amount of disturbed area and protect natural resources**
 - Avoid sensitive areas, steep slopes, and highly erodible soils to the maximum extent possible when developing site plans.
 - Install sediment and erosion controls prior to the start of any construction activities.
 - Plan open channels to follow land contours so natural drainage is not disrupted.
 - Maintain existing vegetation on-site as long as possible.
 - Vegetated and wooded buffers shall be protected.

- **Stabilize sites when projects are complete or operations have temporarily ceased**
 - Construction should proceed progressively on the site in order to minimize exposed soil, and disturbed areas should be restored as soon as possible after work has been completed.
 - Stockpiles shall be stabilized by seeding or mulching if they are to remain for more than two weeks.

- Soils shall be stabilized by mulching and/or seeding when they would be exposed for more than one week during the dry season, or more than two days during the rainy season.
- **Protect slopes on the construction site**
 - Use berms at the top of a steep slopes to divert runoff away from the slope's edge.
 - Provide a stable channel, flume, or slope drain where it is necessary to carry water down slopes.
 - Use organic for temporary slope stabilization and synthetic matting for permanent stabilization.
 - Erosion control blankets shall be utilized when seeding slopes.
- **Protect all storm drain inlets and armor all newly constructed outlets**
 - Place silt sacks within and/or perimeter erosion control (silt fence and straw wattles or straw bales) around existing and newly installed storm drain inlets, including catch basins, area drains, flared ends, and culverts.
- **Use perimeter controls at the site**
 - Use erosion control barriers at the base of slopes and along the project boundary, with a focus on areas where short-circuiting (i.e., flow around the barrier) may occur.
- **Provide temporary runoff controls throughout the construction site to reduce concentration of flow and resulting erosion**
 - Use vegetated channels with rip rap check dams, instead of impervious pavement or concrete, to reduce the water velocity of the conveyance system.
 - Design a check dam or sediment forebay with level spreader at the exit of outfalls to reduce water velocity of the discharge and collect sediment.
 - Use turf reinforcement matting to stabilize vegetated channels, encourage vegetation establishment, and withstand flow velocities without scouring the base of the channel.
 - Divert clean water away from disturbed areas on construction sites to prevent erosion and sedimentation.
- **Stabilize construction site entrances and exits to prevent off-site tracking**
 - Design stabilized construction entrances with stone tracking pads that are consistent with the width of the roadway and extend a minimum of 50 feet into the site, unless otherwise approved by BSU due to site constraints.
 - Use stone that is 2-3 inches in diameter and a minimum of 8 inches thick.
 - Place fabric under the stone tracking pad to prevent upward migration of soil into the pad.
 - Provide wheel washing stations and sweep pavement as required to minimize tracking of sediment off of the construction site.
- **Control wastes that may be discharged from the construction site**

- Properly dispose of discarded building materials, concrete truck wash out, chemicals, litter, and sanitary wastes. These wastes may not be discharged to receiving waters or to the QCC stormwater system.
- **Inspect erosion and sediment controls at consistent intervals to ensure continued protection throughout the duration of construction until permanent stabilization occurs**
 - Consistent with the NPDES Construction General Permit, an inspection shall be completed at each active construction site every seven (7) days because QCC is located upstream of impaired water bodies, including Indian Lake.
 - In the SWPPP or other document, the contractor shall clearly identify the party responsible for maintaining erosion and sediment control devices.
 - Erosion and sediment control devices shall be inspected by the responsible party regularly and maintained as needed to ensure function.
 - Sediment traps and sediment barriers should be cleaned out regularly to reduce clogging and maintain design function. Sedimentation basins shall be cleaned out once sediment reaches 50% of the basin's design capacity.
 - Erosion and sediment control devices shall be inspected following heavy rainfall events to ensure they are working properly.
 - Easements and service routes shall be maintained, to enable maintenance equipment to access BMPs for regular cleaning.

2.2 Stormwater Construction Inspection Plan

QCC or its designated responsible party will perform construction inspections to confirm that site operations match the approved site plans and the Stormwater Pollution Prevention Plan (SWPPP) for the project, and that all precautions are taken to prevent pollutants and sediment from the construction site from impacting local waterways. The inspector is also expected to determine the adequacy of construction site stormwater quality control measures.

The attached Construction Site Stormwater Inspection Report in Appendix B shall be used by the inspector during site visits. Construction meetings are typically held every week for QCC construction projects. Site inspection reports and follow-up actions should be discussed as part of these meetings. The Construction Site Inspections can be delegated to the Construction Manager.

Construction site inspectors shall abide by the following guidelines:

1. Consistent with the NPDES Construction General Permit, an inspection shall be completed at each active construction site every seven (7) days because QCC is located upstream of impaired water bodies, including Indian Lake.
2. The inspection shall begin at a low point and work uphill, observing all discharge points and any off-site support activities.
3. Written and photographic records shall be maintained for each site visit.
4. During the inspection, the inspector should ask questions of the contractor. Understanding the selection, implementation, and maintenance of BMPs is an important goal of the inspection process and requires site-specific input.

5. The inspector should not recommend or endorse solutions or products. The inspector may offer appropriate advice, but all decisions must be made by the contractor.
6. The inspector shall always wear personal protective equipment appropriate for the site.
7. The inspector shall abide by the contractor's site-specific safety requirements.

The Construction Site Inspection process at QCC shall include the following:

1. Plan the inspection before visiting the construction site:
 - a. Obtain and review permits, site plans, previous inspection reports, and any other applicable information.
 - b. Print the approved NOI from the USEPA 2017 Construction General Permit NOI website, listed previously.
 - c. Inform the contractor of the planned site visit.
2. Meet with the General Contractor and Site Contractor:
 - a. Review the Erosion Control Plan, Construction SWPPP (if the site includes over one acre of disturbance), or other related documents.
 - b. Review the project's approved NOI and confirm that information shown continues to be accurate.
 - c. Get a general overview of the project from the contractor.
 - d. Review inspections done by the contractor.
 - e. Review the status of any issues or corrective actions noted in previous inspection reports.
 - f. Discuss any complaints or incidents since the last meeting.
3. Inspect perimeter controls:
 - a. Examine perimeter controls to determine if they are adequate, properly installed, and properly maintained.
 - b. For each structural BMP, check structural integrity to determine if any portion of the BMP needs to be replaced or requires maintenance.
4. Inspect slopes and temporary stockpiles:
 - a. Determine if sediment and erosion controls are effective.
 - b. Look for slumps, rills, and tracking of stockpiled materials around the site.
5. Compare BMPs in the site plan with the construction site conditions:
 - a. Determine whether BMPs are in place as specified in the site plan, and if the BMPs have been adequately installed and maintained.
 - b. Note any areas where additional BMPs may be needed which are not specified in the site plans.
6. Inspect site entrances/exits:

- a. Determine if there has been excessive tracking of sediment from the site.
 - b. Look for evidence of additional entrances/exits which are not on the site plan and are not properly stabilized.
7. Inspect sediment basins:
- a. Look for signs that sediment has accumulated beyond 50% of the original capacity of the basin.
8. Inspect pollution prevention and good housekeeping practices:
- a. Inspect trash areas and material storage/staging areas to ensure that materials are properly maintained and that pollutant sources are not exposed to rainfall or runoff.
 - b. Inspect vehicle/equipment fueling and maintenance areas for the presence of spill control measures and for evidence of leaks or spills.
9. Inspect discharge points and downstream, off-site areas:
- a. Walk down the street and/or in other directions off-site to determine if erosion and sedimentation control measures are effective in preventing off-site impacts.
 - b. Inspect down-slope catch basins to determine if they are protected and identify whether sediment buildup has occurred.
10. Meet with the contractor again prior to leaving:
- a. Discuss the effectiveness of current controls and whether modifications are needed.
 - b. Discuss possible violations or concerns noted during the site inspection, including discrepancies between approved site plans, the SWPPP, and/or the implementation of stormwater controls.
 - c. Agree on a schedule for addressing all discrepancies and schedule a follow-up inspection.
11. Provide a written copy of the inspection report to the contractor.
12. Follow up, as determined, and provide copy of subsequent inspection to the contractor.
13. Use Stop Work orders, as needed, until compliance with the 2017 Construction General Permit and/or other document, as required by the QCC's legal authority, can be achieved.

3.0 POST-CONSTRUCTION STORMWATER REQUIREMENTS

As defined in **Section 2.3.6.a** of the Permit, the Policy must meet the following minimum requirements:

- 1. Implement Low Impact Development (LID) site planning and design strategies**
- 2. Confirm stormwater management systems design are consistent with the following minimum design requirements:**
 - a. The 2008 MassDEP Stormwater Management Standards and associated Handbook

- b. The 2016 Small MS4 Permit pollutant removal requirements for Total Suspended Solids and Total Phosphorus
 - i. All new and redevelopment stormwater management BMPs shall be optimized for phosphorus removal, including but not limited to, retrofitting existing BMPs and providing infiltrating BMPs where feasible.

These requirements are more fully defined in the Sections below.

3.1 Low Impact Development Strategies

Low Impact Development (LID) site planning and design strategies must be implemented unless infeasible in order to reduce the discharge of stormwater from development sites.

The Wetlands Regulations, 310 CMR 10.04, and the Water Quality Certification Regulations, 314 CMR 9.02, define environmentally sensitive site design and low impact development techniques as follows:

Environmentally sensitive site design:

Design that incorporates low impact development techniques to prevent the generation of stormwater and non-point source pollution by reducing impervious surfaces, disconnecting flow paths, treating stormwater at its source, maximizing open space, minimizing disturbance, protecting natural features and processes, and/or enhancing wildlife habitat.

Low Impact Development techniques:

Innovative stormwater management systems that are modeled after natural hydrologic features. Low impact development techniques manage rainfall at the source using uniformly distributed decentralized micro-scale controls. Low impact development techniques use small cost-effective landscape features located at the lot level.

QCC projects must be designed to provide environmentally sensitive site design and low impact development techniques to manage stormwater. Design teams shall consider decentralized systems that involve the placement of a number of small treatment and infiltration devices located close to the various impervious surfaces that generate stormwater runoff in place of a centralized system comprised of closed pipes that direct all the drainage from the entire site into one large dry detention basin.

3.2 2008 Massachusetts Stormwater Handbook

Stormwater management systems design shall be consistent with, or more stringent than, the requirements 2008 Massachusetts Stormwater Handbook.

The 2008 MassDEP Stormwater Management Standards are defined below:

1. No new stormwater conveyances (e.g. outfalls) may discharge untreated stormwater directly to or cause erosion in wetlands or waters of the Commonwealth.
2. Stormwater management systems shall be designed so that post-development peak discharge rates do not exceed pre-development peak discharge rates.
3. Loss of annual recharge to groundwater shall be eliminated or minimized through the use of infiltration measures including environmentally sensitive site design, low impact development techniques, stormwater best management practices, and good operation and maintenance. At

a minimum, the annual recharge from the post-development site shall approximate the annual recharge from pre-development conditions based on soil type.

4. Stormwater management systems shall be designed to remove 80% of the average annual post-construction load of Total Suspended Solids (TSS). This Standard is met when:
 - a. Suitable practices for source control and pollution prevention are identified in a long-term pollution prevention plan, and thereafter are implemented and maintained;
 - b. Structural stormwater best management practices are sized to capture the required water quality volume determined in accordance with the Massachusetts Stormwater Handbook; and
 - c. Pretreatment is provided in accordance with the Massachusetts Stormwater Handbook.
5. For land uses with higher potential pollutant loads, source control and pollution prevention shall be implemented in accordance with the Massachusetts Stormwater Handbook to eliminate or reduce the discharge of stormwater runoff from such land uses to the maximum extent practicable.
6. Stormwater discharges within the Zone II or Interim Wellhead Protection Area of a public water supply, and stormwater discharges near or to any other critical area, require the use of the specific source control and pollution prevention measures and the specific structural stormwater best management practices determined by the Department to be suitable for managing discharges to such areas, as provided in the Massachusetts Stormwater Handbook.
7. A redevelopment project is required to meet the following Stormwater Management Standards only to the maximum extent practicable: Standard 2, Standard 3, and the pretreatment and structural best management practice requirements of Standards 4, 5, and 6. Existing stormwater discharges shall comply with Standard 1 only to the maximum extent practicable. A redevelopment project shall also comply with all other requirements of the Stormwater Management Standards and improve existing conditions.
8. A plan to control construction-related impacts including erosion, sedimentation and other pollutant sources during construction and land disturbance activities (construction period erosion, sedimentation, and pollution prevention plan) shall be developed and implemented.
9. A long-term operation and maintenance plan shall be developed and implemented to ensure that stormwater management systems function as designed.
10. All illicit discharges to the stormwater management system are prohibited.

The MassDEP Stormwater Handbook can be accessed at:

<https://www.mass.gov/guides/massachusetts-stormwater-handbook-and-stormwater-standards>

3.3 2016 Small MS4 Permit Pollutant Removal Requirements for TSS and Total Phosphorus

Stormwater management systems on new development shall be designed to meet an average annual pollutant removal equivalent to **90% of the average annual load of Total Suspended Solids (TSS)** related to the total post-construction impervious area on the site AND **60% of the average annual load of Total Phosphorus (TP)** related to the total postconstruction impervious surface area on the site. All new development stormwater management BMPs shall be optimized for phosphorus removal.

Average annual pollutant removal requirements are achieved through one of the following methods:

1. Installing BMPs that meet the pollutant removal percentages based on calculations developed consistent with EPA Region 1's BMP Accounting and Tracking Tool (2016) or other BMP performance evaluation tool provided by EPA Region 1, where available. If EPA Region 1 tools do not address the planned or installed BMP performance, then any federally or State-approved BMP design guidance or performance standards (e.g., State stormwater handbooks and design guidance manuals) may be used to calculate BMP performance; or
2. Retaining the volume of runoff equivalent to, or greater than, one (1.0) inch multiplied by the total post-construction impervious surface area on the new development site; or
3. Meeting a combination of retention and treatment that achieves the above standards; or
4. Utilizing offsite mitigation that meets the above standards within the same USGS HUC12 as the new development site.

3.4 2016 Small MS4 Permit Requirements for Redevelopments

Stormwater management systems on redevelopment sites shall be designed to meet an average annual pollutant removal equivalent to **80% of the average annual postconstruction load of Total Suspended Solids (TSS)** related to the total post-construction impervious area on the site AND **50% of the average annual load of Total Phosphorus (TP)** related to the total post-construction impervious surface area on the site. All redevelopment stormwater management BMPs shall be optimized for phosphorus removal.

Average annual pollutant removal requirements are achieved through one of the following methods:

1. Installing BMPs that meet the pollutant removal percentages based on calculations developed consistent with EPA Region 1's BMP Accounting and Tracking Tool (2016) or other BMP performance evaluation tool provided by EPA Region 1, where available. If EPA Region 1 tools do not address the planned or installed BMP performance, then any federally or State-approved BMP design guidance or performance standards (e.g., State stormwater handbooks and design guidance manuals) may be used to calculate BMP performance; or
2. Retaining the volume of runoff equivalent to, or greater than, 0.8 inch multiplied by the total post-construction impervious surface area on the redevelopment site; or

3. Meeting a combination of retention and treatment that achieves the above standards; or
4. Utilizing offsite mitigation that meets the above standards within the same USGS HUC12 as the new development site.

Redevelopment activities that are exclusively limited to maintenance and improvement of existing roadways (including widening less than a single lane, adding shoulders, correcting substandard intersections, improving existing drainage systems, and repaving projects) shall improve existing conditions and are exempt from part 2.3.6.a.ii.4 of the Permit. 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 shall meet the requirements of part 2.3.6.a.ii.4 of the Permit.

4.0 SITE PLAN REVIEW PROCEDURES

QCC will review site plans for campus projects disturbing greater than 1 acre to confirm that the stormwater requirements outlined in this Policy have been incorporated into the project design. For projects disturbing less than one (1) acre, the project team shall evaluate strategies and their costs to meet the requirements of the Stormwater Policy.

The QCC site plan review procedure includes:

- A pre-construction review by the permittee of the site design, the planned operations at the construction site, planned BMPs during the construction phase, and the planned BMPs to be used to manage runoff created after development;
- Consideration of potential water quality impacts; and
- Evaluating the incorporation of Low Impact Development (LID) site planning and design strategies unless such practices are infeasible.

The Project shall utilize the Site Plan Review Checklist, provided in Appendix C.

5.0 AS-BUILT SUBMITTAL REQUIREMENTS

QCC requires the submission of as-built drawings at the completion of construction projects. The as-built drawings must depict all on site controls, both structural and non-structural, designed to manage the stormwater associated with the completed site (post construction stormwater management). The as-built survey must be provided in AutoCAD and PDF formats.

The Project is responsible for coordinating with QCC to confirm that CAD files are compatible with the QCC MS4 Stormwater Mapping, including the following:

- CAD file format, including version of AutoCAD
- Horizontal and vertical datum and campus benchmarks
 - Horizontal datum: Mass State Plane Coordinate System

- Vertical datum: NAVD 88
- QCC Campus Benchmarks
- Naming configurations for the CAD files
- Naming convention for drainage structure (catch basins and manhole) and structural stormwater controls

APPENDIX A

Definitions

ABUTTER: The owner(s) of land adjacent to regulated activity.

ALTERATION OF DRAINAGE CHARACTERISTICS: Any activity on an area of land that changes the water quality, force, direction, timing or location of runoff flowing from the area. Such changes include: change from distributed runoff to confined or discrete discharge, change in the volume of runoff from the area; change in the peak rate of runoff from the area; and change in the recharge to groundwater on the area.

AS-BUILT DRAWING: Drawings that completely record and document applicable aspects and features of conditions of a project following construction using Stormwater Management Plans derived from a Land Disturbance Permit.

BEST MANAGEMENT PRACTICE (BMP): An activity, procedure, restraint, or structural improvement that helps to reduce the quantity or improve the quality of stormwater runoff.

CLEARING: Any activity that removes the vegetative surface cover.

CONSTRUCTION AND WASTE MATERIALS: Excess or discarded building or site materials, including but not limited to concrete truck washout, chemicals, litter and sanitary waste at a construction site that may adversely impact water quality.

DEVELOPMENT: The modification of land to accommodate a new use or expansion of use, usually involving construction.

DISCHARGE OF POLLUTANTS: The addition from any source of any pollutant or combination of pollutants into the municipal storm drain system or into the waters of the United States or Commonwealth from any source.

DISTURBANCE OF LAND: Any action that causes a change in the position, location, or arrangement of soil, sand rock, gravel or similar earth material; results in an increased amount of runoff or pollutants; measurably changes the ability of a ground surface to absorb waters; involves clearing and grading; or results in an alteration of drainage characteristics.

DRAINAGE EASEMENT: A legal right granted by a landowner to a grantee allowing the use of private land for stormwater management purposes.

EROSION: The wearing away of the land surface by natural or artificial forces such as wind, water, ice, gravity, or vehicle traffic and the subsequent detachment and transportation of soil particles.

EROSION AND SEDIMENTATION CONTROL PLAN: A document containing narrative, drawings and details developed by a qualified professional engineer (PE) or a Certified Professional in Erosion and Sedimentation Control (CPESC), which includes best management practices, or equivalent measures designed to control surface runoff, erosion and sedimentation during pre-construction and construction related land disturbing activities.

EROSION CONTROL: The prevention or reduction of the movement of soil particles or rock fragments due to stormwater runoff.

GRADING: Changing the level or shape of the ground surface.

GROUNDWATER: Water beneath the surface of the ground.

GRUBBING: The act of clearing land surface by digging up roots and stumps.

HAZARDOUS MATERIAL: Any material which, because of its quantity, concentration, chemical, corrosive, flammable, reactive, toxic, infectious or radioactive characteristics, either separately or in combination with any substance or substances, constitutes a present or potential threat to human health, safety, welfare, or to the environment. Toxic or hazardous materials include any synthetic organic chemical, petroleum product, heavy metal, radioactive or infectious waste, acid and alkali, and any substance defined as "toxic" or "hazardous" under MGL c. 21C and c. 21E, and the regulations at 310 CMR 30.000 and 310 CMR 40.0000.

ILLICIT DISCHARGE: Direct or indirect discharge to the municipal storm drain system or into a watercourse or the waters of the Commonwealth that is not composed entirely of stormwater. The term does not include a discharge in compliance with an NPDES stormwater discharge permit or resulting from fire-fighting activities exempted.

IMPERVIOUS SURFACE: Any material or structure on or above the ground that prevents water infiltrating the underlying soil. Impervious Surface includes without limitation roads, paved parking lots, sidewalks, and rooftops.

IMPOUNDMENT: A stormwater pond created by either constructing an embankment or excavating a pit which retains a permanent pool of water.

INFILTRATION: The act of conveying surface water into the ground to permit groundwater recharge and the reduction of stormwater runoff from a project site.

LAND-DISTURBING ACTIVITY: Any activity that causes a change in the position or location of soil, sand, rock, gravel, or similar earth material; results in an increased amount of runoff or pollutants; measurably changes the ability of a ground surface to absorb waters; involves clearing and grading; or results in an Alteration of Drainage Characteristics.

LAND USE WITH HIGHER POTENTIAL POLLUTANT LOAD (LUHPPL): Land uses such as auto salvage yards, auto fueling facilities, exterior fleet storage yards, vehicle service and equipment cleaning areas, commercial parking lots with high intensity use, road salt storage areas, outdoor storage and loading areas of hazardous substances, confined disposal facilities and disposal sites, marinas, boat yards or other uses as identified by the Massachusetts Stormwater Handbook.

MASSACHUSETTS STORMWATER MANAGEMENT STANDARDS: The performance standards as further defined by the Massachusetts Stormwater Handbook, issued by the Department of Environmental Protection, and as amended, that coordinate the requirements prescribed by state regulations promulgated under the authority of the Massachusetts Wetlands Protection Act G.L. c. 131 §. 40 and Massachusetts Clean Waters Act G.L. c. 21, §. 23-56 to prevent or reduce pollutants from reaching water bodies and control the quantity of runoff from a site.

MUNICIPAL SEPARATE STORM SEWER SYSTEM (MS4) or MUNICIPAL STORM DRAIN SYSTEM: The system of conveyances designed or used for collecting or conveying stormwater, including any road with a drainage system, street, gutter, curb, inlet, piped storm drain, pumping facility, retention or detention basin, natural or man-made or altered drainage channel, reservoir, and other drainage structure that together comprise the storm drainage system owned or operated by QCC or the City of Worcester.

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) STORMWATER DISCHARGE PERMIT: A permit issued by United States Environmental Protection Agency or jointly with the Commonwealth of Massachusetts that authorizes the discharge of pollutants to waters of the United States.

NONPOINT SOURCE POLLUTION: Pollution from many diffuse sources caused by rainfall or snowmelt moving over and through the ground. As the runoff moves, it picks up and carries away natural and man-made pollutants finally depositing them into a water resource area.

OPERATION AND MAINTENANCE PLAN: A plan setting up the functional, financial and organizational mechanisms for the ongoing operation and maintenance of a stormwater management system to insure that it continues to function as designed.

OUTFALL: The point at which stormwater flows out from a point source discernible, confined and discrete conveyance into Waters of the Commonwealth.

OWNER: A person with a legal or equitable interest in property.

PERSON: An individual, partnership, association, firm, company, trust, corporation, agency, authority, department or political subdivision of the Commonwealth or the federal government, to the extent permitted by law, and any officer, employee, or agent of such person.

POINT SOURCE: Any discernible, confined, and discrete conveyance, including but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, or container from which pollutants are or may be discharged.

PRE-CONSTRUCTION: All activity in preparation for construction.

POLLUTANT: Any element or property of sewage, agricultural, industrial or commercial waste, runoff, leachate, heated effluent, or other matter, whether originating at a point or nonpoint source, that is or may be introduced into any sewage treatment works, watercourse or Waters of the Commonwealth. Pollutants include, but are not limited to:

- A. Paints, varnishes, and solvents;
- B. Oil and other automotive fluids;
- C. Nonhazardous liquid and solid wastes and yard wastes;
- D. Refuse, rubbish, garbage, litter, or other discarded or abandoned objects, ordnance, accumulations and floatables;
- E. Pesticides, herbicides, and fertilizers;
- F. Hazardous materials and wastes;
- G. Sewage, fecal coliform and pathogens;
- H. Dissolved and particulate metals;
- I. Animal wastes;
- J. Rock, sand, salt, soils;
- K. Construction wastes and residues; and
- L. Noxious or offensive matter of any kind.

RECHARGE: The process by which groundwater is replenished by precipitation through the percolation of runoff and surface water through the soil.

REDEVELOPMENT: Development, rehabilitation, expansion, demolition or phased projects that disturb the ground surface, including impervious surfaces, on previously developed sites. The creation of new areas of impervious surface or new areas of land disturbance on a site constitutes Development, not Redevelopment, even where such activities are part of a common plan which also involves Redevelopment. Redevelopment includes maintenance and improvement of existing roadways including widening less than a single lane, adding shoulders, correcting substandard intersections, improving existing drainage systems and repaving; and remedial projects specifically designed to provide improved stormwater

management such as projects to separate storm drains and sanitary sewers and stormwater retrofit projects.

RUNOFF: Rainfall, snowmelt, or irrigation water flowing over the ground surface.

SEDIMENT: Mineral or organic soil material that is transported by wind or water, from its origin to another location; the product of erosion processes.

SEDIMENTATION: The process or act of deposition of sediment.

SITE: Any lot or parcel of land or area of property where land-disturbing activities are, were, or will be performed.

SLOPE: The incline of a ground surface expressed as a ratio of horizontal distance to vertical distance.

SOIL: Any earth, sand, rock, gravel, or similar material.

STABILIZATION: The use, singly or in combination, of mechanical, structural, or vegetative methods, to prevent or retard erosion.

STORMWATER: Runoff from precipitation or snow melt and surface water runoff and drainage.

STORMWATER MANAGEMENT PLAN: A document containing narrative, drawings, details and reporting requirements developed by a qualified professional engineer (PE), which describes structural and non-structural best management practices designed to control the discharge of pollutants from impervious surfaces and onsite activities as well as the volume and peak rate of surface runoff from a site on an ongoing basis after construction has been completed.

STRIP: Any activity which removes the vegetative ground surface cover, including tree removal, clearing, grubbing, and storage or removal of topsoil.

TOTAL MAXIMUM DAILY LOAD or TMDL: the greatest amount of a pollutant that a water body can accept and still meet water quality standards for protecting public health and maintaining the designated beneficial uses of those waters for drinking, swimming, recreation, and fishing. A TMDL is also a plan, adopted under the Clean Water Act, specifying how much of a specific pollutant can come from various sources, including stormwater discharges, and identifies strategies for reducing the pollutant discharges from these sources so as not to violate Massachusetts surface water quality standards. (314 CMR 4.00, et seq.)

TOTAL SUSPENDED SOLIDS or TSS: Undissolved organic or inorganic particles in water.

WATERCOURSE: A natural or man-made channel through which water flows or a stream of water, including a river, brook or underground stream.

WATERS OF THE COMMONWEALTH: All waters within the jurisdiction of the Commonwealth, including, without limitation, rivers, streams, lakes, ponds, springs, impoundments, estuaries, wetlands, coastal waters, and groundwater and Waters of the United States as defined under the Federal Clean Water Act (33 U.S.C. § 1251, et seq.) as hereafter amended.

APPENDIX B

Construction Site Inspection Checklist

(continued)

	BMP Description	Installed and Operating Properly?	Corrective Action Needed
3		Yes <input type="checkbox"/> No <input type="checkbox"/>	
4		Yes <input type="checkbox"/> No <input type="checkbox"/>	
5		Yes <input type="checkbox"/> No <input type="checkbox"/>	
6		Yes <input type="checkbox"/> No <input type="checkbox"/>	
7		Yes <input type="checkbox"/> No <input type="checkbox"/>	
8		Yes <input type="checkbox"/> No <input type="checkbox"/>	
9		Yes <input type="checkbox"/> No <input type="checkbox"/>	
10		Yes <input type="checkbox"/> No <input type="checkbox"/>	
11		Yes <input type="checkbox"/> No <input type="checkbox"/>	
12		Yes <input type="checkbox"/> No <input type="checkbox"/>	
13		Yes <input type="checkbox"/> No <input type="checkbox"/>	
14		Yes <input type="checkbox"/> No <input type="checkbox"/>	
15		Yes <input type="checkbox"/> No <input type="checkbox"/>	
16		Yes <input type="checkbox"/> No <input type="checkbox"/>	
17		Yes <input type="checkbox"/> No <input type="checkbox"/>	
18		Yes <input type="checkbox"/> No <input type="checkbox"/>	
19		Yes <input type="checkbox"/> No <input type="checkbox"/>	
20		Yes <input type="checkbox"/> No <input type="checkbox"/>	

Erosion and Sedimentation Control

Document any of the following issues found on the construction site, and the corrective action(s) required for each.

Issue	Status	Corrective Action Needed
Have all ESC features been constructed before initiating other construction activities?	Yes <input type="checkbox"/> No <input type="checkbox"/>	
Is the contractor inspecting and maintaining ESC devices regularly?	Yes <input type="checkbox"/> No <input type="checkbox"/>	
Is existing vegetation maintained on the site as long as possible?	Yes <input type="checkbox"/> No <input type="checkbox"/>	
Is construction staged so as to minimize exposed soil and disturbed areas?	Yes <input type="checkbox"/> No <input type="checkbox"/>	
Are disturbed areas restored as soon as possible after work is completed?	Yes <input type="checkbox"/> No <input type="checkbox"/>	
Is clean water being diverted away from the construction site?	Yes <input type="checkbox"/> No <input type="checkbox"/>	
Are sediment traps and sediment barriers cleaned regularly?	Yes <input type="checkbox"/> No <input type="checkbox"/>	
Are vegetated and wooded buffers protected and left undisturbed?	Yes <input type="checkbox"/> No <input type="checkbox"/>	
Are soils stabilized by mulching and/or seeding when they are exposed for a long time?	Yes <input type="checkbox"/> No <input type="checkbox"/>	
Has vegetation been allowed to establish itself before flows are introduced to channels?	Yes <input type="checkbox"/> No <input type="checkbox"/>	
Is regular, light watering used for dust control?	Yes <input type="checkbox"/> No <input type="checkbox"/>	
Is excessive soil compaction with heavy machinery avoided, to the extent possible?	Yes <input type="checkbox"/> No <input type="checkbox"/>	

(continued)

Issue	Status	Corrective Action Needed
Are erosion control blankets used when seeding slopes?	Yes <input type="checkbox"/> No <input type="checkbox"/>	
Are trees and vegetation that are to be retained during construction adequately protected?	Yes <input type="checkbox"/> No <input type="checkbox"/>	
Are areas designated as off-limits to construction equipment flagged or easily distinguishable?	Yes <input type="checkbox"/> No <input type="checkbox"/>	
If excavated topsoil has been salvaged and stockpiled for later use on the project, are stockpiles adequately protected?	Yes <input type="checkbox"/> No <input type="checkbox"/>	
Are temporary slope drains or chutes used to transport water down steep slopes?	Yes <input type="checkbox"/> No <input type="checkbox"/>	
Do all entrances to the storm sewer system have adequate protection?	Yes <input type="checkbox"/> No <input type="checkbox"/>	

Overall Site Conditions

Document any of the following issues found on the construction site, and the corrective action(s) required for each.

Issue	Status	Corrective Action Needed
Are slopes and disturbed areas not being actively worked properly stabilized?	Yes <input type="checkbox"/> No <input type="checkbox"/>	
Are material stockpiles covered or protected when not in use?	Yes <input type="checkbox"/> No <input type="checkbox"/>	
Are natural resource areas protected with sediment barriers or other BMPs?	Yes <input type="checkbox"/> No <input type="checkbox"/>	
Are perimeter controls and sediment barriers installed and maintained?	Yes <input type="checkbox"/> No <input type="checkbox"/>	

(continued)

Issue	Status	Corrective Action Needed
Are discharge points and receiving waters free of sediment deposits and turbidity?	Yes <input type="checkbox"/> No <input type="checkbox"/>	
Are storm drain inlets properly protected?	Yes <input type="checkbox"/> No <input type="checkbox"/>	
Is there evidence of sediment being tracked into streets?	Yes <input type="checkbox"/> No <input type="checkbox"/>	
Is trash/litter from the construction site collected and placed in dumpsters?	Yes <input type="checkbox"/> No <input type="checkbox"/>	
Are vehicle/equipment fueling and maintenance areas free of spills and leaks?	Yes <input type="checkbox"/> No <input type="checkbox"/>	
Are potential stormwater contaminants protected inside or under cover?	Yes <input type="checkbox"/> No <input type="checkbox"/>	
Is dewatering from site properly controlled?	Yes <input type="checkbox"/> No <input type="checkbox"/>	
Are portable restroom facilities properly sited and maintained?	Yes <input type="checkbox"/> No <input type="checkbox"/>	
Are all hazardous materials and wastes stored in accordance with local regulations?	Yes <input type="checkbox"/> No <input type="checkbox"/>	

Non-Compliance Actions

QCC shall provide the site operator with a copy of this report and notice of the corrective action(s) to be taken. The site operator must immediately take all reasonable steps to address the condition. When the problem does not require a new or replacement control or significant repair, the corrective action must be completed by the close of the next business day. When the problem requires a new or replacement control or significant repair, install the new or modified control and make it operational, or complete the repair, by no later than seven (7) calendar days from the time of discovery. If it is infeasible to complete the installation or repair within seven (7) calendar days, the site operator must document why it is infeasible to complete the installation or repair within the 7-day timeframe and document the schedule for installing the stormwater control(s) and making it operational as soon as feasible after the 7-day timeframe. Where these actions result in changes to any of the stormwater controls or procedures documented in the SWPPP, the SWPPP should be modified accordingly within seven (7) calendar days of completing this work.

APPENDIX C

Site Plan Review Checklist



Stormwater Management Policy Design Review Checklist

1. Project Information

Project Name: _____

Project Street/Location: _____

City of Worcester Zoning/Overlay District(s): _____

Estimated Area to be Disturbed (ft²): _____

Total Area of Impervious Surfaces: Existing Proposed
(buildings, parking, sidewalks, etc.) (ft²): _____ _____

2. QCC Project Manager

Name: _____

Address: _____

Telephone: _____

E-Mail: _____

Fax: _____

3. Engineer of Record

Name: _____

Address: _____

Telephone: _____

E-Mail: _____

Fax: _____

4. Other Applicable Regulatory Requirements (check all that apply, refer to flowchart)

City of Worcester

- Conservation Commission – Wetlands Protection Act and Local Regulations
- Planning Board – Zoning Bylaw
- Other (Board of Health, Department of Public Works, etc.)

State – Massachusetts Department of Environmental Protection

- Massachusetts Stormwater Management Policy
- Wetlands Protection Act
- 401 Water Quality Certification

Federal

- EPA Construction General Permit
- Army Corps of Engineers – Massachusetts General Permit

5. Submittal Requirements

- Stormwater Management Plan
 - Contact information
 - Locus map
 - The existing zoning and land use and proposed land use at the site
 - The location(s) of existing and proposed easements
 - The location of existing and proposed utilities
 - The site's existing & proposed topography with contours at 2-foot intervals
 - Proposed limits of disturbance
 - Estimate of the total area expected to be disturbed by excavation, grading or other construction activities
 - A description of the existing site hydrology
 - A description & delineation of existing stormwater conveyances, impoundments, and wetlands on or adjacent to the site or into which stormwater flows
 - A delineation of 100-year floodplains, if applicable
 - Habitats mapped by the Massachusetts Natural Heritage & Endangered Species Program within five hundred (500) feet of any construction activity
 - Estimated seasonal high groundwater elevation in areas to be used for stormwater retention, detention, or infiltration
 - The existing and proposed vegetation and ground surfaces with runoff coefficients for each
 - A drainage area map showing pre- and post-construction watershed boundaries, drainage area and stormwater flow paths, including municipal drainage system flows
 - Drainage patterns and approximate slopes anticipated after major grading activities
 - Description and drawings of all components of proposed stormwater management systems
 - Hydrologic and hydraulic design calculations for pre- and post-development conditions
 - Soils information from test pits performed at the location of proposed stormwater management facilities, including soil descriptions, depth to seasonal high groundwater, depth to bedrock, and infiltration rates.
 - Planting plan for stormwater management systems and adjacent areas
 - A description of provisions for project phasing
- Erosion & Sedimentation Control Plan (SWPPP for projects subject to EPA CGP)
- Stormwater Operation & Maintenance Plan
- Documentation of Other Local, State, and Federal Approvals:
 - Planning Board
 - Conservation Commission
 - MADEP 401 Water Quality Certification
 - EPA Construction General Permit Coverage