Municipal Stormwater Management Plan Addendum

For

Town of North Smithfield

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Submitted by:

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1 INTRODUCTION

In March 2004, the Town of North Smithfield engaged Vanasse Hangen Brustlin, Inc, (VHB) of Providence, RI to prepare a Municipal Stormwater Management Program Plan (SWMPP). The plan was prepared to bring the Town into compliance with its 2003 MS4 RIPDES Permit. The plan as prepared identified steps the Town should take to meet the RIPDES Permit requirements and six (6) minimum control measures. These Control Measures include:

- Measure 1 – Public Education and Outreach
- Measure 2 – Public Participation / Involvement
- Measure 3 – Illicit Discharge Detection and Elimination
- Measure 4 – Construction Site Runoff Control
- Measure 5 – Post-Construction Runoff Control
- Measure 6 – Pollution Prevention/Good Housekeeping

As of December 2015, the Town of North Smithfield, failed to meet all the requirements of the 2004 SWMPP. RIDEM reviewed their current MS4 Program and identified ten (10) items that require implementation in order to bring the Town into compliance. This addendum will address the first item, an amendment to the SWMPP identified by RIDEM. The revisions requested include:

1. Identify the procedures for tracing and removing the source of an illicit discharge, including the enforcement process, and physical removal of the illicit discharge.

2. Identify the procedures and an implementation schedule for prioritizing outfalls or portions of the system for further investigation of illicit discharges.

3. Identify procedures to implement an Erosion and Sediment Control Review and Inspection Program, including reviewing 100% of plans, issuing and tracking permits, inspecting 100% of projects with more than 1 or more acres of land disturbance. Developing a system to track compliance and keep track of records including coordination with State programs and procedures for referral to RIDEM.

4. Identify procedures to implement a Post-Construction Review and Inspection Program, including reviewing 100% or plans, issuing and tracking permits, inspecting 100% of projects with 1 or more acres of land disturbance, and a system to track compliance and keep track of records. Develop strategies and procedures for program consistency with the RI Stormwater Design and Installation Standards Manual (RISWDISM), pre-application meetings, coordination with existing State programs, referral of new industrial activity discharges, post-construction inspection of BMPs, and identifying existing structural BMPs.

5. Identify procedures to maintain records on inspections and maintenance performed on structural BMPs, storm sewers, and catch basins.
6. Identify procedures for the proper disposal of waste removed from MS4s and waste from other municipal operations, including accumulated sediments, floatables and other debris.

7. Identify procedures to ensure that design and construction of new elements of the MS4 and repairs of existing elements of the MS4 undertaken by the operator are assessed for potential water quality impacts and incorporation of additional water quality protection devices or practices.

2  ILLICIT DISCHARGE DETECTION AND ELIMINATION – MEASURE #3
The Town of North Smithfield has started its illicit discharge and elimination program. In March 2016, the town identified and located all of its stormwater outfalls and receiving water bodies. The Town further inspected all of the existing outfalls during non-storm events for the purpose of detecting and/or determining an illicit discharge condition. The outfalls exhibiting flow and/or visual staining or odors were noted for further sampling and analysis. If analytical testing demonstrates a potential ‘issue’, an upstream review will be required to determine the source of the discharge and eventual elimination of said discharge. As part of the program going forward, the Town proposes the following procedures to locate and eliminate any illicit discharge into the storm drainage system.

2.1 Amend the Town’s Zoning Ordinance
The Town has drafted an amendment to the Zoning Ordinance, Section 6.21 Illicit Discharge Storm Water Ordinance, to prohibit non stormwater discharges into the municipal drainage system. The Ordinance was initially heard by the Town Council in August 2016 and later enacted in October 2016. A copy of the ordinance is included as Appendix A.

2.2 Detection and Tracing an Illicit Discharge
Annually, the Director of Public Works (the Director) or his/her designee shall conduct a reconnaissance inventory of all outfalls and visually inspect each outfall within the Town. During non-storm events (3-days following any rain event) if a discharge is noted at the outfall, at a minimum, an upstream investigation into the source of the discharge should be conducted until the discharge source is identified. Once the source discharge is identified in the upstream portion of the system, it will need to be permanently disconnected from the system in accordance with the Town’s ordinance.

In the event that the outfall discharge exhibits the presence of visual contaminants (i.e. color change, odor, sediment laden, oil sheen, etc.) a discharge sample shall be obtained and analyzed at a minimum for the following: pH, temperature, specific conductance, coliform bacteria, surfactants, ammonia, nitrates and/or TPH, TSS. Note, the exact type of analytical testing to perform should be based on visual observations (i.e. TPH would not be required if an oil sheen is not observed).

Should contaminants be found in the analytical, the source of the discharge will need to be located and permanently disconnected from the system. In the event that the source of
discharge falls between manhole sections, such that identification of the source owner can’t
be easily determined, pipeline video inspection between the manholes may be required.

Once the source of the discharge is correctly identified, notification to the Owner of the Illicit
discharge shall be made. Plugging of the source at the discharge into the MS4 system will
only be considered a temporary fix. The illicit discharge will need to be permanently
disconnected from the system. Enforcement actions shall be in accordance with Section
6.21.12 of the Ordinance.

Those discharges identified to be flowing during the dry weather surveys conducted between
January and April 2016 and again in October 2016, shall be prioritized for upstream review
and source removal from the system.

2.3 Upstream Stormdrain System Mapping and Inspection
The Director will undertake a mapping effort of the entire MS4 drainage system within the
Town. Using the Town’s recently purchased sub-meter GPS system, all drainage manholes,
catch basins, and water quality structures, shall be field located and mapped showing
connectivity to the Town’s Outfalls. This process is currently ongoing and should be
completed by December 31, 2016.

In addition to field location, each structure will be inspected and documented for
maintenance purposes and/or any illicit connections. Should illicit connections or discharges
be identified, the Director shall take the necessary actions in accordance with the Ordinance
to remove said connection or discharge from the MS4 system. Those structures requiring
maintenance shall be addressed in accordance with Section 5 of this addendum.

2.4 Training
The Town shall conduct a training session for all appropriate personnel to better understand
the provisions of the IDDE Ordinance, including how to identify an illegal connection or
discharge into the storm drainage system. Tracing said illegal discharge to its source, and
how to undertake the recommended follow-up actions in accordance with the ordinance.

3 CONSTRUCTION SITE RUNOFF CONTROL – MEASURE #4
The Town of North Smithfield currently has a town ordinance relative to Soil Erosion and
Sediment Control (Chapter 13-12) and an additional section included in the zoning ordinance
(Section 18). It is the responsibility of the Building Official and/or Zoning Officer (or their
designee) to determine applicability, plan review, and inspections. At a minimum, the
following procedures shall be implemented relative to Stormwater Runoff and Erosion and
Sediment Control review.

3.1 Update the Erosion and Sediment Control Ordinance
The existing Erosion and Sediment Control Ordinance (Chapter 13-12) should be updated to
match Section 18 Erosion and Sediment Control and Stormwater Pollution Prevention Plan
(SWPPP), as contained in the Zoning Ordinance. Section 18 has been amended to meet the
requirements of the RIPDES MS4 permit and includes requirements for applicants proposing land development projects disturbing 1-acre or more of land to submit for a Construction RIPDES Permit and/or stormwater permit from the RIDEM and requires the submittal of a SWPPP for approval by the Building Official or his/her designee.

For new residential development and those sites considered exempt from the ordinance, including disturbances less than 1-acre of land, the Building Official shall at a minimum require the proposed development be in accordance with the “State of Rhode Island Stormwater Management Guidance for Individual Single-Family Residential Lot Development” document included as an Appendix B and the Rhode Island Stormwater Design and Installation Standards Manual (RISWDISM).

3.2 Stormwater Management and ESCP Plan Review
The Building Official or his/her designee shall review all plans relative to land development and subdivision projects in accordance with Section 18.8 of the ordinance. Submittal requirements are stipulated in Section 18.11 of the Ordinance and shall require a SWPPP prepared in conformance with RIDEM’s General Permit for Stormwater Discharge Associated with Construction Activity for sites greater than or equal to 1 acre of disturbance and in conformance with the guidelines established in the “Rhode Island Soil Erosion and Sediment Control Handbook” for sites less than 1 acre of disturbance. In addition, as part of the submittal package, permits received (RIPDES, Stormwater, Water Quality, etc.) from the State will be required. A copy of the Erosion and Sediment Control Ordinance (Section 18) is included as Appendix C.

3.3 Record Keeping, Compliance Monitoring, and Coordination with State Programs
The Building Department shall be responsible for tracking permits issued for land development and building projects, respectively. Coordination between the Building Official and Zoning Officer will be performed for compliance monitoring during construction. In accordance with Section 18.6 of the Soil Erosion and Sediment Control Ordinance (Section 18), any land disturbance greater than 1-acre and/or involve freshwater wetlands will be referred to RIDEM for the proper state permitting. All permits received from RIDEM must be included in the SWPPP submittal to the town for approval, as stipulated in Section 18.18 of the ordinance.

In accordance with Section 18.17 of the Soil and Sediment Control Ordinance, periodic inspections during construction shall be carried out by the Building Official or his/her designee and shall be in accordance with an inspection and construction control schedule approved by the Building Official. All inspection records shall be maintained by the building department. At a minimum, two (2) inspections will be conducted related to erosion and sediment control with the first being during construction and the second after final site stabilization as stated in the ordinance.
4 POST CONSTRUCTION REVIEW AND INSPECTION PROGRAM - MEASURE #5

4.1 Amend the Town’s Zoning Ordinance
The Town has drafted an amendment to the Zoning Ordinance, Section 6.22 Post-Construction Stormwater Control Ordinance, to allow for the review and approval of stormwater management plans and post construction review and inspection of stormwater best management practices discharging into the municipal drainage system. The Ordinance is scheduled to be heard by the Town Council in December 2016. A copy of the ordinance is included as Appendix D.

4.2 Stormwater Management Plans
In accordance with Section 6.22 of the amended zoning ordinance, any land development or re-development project shall be required to submit a stormwater management plan meeting the technical standards set forth in Section 6.22.7 and in accordance with the Rhode Island Stormwater Design and Installations Standard Manual (RISDISM), as amended. The stormwater plan shall include an operations and maintenance plan, schedule, and responsibility agreement.

4.3 Post Construction Review
At the completion of construction for all land development projects, it shall be the responsibility of the Building Official or Zoning Officer (or their designated representatives) to schedule and inspect the permitted projects for conformance to the approved plans. Any noted deviations from the approved plan set shall be brought to the attention of the developer or property owner in an effort to bring the project into conformance with the Town’s ordinances.

In accordance with Section 6.22.9 of the ordinance, the town shall have the right to inspect Post-Construction BMPs to address whether the said BMPS have been installed in accordance with the approved stormwater management plans.

4.4 Construction Plans vs. As-Builts
Construction project changes related to stormwater management, may require the owner/developer to submit “As-Builts” and supporting documents to the Town Planner for review and approval prior to Town acceptance of the project. The As-built plans and supporting documents will need to adequately demonstrate to the satisfaction of the Town Planner that the stormwater management controls are in compliance with the Town’s Ordinances and in general agreement with the RISDISM.

4.5 Permit Tracking and Inspections
All land development projects will require various inspections during the course of construction. All inspections shall be coordinated between the Building Official, Zoning Officer, and The Director of Public Works. The building department shall have responsibility for a permit tracking system and maintaining inspection records.
4.6 Conformance with RISDISM

All stormwater management plans and proposed structural BMPs will be required to meet the guidelines as established in the Rhode Island Stormwater Design and Installations Standards Manual (RISDISM).

4.7 Coordination with State Programs

All land development and re-development projects proposing to disturb 1-acre or more of land, will be required to submit to RIDEM for a RIPDES General Construction Permit and stormwater management review. RIDEM approved permits will be required for approval with the Town.

5 MISCELLANEOUS REQUIREMENTS

5.1 Record Retention for Current MS4 Inspection and Maintenance Activities

The North Smithfield Director of Public Works or his/her designee will have responsibility concerning inspection and maintenance on the existing MS4 storm drainage system. As the MS4 system is currently being mapped within the Town, the DPW will perform inspections of every manhole, catch basin, and structural BMPs (i.e. detention ponds, outlet structures, etc.) within the system. On an annual basis thereafter, all catch basins and water quality structures shall be inspected. All drainage manholes shall be inspected the first year. Following the first year, 25% of the manhole structures shall be inspected on an annual basis.

The DPW shall utilize the Town’s sub-meter GPS system and data collector to document the inspections. Once completed, the DPW shall prioritize those structures requiring maintenance and/or cleaning. Inspection Records (including pictures, etc.) shall be downloaded from the data collector on a routine basis (weekly at a minimum) and stored digitally in the DPW.

Maintenance and/or cleaning activities conducted on the MS4 system shall be recorded and field verified upon completion. Maintenance records shall be maintained with inspection records for ease of connectivity.

5.2 Waste Disposal from the MS4 System

All debris removed from the MS4 system shall be documented in the maintenance records. Catch basins and manholes shall be cleaned using a clam-shell type extractor or vacuum extraction system. All debris (including accumulated sediment, floatables, etc.) shall be disposed of at a licensed solid waste facility. Copies of the disposal records related to the MS4 system shall be maintained with the inspection and maintenance records.

5.3 Design and Construction of New Elements and Repair of Existing Elements within the MS4

All new drainage elements proposed to be incorporated and connected to the existing MS4 system shall be reviewed in accordance with Section 3 and 4 of this document. Actual
connections of these elements to the MS4 shall be inspected by the Director of Public Works or his/her designee for conformance with this program.

In the event that an inspection conducted as part of this program identifies that a significant repair or modification to any component of the existing MS4 system, is required, the Director of Public Works shall coordinate with the Town’s Engineering Consultant. The Engineering Consultant will review the drainage issue and assess any potential water quality impacts. The Engineering Consultant will develop a repair plan in accordance with the RISDISM. The repair, depending on the complexity, will be performed by the DPW or through a third party contractor.
Appendix A
Illicit Discharge Stormwater Ordinance
STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS
THE TOWN OF NORTH SMITHFIELD
ZONING ORDINANCE SECTION 6
SUPPLEMENTARY DISTRICT REGULATIONS

It is ordained by the Town Council of the Town of North Smithfield as follows:

That the Zoning Code of Ordinances, Section 6.21 entitled, "Illicit Discharge Storm Water Ordinance", be enacted as follows:

Section 6.21: Illicit Discharge Storm Water Ordinance
In order to comply with the Illicit Discharge Detection and Elimination requirements of RIPDES Permit No. RIR040013 (North Smithfield coverage under the General Permit)

Sec. 6.21.1 Purpose

Contaminated storm water runoff is a major cause of impairment of water quality in lakes, ponds, streams, rivers, wetlands, and groundwater; contamination of drinking water supplies; and alteration or destruction of aquatic and wildlife habitat. Regulation of illicit connections and discharges to the municipal storm drain system is necessary for the protection of Town water bodies and groundwater, and to safeguard the public health, safety, welfare, and the environment.

The objectives of this ordinance are:
1. to prevent (or reduce to the maximum extent practicable) pollutants from entering the Town owned storm drainage system;
2. to prohibit illicit connections and unauthorized discharges to the storm water drainage system;
3. to require the removal of all such illicit connections and discharges;
4. to comply with state law and federal statutes and regulations relating to storm water discharges; and
5. to set forth the legal authority and procedures to carry out all inspection, detection, monitoring, and enforcement activities necessary to ensure compliance with this ordinance.

Sec. 6.21.2 Authority

This ordinance is promulgated pursuant to the Rhode Island Department of Environmental Management’s (“DEM”) General Permit Rhode Island Pollutant Discharge Elimination System Storm Water Discharge from Small Municipal Separate Storm Sewer Systems and from Industrial Activity at Eligible Facilities Operated by Regulated Small MS4s (“MS4 General Permit”) and in accordance with the Administrative Procedures Act, R.I.G.L. 42-35-1, et seq.

Sec. 6.21.3 Definitions The following words, terms and phrases, when used in this ordinance, shall have the meanings ascribed to them in this section:

Allowable Non-Storm Water Discharges- Discharges not comprised of storm water are allowed under the MS4 General Permit Part I.B.3 but are limited to the following, provided these are not significant contributors of pollutants to the MS4: discharges which result from the
washdown of vehicles at retail dealers selling new and used automobiles where no detergents are used and individual residential car washing; external building washdown where no detergents are used; the use of water to control dust; fire-fighting activities; fire hydrant flushings; natural springs; uncontaminated groundwater; dechlorinated pool discharges; air conditioning condensate; lawn watering; potable water sources including waterline flushings; irrigation drainage; pavement washwaters where spills or leaks of toxic or hazardous materials have not occurred (unless all spilled materials have been removed) and where detergents are not used; discharges from foundation or footing drains where flows are not contaminated with process materials such as solvents, or contaminated by contact with soils where spills or leaks of toxic or hazardous materials have occurred; uncontaminated utility vault dewatering; dechlorinated water line testing water; hydrostatic test water that does not contain any treatment chemicals and is not contaminated with process chemicals.

Best Management Practices (BMPs) - Schedules of activities, prohibitions of practices, general good house-keeping practices, pollution prevention and educational practices, maintenance procedures, and other management practices; and structures, to prevent or reduce the discharge of pollutants directly or indirectly to storm water, receiving waters, or storm water conveyance systems. BMPs also include treatment practices, operating procedures, and practices to control site runoff, spillage or leaks, sludge or water disposal, or drainage from raw materials storage.

Clean Water Act (CWA) - The federal Water Pollution Control Act (33 U.S.C. § 1251 et seq.), and any subsequent amendments thereto.

Construction Activity - Activities subject to RIPDES Construction Permits, which includes construction projects resulting in land disturbance of one acre or more; and activities resulting in land disturbance of less than one acre which are subject to Planning Board approval. Such activities include but are not limited to clearing and grubbing, grading, excavating, and demolition.

Director means the Director of Public Works, or his authorized deputy, agent or representative.

Discharger - Any person who causes, allows, permits, or is otherwise responsible for a discharge, including, without limitation, any operator of a construction site or industrial facility.

Hazardous Material - Any material, including any substance, waste, or combination thereof, which because of its quantity, concentration, or physical, chemical, radioactive, or infectious characteristics may cause, or significantly contribute to, a substantial present or potential hazard to human health, safety, property, or the environment when improperly treated, stored, transported, disposed of, or otherwise managed.

Illicit Connection - An illicit connection is defined as either of the following:

• Any drain or conveyance, whether on the surface or subsurface, which allows an illegal discharge to enter the storm drain system including but not limited to any conveyances which allow any non-storm water discharge including sewage, process wastewater, and wash water to
enter the storm drain system and any connections to the storm drain system from indoor drains and sinks, regardless of whether said drain or connection had been previously allowed, permitted, or approved by the Director, or,

- any drain or conveyance connected from a commercial or industrial land use to the storm drain system which has not been documented in plans, maps, or equivalent records and approved by the Director.

Illicit Discharge- Any direct or indirect discharge to a municipal storm drainage system that is not composed entirely of storm water, except discharges pursuant to a RIPDES permit (other than the RIPDES permit for discharges from the municipal separate storm sewer) and discharges resulting from fire fighting activities. Illicit discharges include, but are not limited to, discharges in the form of: illegal dumping, hazardous waste/material spills, sewage and wastewater, construction waste, building material, truck washout, litter, and those allowable storm water discharges found to be a significant contributor of pollutants to the MS4.

Industrial Activity- Activities subject to RIPDES Industrial Storm Water Permits as defined in RIPDES Rule 31 (b) (15).

Municipal Separate Storm Sewer System (MS4)- A conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, natural and man-made channels and watercourses, piped storm drains, retention and detention basins, and other drainage structures), owned or operated by the Town, or proposed for ownership or operation by the Town, and designed or used for collecting or conveying storm water, and that is not used for collecting or conveying sewage. (Also known as the ‘storm drainage system’.)

Non-Storm Water Discharge- Any discharge to the storm drain system, or that has the potential to enter the storm drain system, that is not composed entirely of storm water.

Operator- The party or parties that either individually or taken together have the day-to-day operational control over the facility activities and the ability to make modifications to such activities.

Owner- The party or parties that either individually or taken together has legal title to any premise.

Person- Any individual, association, organization, partnership, firm, corporation or other entity recognized by law and acting as either the owner or as the owner's agent.

Pollutants- Anything that causes or contributes to pollution. Pollutants may include, but are not limited to: paints, varnishes, and solvents; oil and other automotive fluids; nonhazardous liquid and solid wastes and yard wastes; refuse, rubbish, garbage, litter, or other discarded or abandoned objects and accumulations, so that same may cause or contribute to pollution; floatables; pesticides, herbicides, and fertilizers; hazardous substances and wastes; sewage, fecal coliform and pathogens; dissolved and particulate metals; animal and pet wastes; soil, sediment/
fines resulting from land disturbing activities; wastes and residues that result from constructing a building or structure; and noxious or offensive matter of any kind.

**RIPDES**- Rhode Island Pollution Discharge Elimination System means the Rhode Island system for issuing, modifying, revoking and reissuing, terminating, monitoring, and enforcing point source discharge permits and imposing and enforcing pretreatment requirements pursuant to Title 46, Chapter 12 of the General Laws of Rhode Island and the Clean Water Act.

**Storm Water**- Any surface flow, runoff, and drainage consisting entirely of water from any form of natural precipitation, and resulting from such precipitation.

**Storm Water Management Program Plan (SWPPP)**- the municipal document describing a program to reduce the discharge of pollutants from the MS4 to the maximum extent practicable, protect water quality, and satisfy the water quality requirements of the Federal Clean Water Act and Rhode Island Water Quality Standards; and which includes the following six minimum control measures: Public Education and Outreach, Public Involvement/Participation, Illicit Discharge Detection and Elimination, Construction Site Storm Water Runoff Control, Post Construction Storm Water Management, and Pollution Prevention and Good House Keeping in Municipal Operations. Storm Water Pollution Prevention Plan (SWPPP)- A document which describes the Best Management Practices and activities to be implemented by a person or business to identify sources of pollution or contamination at a site and the actions to eliminate or reduce pollutant discharges to storm water, storm water conveyance systems, and/or receiving waters to the maximum extent practicable.

**Watercourse**- A natural or man-made surface drainage channel or body of water (including a lake or pond) through which a water flow occurs, either continuously or intermittently.

**Waters of the State**- Surface and ground waters within the boundaries of the State of Rhode Island and subject to its jurisdiction.

**Sec. 6.21.4 Discharge Prohibitions**

(a) Prohibition of Illicit Discharges

No person shall throw, drain, or otherwise discharge or cause to be discharged into the municipal storm drainage system any pollutant or non-storm water discharge unless such a non-storm water discharge is outlined in Part I.B.3 of the MS4 General Permit as an Allowable Non-Storm Water Discharge, or is authorized by a specific RIPDES permit. The allowable non-storm water discharges are permitted if deemed not to be a significant contributor of pollutants to the municipal storm drainage system. Allowable non-stormwater discharges will not be permitted under any circumstance when said discharge adversely affects a municipal right-of-way or stormwater system.
Reports of illegal dumping, hazardous waste and material spills, and other complaints will be investigated under the purview of this ordinance, and Ordinance No. 8, and other applicable State and Federal laws.

The commencement, conduct, or continuance of any illicit discharge to the storm drainage system is prohibited.

(b) Prohibition of Illicit Connections

The construction, use, maintenance or continued existence of illicit connections to the municipal storm drain system is prohibited. This prohibition expressly includes, without limitation, illicit connections made in the past, regardless of whether the connection was permissible under law or practices applicable or prevailing at the time of connection.

A person is considered to be in violation of this ordinance if the person connects a line conveying sewage to the MS4 or any watercourse, or allows such a connection to continue.

Improper connections in violation of this ordinance must be disconnected, and if necessary, redirected to an approved onsite wastewater management system upon approval of the RIDEM, or to the sanitary sewer system.

Sec. 6.21.5 Right of Entry

Entry to Perform Duties Under this Ordinance.

To the extent permitted by State law, or if authorized by the owner or other party in control of the property, the Director, and/or his designees may enter upon privately owned property for the purpose of performing their duties under this ordinance and may make or cause to be made such inspections, surveys, testing, or sampling as the Director deems reasonably necessary.

Sec. 6.21.6 Inspections and Monitoring

The Director shall be permitted, upon the presentation of credentials and other documents as may be required by law, to:

1. Enter the dischargers premise(s) where a regulated activity is conducted, or where records must be kept related to storm water compliance;

2. Have access to and copy, at reasonable times, any records related to storm water compliance;

3. Inspect at reasonable times any equipment, practices, or operations related to storm water compliance; and

4. Take samples, perform testing, or monitor any substances or parameters at any location, at reasonable times, for the purposes of assuring compliance with this ordinance or as otherwise authorized by the CWA or R.I. law.
5. Require that the owner or occupant of the property locate any drain or conveyance that has not been documented in plans, maps or equivalent, and which may be connected to the storm drain system; and to identify the drain or conveyance as storm drain, sanitary sewer, or other, and that the outfall location or point of connection to the storm drain system, sanitary sewer system or other discharge point be identified. Results of these investigations are to be documented and provided to the Director.

Sec. 6.21.7 Suspension of MS4 Access

(a) Suspension due to Illicit Discharges in Emergency Situations. The Director may, without prior notice, suspend MS4 discharge access to a person when such suspension is necessary to stop an actual or threatened non-storm water discharge which presents or may present imminent and substantial danger to the environment, or to the health or welfare of persons, or to the MS4 or Waters of the State. If the violator fails to comply with a suspension order issued in an emergency, the Director may take such steps as deemed necessary to prevent or minimize damage to the MS4 or Waters of the State, or to minimize danger to persons. (b) Suspension due to the Detection of Illicit Discharge. Any person discharging to the MS4 in violation of this ordinance may have their MS4 access terminated if such termination would abate or reduce an illicit discharge. The Director will notify a violator of the proposed termination of its MS4 access. A person commits an offense if the person reinstates MS4 access to premises terminated pursuant to this Section, without the prior approval of the Director.

Sec. 6.21.8 Requirement to Secure a RIPDES Permit

The Director shall refer to RIDEM all non-storm water discharges not authorized in accordance with Part I.B.3 of the MS4 General Permit or by a specific RIPDES Permit, which the Director has deemed appropriate to continue discharging to the MS4, for consideration of an appropriate permit.

Sec. 6.21.9 Industrial and Construction Activity Discharge.

Any person subject to an industrial or construction activity RIPDES storm water discharge permit shall comply with all provisions of such permit. Proof of compliance with said permit may be required in a form acceptable to the Director prior to the allowing of discharges to the MS4, or as a condition of a subdivision map, site plan, building permit, or development or improvement plan.

Sec. 6.21.10 Requirement to Prevent, Control and Reduce Storm Water Pollutants by the use of Best Management Practices

Upon confirmation of a violation of this ordinance, the Director may require, in an attempt to prevent, control, and reduce storm water pollutants, any person engaged in activities or operations, or owning facilities or property which has or may result in future pollutants entering storm water, the storm drainage system, or waters of the State shall develop and implement, at their own expense, a Storm Water Pollution Prevention Plan prescribing Best Management
Practices to the extent they are technologically achievable to prevent and reduce such pollutants. The owner or operator of a commercial or industrial establishment found to be in violation of this ordinance shall provide reasonable protection from accidental discharge of prohibited materials or other wastes into the municipal storm drain system or watercourses. Facilities to prevent accidental discharge of prohibited materials or other wastes shall be provided and maintained at the owner or operator's expense. The SWMPP shall be subject to review by the Town and/or RIDEM for approval, and the cost of such review shall be at the owner or operator's expense.

Sec. 6.21.11 Notification of Spills

Notwithstanding other requirements of law, as soon as any person responsible for a facility or operation, or responsible for emergency response for a facility or operation has information of any known or suspected release of materials which are resulting or may result in unauthorized discharges or pollutants discharging into storm water, the storm drain system, or waters of the State from said facility, said person shall take all necessary steps to ensure the discovery, containment, and cleanup of such release. In the event of such a release of a hazardous material said person shall immediately notify emergency response officials of the occurrence via emergency dispatch services (911). In the event of a release of non-hazardous materials, said person shall notify the Director no later than the next business day. Notifications in person or by phone shall be confirmed by written notice addressed and mailed to the Director within two (2) business days of the phone notice. If the discharge of prohibited materials emanates from a commercial or industrial establishment, the owner or operator of such establishment shall also retain an on-site written record of the discharge and the actions taken to prevent its recurrence. Such records shall be retained for at least three years. Nothing in this section shall preclude any owner/lessee from compliance with relevant provisions of the Rhode Island Clean Water Act, R.I.G.L. 46-12-1, et seq. or other applicable laws or regulations.

Sec. 6.21.12 Enforcement

Notice of Violation: Whenever the Director finds that any person has violated a prohibition or failed to meet a requirement of this Ordinance, the Director may order compliance by written notice of violation to the land owner and/or responsible person. Such notice may require without limitation:

1. The performance of monitoring, analyses, and reporting;
2. The elimination of illicit connections or discharges;
3. That violating discharges, practices, or operations shall cease and desist;
4. The abatement or remediation of storm water pollution or contamination hazards and the restoration of any affected property; and
5. Payment of a fine to cover administrative and remediation costs; and
6. The implementation of source control or treatment BMPs; and
7. The development and approval of a Storm Water Pollution Prevention Plan

If abatement of a violation and/or restoration of affected property is required, the notice shall set forth a deadline within which such remediation or restoration must be completed. Said notice shall further advise that, should the violator fail to remediate or restore established deadline, the
work will be done by a designated governmental agency or a contractor and the expense thereof shall be charged to the violator.

Sec. 6.21.13 Administrative Orders

The Director is authorized to issue the following administrative orders at any time he/she deem such action appropriate to secure timely and effective compliance with this Ordinance or a discharge permit or order issued pursuant to this Ordinance, whether or not any previous notifications of violation have been provided to the user.

A. Cease and Desist Order: The Director may issue an order to cease and desist a violation or an action or inaction which threatens a violation and to direct the user to comply forthwith or to take such appropriate remedial or preventive action as may be needed to properly address the violation or threatened violation, including halting operations and terminating the discharge.

B. Consent Order: The Director may enter into consent orders, assurances of voluntary compliance, or other similar documents establishing an agreement with a user. Such orders shall include specific actions to be taken by the user and specific time frames to correct a violation or to remove the threat of a violation. A consent order may also direct that a user provide improved operation and maintenance of existing discharge facilities, conduct additional self-monitoring, or submit appropriate reports or management plans.

Sec. 6.21.14 Abatement by Town

If the violation has not been corrected pursuant to the requirements set forth in the Notice of Violation, than the Town or a contractor designated by the Director shall enter upon the subject private property and is authorized to take any and all measures necessary to abate the violation and/or restore the property. It shall be unlawful for any person, owner, agent or person in possession of any premises to refuse to allow the Town or designated contractor to enter upon the premises for the purposes set forth above.

Sec. 6.21.15 Cost of Abatement of the Violation

Within thirty days after abatement of the violation by or under the direction of the Director, the owner of the property will be notified by the enforcement agency or municipality of the cost of abatement, including administrative costs. If the amount due is not paid within a timely manner as determined by the Director, the charges shall become a special assessment against the property and shall constitute a lien on the property for the amount of the assessment. Any person violating any of the provisions of this section shall become liable to the Town by reason of such violation. The liability shall be paid in not more than 12 equal payments. Interest at the rate of 12 percent per annum shall be assessed on the balance beginning on the first day following discovery of the violation.

8
Sec. 6.21.16 Injunctive Relief

It shall be unlawful for any person to violate any provision or fail to comply with any of the requirements of this Ordinance. If a person has violated or continues to violate the provisions of this ordinance, the Director may petition for a temporary, preliminary, or permanent injunction restraining the person from activities which would create further violations or compelling the person to perform abatement or remediation of the violation.

Sec. 6.21.17 Violations Deemed a Public Nuisance

In addition to the enforcement processes and penalties provided, any condition caused or permitted to exist in violation of any of the provisions of this Ordinance is a threat to public health, safety, and welfare, and is declared and deemed a nuisance, and may be summarily abated or restored at the violator's expense, and/or a civil action to abate, enjoin, or otherwise compel the cessation of such nuisance may be taken by the Town.

Sec. 6.21.18 Criminal Prosecution

Any person that has violated or continues to violate this Ordinance shall be liable to criminal prosecution to the fullest extent of the law, and shall be subject to a criminal penalty of $500 dollars per violation per day and/or imprisonment for a period of time not to exceed five (5) days. The Director may recover all attorney's fees, court costs, and other expenses associated with enforcement of this Ordinance, including sampling and monitoring expenses.

Sec. 6.21.19 Remedies Not Exclusive

The remedies listed in this ordinance are not exclusive of any other remedies available under any applicable federal, state, or local law and it is within the discretion of the authorized enforcement agency to seek cumulative remedies.

Approved in form: _____________________________

David Igliozi, Town Solicitor

Received by Town Clerk: ______________________ Date: ________________

Debra A. Todd

Posted Date: ________________________________

First Reading: ________________________________

Second Reading: ______________________________

Soly Alves Nadeau Zwolenski Boucher

Approved by Town Administrator: ________________

Paulette Hamilton
Appendix B
RIDEM Stormwater Management
Guidance for Residential Lot Development
State of Rhode Island Stormwater Management Guidance for Individual Single-Family Residential Lot Development

Section 300.6 of the RI Coastal Resources Management Program (RICRMP) and Rule 7.12 of the DEM Rules and Regulations Governing the Administration of the RI Freshwater Wetlands Act require stormwater management for projects on individual single-family residential lots that create 600 square feet or more of new impervious roof surface area, and all new driveway and parking areas. This document provides guidance for meeting those requirements, and may also be used by applicants under the jurisdiction of CRMC Freshwater Wetlands in the Vicinity of the Coast.

The guidance provided in this document may not be used to meet stormwater requirements for residential subdivisions or any project types other than individual single-family residential lot development.

CRMC Supplemental Stormwater Application Requirements:

☐ Completed CRMC application (4 copies) including all forms, fees and required enclosures.
☐ 8.5 x 11 inch site plan that depicts the information detailed in the checklist under Step 5 on page of this document.

DEM Application Requirements:

☐ Completed DEM Application package including all forms, fees and required enclosures (see DEM Rules 7.00 and either 9.00 or 10.00 as applicable)
☐ Ensure site plans (DEM Rule 7.03) include all elements detailed in the checklist under Step 5 on page 17 of this document.

Residential Stormwater Management Overview

A single residential lot might not be the most obvious source of pollution problems, but behind a suburban landscape, there may be activities that can threaten water quality. Pollutants commonly present on residential lots include pesticides fertilizers used in landscaping. Other pollutants may include sediment from erosion-prone areas, yard waste such as leaves and grass clippings, pet waste and oil and gas from driveway surfaces. Even runoff from rooftops can contain pollutants known to occur in rainfall. These have the potential to be transported in stormwater to surface water bodies, posing risks to the environment and human health. While the contribution from an individual yard may seem small, the cumulative effects of stormwater runoff coming from hundreds or thousands of homes within a watershed can be significant. Reducing the amount of stormwater that leaves your property as runoff helps to prevent pollutants from reaching our streams, lakes, ponds and coastal waters.

Rule Applicability

Under RICRMP Section 300.6 and DEM Rule 7.12, applicants for individual single-family residential projects are required to treat the water quality volume, or one inch of stormwater runoff from any new rooftop impervious surfaces of 600 square feet or greater in size, and all new driveways and parking areas. This guidance document describes stormwater management practices for reducing runoff volumes and pollutant levels. It also provides guidance for designing, installing and maintaining stormwater management practices that meet the requirements for new or enlarged single-family dwellings, driveways and parking areas. The practices discussed in this document are part of a stormwater management approach known as low impact development or LID. This document is meant to be used as a generalized guide to help applicants meet storm water management requirements on individual single-family residential lots. For more complex projects, and for more detailed information on the design of storm water management practices, see the most recent version of the Rhode Island Stormwater Design and Installation Standards Manual for additional information at www.dem.ri.gov/pubs/regs/regs/water/swmanual.pdf.
Avoid, Reduce, and Manage Stormwater Impacts

There are a few steps to follow when managing stormwater on a residential lot. First, avoid the negative impacts of stormwater to the extent possible. Protect undisturbed open space and existing vegetation by minimizing land disturbance and making your construction footprint as small as possible on the parcel. Avoid impacts to natural drainage areas and limit soil compaction to the structural footprint only.

Next, reduce impacts by minimizing the amount of stormwater runoff that flows off your lot. Eliminating or reducing the size of rooftops, driveways and other paved surfaces will reduce the amount of stormwater runoff that is generated from these impervious surfaces. Plant native shrubs and trees and low-maintenance, drought-resistant turf grasses that require less irrigation, fertilizers, and pesticides. Use sustainable landscaping practices to promote plant health and limit the amount of chemicals applied to the landscape.

Finally, manage any stormwater runoff from the site that cannot be eliminated by directing it to pervious areas or stormwater management practices that will allow the water to infiltrate into the ground. The following sections provide guidance for designing, installing and maintaining practices that can be used to manage and treat stormwater runoff. To meet the applicable stormwater requirements, these practices must be designed to capture and treat the water quality volume, or 1 inch of runoff from all new contributing impervious surfaces. By designing stormwater practices in this way, they will capture 90% of the average annual volume of runoff generated.

*Please note that municipal stormwater management requirements may differ from, and may not be compliant with state requirements.

Steps to Meet Stormwater Permit Requirements for Single-family Residential Projects

Step 1: Determine the surface area (ft²) of new rooftop and driveway areas;
Step 2: Choose potential storm water management practice locations based on required regulatory setbacks. If you plan to install infiltration trenches or dry wells, it is in your interest to have a professional determine the depth to the Seasonal High Groundwater Table (SHGWT) to ensure proper functioning of the stormwater practice
Step 3: Select appropriate storm water treatment practice(s) based on your site conditions and required elements for each practice. You may have to install more than one practice to meet your stormwater management requirements;
Step 4: Size the selected stormwater treatment practice(s) to meet the water quality volume (WQv) requirement using drainage area and soil texture information;
Step 5: Prepare a site plan depicting location of all proposed stormwater treatment practices, drainage areas, stormwater flow paths to each practice and other required elements detailed in the checklist on page 17 of this document.

Step 1: Determine the surface area of new rooftop and driveway areas

The purpose of this step is to calculate the surface area in square feet of all new rooftop, driveway and parking area surfaces associated with your project. Determine the area of new rooftops, driveways and parking areas by multiplying the length times the width. Alternatively for new homes or garages, use the footprint area of the building as measured from the site plan. If the total new rooftop area is greater than 600 square feet, then proceed to Step 2. For all new driveway and parking areas regardless of size, proceed to Step 2.
Step 2: Choose potential storm water management practice locations based on required setbacks. If needed, get a professional soil evaluation to determine soil drainage and texture.

When choosing locations for your stormwater management practices, be sure each location meets the required minimum separation distances, or setbacks, listed in Table 1 below.

Table 1. Minimum Setback Distances for Rain Gardens, Infiltration Trenches, Dry Wells and Permeable Pavement Practices on Single-Family Residential Lots

<table>
<thead>
<tr>
<th>Landscape Feature</th>
<th>Required Setback (ft) for Infiltration Trenches and Dry Wells</th>
<th>Required Setback (ft) for Rain Gardens and Permeable Paving Practices</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public Drinking Water Supply Well – Drilled (rock), Driven, or Dug</td>
<td>200</td>
<td>200</td>
</tr>
<tr>
<td>Public Drinking Water Supply Well – Gravel Packed, Gravel Developed</td>
<td>400</td>
<td>400</td>
</tr>
<tr>
<td>Private Drinking Water Wells</td>
<td>50</td>
<td>25</td>
</tr>
<tr>
<td>Surface Water Drinking Water Supply Impoundment with Supply Intake</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Tributaries that Discharge to the Surface Drinking Water Supply Impoundment</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>All Other Surface Waters</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>Up-gradient from Natural slopes &gt; %15</td>
<td>25</td>
<td>25</td>
</tr>
<tr>
<td>Down-gradient from Building Structures</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Up-gradient from Building Structures</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Onsite Wastewater Treatment Systems (OWTS)</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>Coastal features, coastal buffer zones, regulated freshwater wetlands</td>
<td>As applicable</td>
<td>As applicable</td>
</tr>
</tbody>
</table>

To ensure proper functioning of a stormwater management practice, you must make sure it is located in an area with adequate soil drainage. Improper siting of stormwater management practices can cause extended ponding or overall failure of the practice, which can lead to flooding and possibly mosquito breeding problems on your site. To test a potential site, a 6 to 8 inch deep hole may be dug and filled with water. If the water does not drain within 12 hours, the location is not appropriate for a stormwater management practice. You can also have potential stormwater practice locations inspected by a professional licensed soil evaluator, registered professional engineer or certified soil scientist. If you plan to install an infiltration trench or dry well, you should determine the depth to the Seasonal High Groundwater Table (SHGWT). This is especially advisable if there is a known or suspected shallow depth to SHGWT anywhere on the site. Determinations of depth to the SHGWT are best done by a professional engineer, licensed soil evaluator or certified soil scientist. Alternatively, refer to a prior determination of the depth to SHGWT such as may appear on a prior onsite wastewater treatment system plan. The depth to SHGWT is not required when the selected practice is a Qualifying Pervious Area (QPA), vegetated swale, rain garden or permeable surface construction. Notify your local Dig Safe system (1-888-DIG-SAFE) at least three business days before you dig.

Additional soil testing guidelines are provided in Appendix H of the RI Stormwater Design and Installation Standards Manual.
Step 3: Select appropriate stormwater treatment practices based on your site conditions and the required elements of each practice.

Now that you have identified locations that are appropriate for stormwater management practices, you will need to select the type of practice to be installed at each location. Table 2 below lists LID stormwater management practices that may be applied on residential lots to meet the requirements for individual single-family residential projects. Each of these practices is explained in further detail in Sections A through E, which include design information to help you determine whether the practice is appropriate for your site. You may need to select more than one practice to meet your stormwater management requirements. The minimum criteria and required elements for each practice are derived from the specifications in the most recent version of the RI Stormwater Design and Installation Standards Manual.

### Table 2. Residential stormwater management practices and their applicability

<table>
<thead>
<tr>
<th>LID Practice</th>
<th>Can be used to treat runoff from rooftops</th>
<th>Can be used to treat runoff from driveways</th>
</tr>
</thead>
<tbody>
<tr>
<td>Qualifying Pervious Area (QPA)</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Vegetated Swale</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Rain Garden</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Infiltration Trench</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Dry Well</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Permeable Surface Construction</td>
<td>✓</td>
<td></td>
</tr>
</tbody>
</table>

Step 4: Size the selected stormwater treatment practice(s) to meet the water quality volume (WQv) requirement

After selecting the appropriate stormwater treatment practices for your site from Step 3 above, you’ll need to size each practice to accommodate the water quality volume, or the first one inch of runoff from the contributing impervious surface. Use the sizing guidance in sections A through E for each stormwater management practice. You will need to determine the drainage area, or the area of impervious surface that drains to each practice. For example, if a practice will receive runoff from a single downspout that drains ¼ of a rooftop, you would calculate the drainage area by dividing the entire roof area by 4 (see Figure 1. below). To determine the water quality volume from each drainage area, multiply the drainage area in square feet by 0.083 (ft./in.).

Next, if you are proposing a vegetated swale, rain garden, infiltration trench or dry well, you will need to determine the texture of the soil at your chosen stormwater management practice locations (soil texture is not required for QPAs or permeable surface construction). This information will be used to determine the size of each practice. Texture can be determined by a soil professional in conjunction with the SHGWT depth determination, or you can send a sample for textural classification to a soil testing laboratory. Alternatively, you can make the conservative assumption that the soil is silty, and size your practices accordingly. This assumption will maximize the size of each practice. Additional soil testing guidelines are provided in Appendix H of the RI Stormwater Design and Installation Standards Manual.

A. Qualifying Pervious Areas

Qualifying Pervious Areas (QPAs) are natural or restored upland vegetated areas that meet specific requirements such as maximum slope and soil characteristics, which can be used to infiltrate storm water runoff. Wetland areas or coastal features may not be used as QPAs, with the exception of perimeter or riverbank wetlands as defined in DEM Rules Section 4.00. For individual single-family residential lot applications, QPAs must be areas of vegetation that are not highly managed or fertilized. Lawn areas may not be used as QPAs for individual single-family residential projects. In general, QPAs are relatively flat with well-drained soils, and receive small volumes of runoff as sheet (unconcentrated) flow. To utilize this practice, simply direct storm water flow to an area that meets the criteria in Table 3 below.

<table>
<thead>
<tr>
<th>Table 3. Minimum Criteria for Qualifying Pervious Areas on Single-Family Residential Lots</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Drainage Area and Size</strong></td>
</tr>
<tr>
<td>□ The rooftop, driveway or parking area draining to any one QPA cannot exceed 1,000 ft².</td>
</tr>
<tr>
<td>□ For rooftop runoff, the length of the flow path through the QPA shall be equal to or greater than the contributing rooftop area divided by 13.3. The width of the QPA shall be equal to or greater than the length of the contributing rooftop area.</td>
</tr>
<tr>
<td>□ For driveway runoff, the length and width of the QPA shall be no less than the length and width of the driveway. For example, if a driveway is 15 feet wide and 40 feet long, the QPA width shall be no less than 15 feet wide and 40 feet long.</td>
</tr>
<tr>
<td><strong>Location</strong></td>
</tr>
<tr>
<td>□ In locations where there is a history of groundwater seepage and/or basement flooding, QPAs should not be utilized.</td>
</tr>
<tr>
<td>□ The flow path through the QPA must be 25 feet from any onsite wastewater treatment system (OWTS).</td>
</tr>
<tr>
<td>□ The slope of the QPA shall be less than or equal to 5.0%.</td>
</tr>
<tr>
<td>□ Although they may abut, there shall be no overlap between QPAs. For example, the runoff from two 1,000 ft² sections of roof must be directed to separate QPAs. They shall not be directed to the same area.</td>
</tr>
<tr>
<td><strong>Conveyance</strong></td>
</tr>
<tr>
<td>□ Lawn areas may not be used as QPAs for individual single-family residential lots. Stormwater runoff may be conveyed across a lawn area to a QPA provided the area of lawn between the discharge point and the QPA is less than 25 feet wide.</td>
</tr>
<tr>
<td>□ Wetlands and coastal features may not be used as QPAs, however part or all of an upland buffer zone, perimeter wetland or riverbank wetland (as defined in DEM Rules Section 4.00) may be used as a QPA. Activities such as planting or alteration of vegetation within a coastal buffer zone will require additional written approval from CRMC.</td>
</tr>
<tr>
<td>□ To prevent basement seepage, at a minimum, runoff must be directed away from the building foundation and be infiltrated at the QPA at least 10 feet away from the foundation.</td>
</tr>
<tr>
<td>□ Downspouts must discharge at least 10 feet away from the nearest impervious surface to prevent reconnection to any storm sewers.</td>
</tr>
<tr>
<td>□ Downspouts must include appropriate provisions, such as a splash block or level spreader to induce non-erosive sheet flow.</td>
</tr>
</tbody>
</table>

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Updated 2/13/2013
Where a gutter/downspout system is not used, the rooftop runoff must be designed to sheet flow at low velocity away from the structure housing the roof, and enter the QPA as sheet flow.

Runoff from driveways may be directed over soft shoulders, through curb cuts or level spreaders to QPAs. Measures must be employed at the discharge point to the QPA to prevent erosion and the runoff must enter the QPA as sheet flow.

To prevent compaction of the soil in the QPA, construction vehicles must not be allowed to drive over the area. If it becomes compacted, the soil must be suitably amended, tilled, and re-vegetated once construction is complete to restore infiltration capacity.

If you are restoring an area by planting to create an eligible QPA, use approved native plants from the RI Coastal Plant Guide (www.uri.edu/cels/ceoc/coastalPlants/CoastalPlantGuide.htm) or Appendix B of the RI Stormwater Design and Installation Standards Manual. Additional planting guidance can be found in the CRMC Coastal Buffer Zone Planting Guide (http://www.crmc.ri.gov/coastallandscapes/Coastal_Buffer_Planting_Guide.pdf).

The QPA must be inspected and maintained at least yearly to remove deposited sediment and address any ponding or erosion, and replant vegetation within the QPA that has died.

*Construction and maintenance activities within a coastal buffer zone will require additional written approval from CRMC.

**Figure 1.**

Example Use of Qualified Pervious Area (QPA) to Treat Rooftop Runoff

<table>
<thead>
<tr>
<th>Naturally Vegetated Area</th>
<th>Flow path across QPA ≥ 33.8ft</th>
</tr>
</thead>
<tbody>
<tr>
<td>60 ft</td>
<td>25 ft</td>
</tr>
<tr>
<td>30 ft</td>
<td>25 ft</td>
</tr>
<tr>
<td>450 ft²</td>
<td>QPA width ≥ 30 ft</td>
</tr>
</tbody>
</table>

Total roof area = 60ft x 30ft = 1800 ft²
1800 x 0.25 = 450 ft²
Drainage area = 450 ft²
Minimum QPA Flowpath Length = 450 ft² / 13.3 = 33.8 ft
B. Vegetated Swales

Vegetated swales are open vegetated channels that are designed to capture and treat stormwater runoff. They are similar in concept and construction to a rain garden, except for their long, narrow shape and longitudinal slope. They are typically vegetated with grasses (see Appendix B, Section B.6 of the RI Stormwater Design and Installation Standards Manual for planting guidance). They may be used as a stand-alone stormwater management practice or as a conveyance to other practices.

| Table 4. Required Elements for Vegetated Swales on Single-Family Residential Lots |
|-----------------------------------|---------------------------------------------------------------------------------|
| **Conveyance**                   | □ Vegetated swales shall be designed with moderate side slopes flatter than 3:1 for most conditions. |
|                                  | □ Vegetated swales shall have a maximum longitudinal slope of 4% (e.g. 4 foot drop over a horizontal distance of 100 feet). |
| **Treatment**                    | □ The average surface ponding depth shall be no more than a 8 inches deep. |
|                                  | □ The bottom width shall be no less than 2 feet and no greater than 8 feet wide |
|                                  | □ A maximum ponding depth of 1 ft should be maintained at the longitudinal midpoint of the vegetated swale and a maximum depth of 18 inches at the end point. |
|                                  | □ Swales should contain a 2 – 4 inch amended soil layer and a 2 – 3 inch mulch layer. |
|                                  | □ The amended soil layer of a vegetated swale should be a 50/50 mixture of the excavated native soils and mature organic compost. |
| **Vegetation**                   | □ Grasses or sedges are typically used in vegetated swales, but other native plants can be used as well. Please refer to the RI Coastal Plant Guide ([www.uri.edu/cels/ceoe/coastalPlants/CoastalPlantGuide.htm](http://www.uri.edu/cels/ceoe/coastalPlants/CoastalPlantGuide.htm)) and modify the selection for native plants suited to rain gardens. |
| **Maintenance**                  | □ Vegetated swales shall be inspected annually and should be inspected after large storm events. |
|                                  | □ Eroded side slopes and channel bottoms shall be stabilized as necessary. |
|                                  | □ If the surface of the dry swale becomes clogged to the point that standing water is observed on the surface 48 hours after precipitation events, the bottom shall be roto-tilled or cultivated to break up any hard-packed sediment, and then reseeded. |
|                                  | □ Vegetation in dry swales shall be mowed as required to maintain minimum grass heights in the 4-6 inch range. |
|                                  | □ Every five years, the channel bottom of dry swales should be scraped to remove sediment and to restore original cross section and infiltration rate, and should be seeded to restore ground cover, where necessary. |
**Figure 2.** Vegetated Swale, Typical Cross-Section

![Vegetated Swale Diagram](adapted from Vermont Department of Environmental Conservation's Vermont LID Guide for Residential and Small Sites [link](https://www.vtwaterquality.org/stormwater/docs/swimpairedwatersheds/sw_rda_small_sites_guide.pdf))

**Sizing a Vegetated Swale:**

Determine the area (in square feet) of impervious surface that will drain to the swale. This is the drainage area. Use Table 5 below to choose a pre-calculated size for an 8 inch deep swale based on the drainage area and soil texture. To do this, you may need to round up your drainage area size (don’t round down to avoid under-sizing your swale). Remember that your swale should be at least 2 but less than 8 feet wide at the bottom, and the sides should have a slope no steeper than 3:1. The sizing recommendations below are based on sizing guidance in the University of Wisconsin Extension publication “Rain Gardens: a how-to manual for homeowners,” which can be accessed at [link](https://www.dnr.state.wi.us/runoff/pdf/rp/rpmanual.pdf). Alternatively, use sizing information and equations in Chapter 5 of the RI Stormwater Design and Installation Standards Manual at [link](https://www.dem.ri.gov/pubs/regis/regs/water/swmanual.pdf). Be sure to demonstrate which sizing method was used on your submitted application.

**Table 5. Vegetated Swale Sizing Guidance**

<table>
<thead>
<tr>
<th>Drainage Area (in square feet)</th>
<th>Bottom surface Area (in square feet) for an 8 in. deep swale</th>
</tr>
</thead>
<tbody>
<tr>
<td>200</td>
<td>Sandy Soils*: 16</td>
</tr>
<tr>
<td></td>
<td>Silty Soils*: 32</td>
</tr>
<tr>
<td>400</td>
<td>Sandy Soils*: 32</td>
</tr>
<tr>
<td></td>
<td>Silty Soils*: 64</td>
</tr>
<tr>
<td>600</td>
<td>Sandy Soils*: 48</td>
</tr>
<tr>
<td></td>
<td>Silty Soils*: 96</td>
</tr>
<tr>
<td>800</td>
<td>Sandy Soils*: 64</td>
</tr>
<tr>
<td></td>
<td>Silty Soils*: 128</td>
</tr>
<tr>
<td>1000</td>
<td>Sandy Soils*: 80</td>
</tr>
<tr>
<td></td>
<td>Silty Soils*: 160</td>
</tr>
</tbody>
</table>

*In lieu of a soil texture determination, use the calculated surface areas for silty soils.
C. Rain Gardens

Rain Gardens are shallow depressions that are excavated, backfilled with amended soil, and planted to capture runoff and allow it to infiltrate into the ground below. Rain gardens can be planted with a variety of plants, and are similar to regular planting beds or landscaped areas, except that they are designed and sited to intercept and detain stormwater runoff. They are ideal for receiving larger volumes of runoff from downspouts or impervious areas such as driveways.

<table>
<thead>
<tr>
<th>Table 6. Required Elements for Rain Gardens on Single-Family Residential Lots</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Location</strong></td>
</tr>
<tr>
<td>☐ Rain gardens should be located in areas with less than a 12% slope (i.e. a 12 foot drop over a horizontal distance of 100 feet or a 6 foot drop over a distance of 50 feet).</td>
</tr>
<tr>
<td>☐ Rain gardens should be located at least 10 ft from foundations to avoid basement seepage.</td>
</tr>
<tr>
<td>☐ Rain gardens should be located at least 15 ft from onsite wastewater treatment systems and at least 25 ft from private drinking water wells (see Table 5 for additional setbacks).</td>
</tr>
<tr>
<td><strong>Treatment</strong></td>
</tr>
<tr>
<td>☐ The bottom of a rain garden should be level to encourage the even distribution of stormwater and increase infiltration capacity.</td>
</tr>
<tr>
<td>☐ Rain gardens should be 4 to 8 inches deep with a 2 – 4 inch amended soil layer and a 2 – 3 inch layer of non-dyed aged shredded hardwood mulch.</td>
</tr>
<tr>
<td>☐ The amended soil layer of a rain garden should be a 50/50 mixture of the excavated native soils and mature organic compost.</td>
</tr>
<tr>
<td><strong>Vegetation</strong></td>
</tr>
<tr>
<td>☐ Select plants for rain gardens using the Coastal Plant Guide at <a href="http://www.uri.edu/cels-ceoc/coastalPlants/CoastalPlantGuide.htm">www.uri.edu/cels-ceoc/coastalPlants/CoastalPlantGuide.htm</a> or Appendix B of the RI Stormwater Design and Installation Standards Manual. See example planting plans below.</td>
</tr>
<tr>
<td><strong>Construction</strong></td>
</tr>
<tr>
<td>☐ A crushed stone entrance should be installed at the inflow to prevent channeling.</td>
</tr>
<tr>
<td>☐ A berm to detain stormwater should be constructed along the downhill side of the rain garden, perpendicular to the slope of the lawn.</td>
</tr>
<tr>
<td>☐ Be sure that the soil within the rain garden area does not become compacted by construction activities (i.e. heavy machinery). If soil becomes severely compacted it may need to be tilled and amended to maintain proper drainage.</td>
</tr>
<tr>
<td><strong>Maintenance</strong></td>
</tr>
<tr>
<td>☐ Rain gardens shall be inspected following at least the first two precipitation events of at least 1.0 inch to ensure that the system is functioning properly. Thereafter, the rain garden shall be monitored and maintained to assure proper functioning, plant growth and survival. Plants shall be replaced on an as-needed basis during the growing season.</td>
</tr>
<tr>
<td>☐ Silt/sediment shall be removed from the rain garden when the accumulation exceeds one inch, or when water ponds on the surface of the rain garden for more than 48 hours. The top few inches of material shall be removed and shall be replaced with fresh soil mixture and mulch.</td>
</tr>
<tr>
<td>☐ Pruning or replacement of woody vegetation shall occur when dead or dying vegetation is observed.</td>
</tr>
<tr>
<td>☐ Soil erosion gullies shall be repaired when they occur.</td>
</tr>
<tr>
<td>☐ Fertilizer or pesticides shall not be applied to plants within rain gardens.</td>
</tr>
<tr>
<td>☐ Perennial plants and ground covers shall be replaced as necessary to maintain an adequate vegetated ground cover. Annual plants may also be used to maintain ground cover.</td>
</tr>
</tbody>
</table>
Sizing a Rain Garden

Determine the area of impervious surface that will drain to your rain garden. This is the drainage area. Use Tables 7 and 8 below to choose a pre-calculated size based on the drainage area, soil texture and depth. To do this, you may need to round up your drainage area size (don’t round down to avoid under-sizing your rain garden). The sizing recommendations below are based on sizing guidance in the University of Wisconsin Extension publication “Rain Gardens: a how-to manual for homeowners,” which can be accessed at clean-water.uwex.edu/pubs/pdf/rgmanual.pdf. Alternatively, use sizing information and equations in Chapter 5 of the RI Stormwater Design and Installation Standards Manual at www.dem.ri.gov/pubs regs/regs water/swmanual.pdf. Be sure to demonstrate which sizing method was used on your submitted application.

Tables 7 and 8. Rain Garden Sizing Guidance

<table>
<thead>
<tr>
<th>Drainage Area (Square feet)</th>
<th>for 4 inch deep garden</th>
<th>for 6 inch deep garden</th>
<th>for 8 inch deep garden</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>19</td>
<td>15</td>
<td>8</td>
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<tr>
<td>200</td>
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<thead>
<tr>
<th>Drainage Area (Square feet)</th>
<th>for 4 inch deep garden</th>
<th>for 6 inch deep garden</th>
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<tr>
<td>100</td>
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<td>1000</td>
<td>340</td>
<td>250</td>
<td>160</td>
</tr>
</tbody>
</table>

*In lieu of a soil texture determination, use the calculated surface areas for silty soils

Rain Garden Dimensions and Shape

The length of the rain garden should be perpendicular to the slope of the lawn, and overall it should be twice as long as it is wide. This allows the garden to catch as much runoff as possible. Rounded or curvy shapes are the most effective, just be sure to approximate the required area from the table. Depending upon your site, it may be easier to break up stormwater flows to create multiple, smaller rain gardens than one larger one.
Rain Garden Installation

The best time to install a rain garden is in the spring, when digging will be easier and plants will be more likely to thrive. Be sure that the bottom of the rain garden is level and at the appropriate depth, and that you create a berm on the downhill side to retain stormwater (see Figure 3. below).

Figure 3. Digging the Rain Garden and Creating a Berm

Rain Garden Plant Selection

Plants that tend to do well in rain gardens are those that tolerate wet conditions, but also very dry conditions. Use the Rhode Island Coastal Plant Guide at www.uri.edu/cels/ceoc/coastalPlants/CoastalPlantGuide.htm to select appropriate species (filter your selection for “Rain Garden”) then create a planting plan to lay out where each plant will go. Below are two example planting plans for residential rain gardens, but feel free to create your own. To ensure proper functioning of the rain garden, your planting plan should include a minimum of three different plant species, including shrubs as well as herbaceous species. Additional guidance for plant selection can be found in Appendix B of the RI Stormwater Design and Installation Standards Manual or in the CRMC Coastal Buffer Zone Planting Guide at www.crmc.ri.gov/coastallandscapes/Coastal_Buffer_Planting_Guide.pdf. Submit your planting plan and a list of the species to be planted with your application.
**Figure 4.** Rain Garden Example - Planting Plan 1

**Figure 5.** Rain Garden Example - Planting Plan 2
D. Infiltration Trench and Dry Well

Infiltration trenches and dry wells are dug chambers backfilled with crushed stone that capture and temporarily store stormwater before allowing it to infiltrate into the soil over a maximum period of 48 hours.

<table>
<thead>
<tr>
<th>Table 9. Required Elements for Infiltration Practices (Trenches and Dry Wells) on Single-Family Residential Lots</th>
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<tbody>
<tr>
<td><strong>Location</strong></td>
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<td><strong>Treatment</strong></td>
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<td><strong>Construction</strong></td>
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<tr>
<td><strong>Maintenance</strong></td>
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</tbody>
</table>

**Figure 6. Infiltration Trench, Typical Cross-Section**
Figure 7. Dry Well, Typical Cross-Section

Sizing Infiltration Trenches and Dry Wells:

Determine the size (in square feet) of the impervious surface that will drain to your infiltration trench or dry well. This is the drainage area. Use Tables 10 and 11 below to determine the size of your infiltration trench or dry well. The sizing recommendations in the tables below are based on the sizing equations provided in the Rhode Island Stormwater Design and Installation Standards Manual, Section 5.3. For additional sizing information see Chapter 5 of the Manual at www.dem.ri.gov/pubs/regs/regs/water/swmanual.pdf. Be sure to detail which sizing method was used in your submitted application.

Tables 10. and 11. Sizing Guidance for Infiltration Trenches and Dry Wells

<table>
<thead>
<tr>
<th>Drainage Area (sq. ft.)</th>
<th>6 in. deep</th>
<th>12 in. deep</th>
<th>18 in. deep</th>
<th>24 in. deep</th>
<th>30 in. deep</th>
<th>36 in. deep</th>
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<td>69</td>
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</tbody>
</table>
### Infiltration Trench / Dry Well Surface Area (square feet) in Silty Soils (Loams and Silt Loams)

<table>
<thead>
<tr>
<th>Drainage Area (sq. ft.)</th>
<th>6 in. deep</th>
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<th>18 in. deep</th>
<th>24 in. deep</th>
<th>30 in. deep</th>
<th>36 in. deep</th>
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<tr>
<td>700</td>
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<td>113</td>
<td>92</td>
<td>77</td>
<td>59</td>
</tr>
</tbody>
</table>

### E. Permeable Paving and Pavers

Permeable paving practices capture and temporarily store the water quality volume before allowing it to infiltrate into the soil. The two major types include porous asphalt or concrete and paver systems. For individual single-family residential projects only, crushed stone may be used without a grid system provided it meets the required elements below.

- **Porous asphalt and concrete** resemble traditional asphalt or concrete pavement but they have a 10%--25% void space and are constructed over an open-graded stone base course that doubles as the stormwater reservoir before it infiltrates into the subsoil. Porous asphalt and concrete must be designed and installed in accordance with specifications in Appendix F of the RI Stormwater Design and Installation Standards Manual.

- **Pavers** include permeable blocks, solid blocks with open-cell joints, as well as open-cell grids filled with either gravel or with sandy soil and then planted with turf, set on a prepared open-graded stone base course that also serves as a reservoir for the stormwater before it infiltrates into the subsoil.
| **Feasibility** | Soil infiltration rate must be at least 0.5 inches per hour as determined by a soil professional or lab analysis. A professional soil textural analysis is required for permeable paving practices.  
| | Separation from groundwater table and bedrock must be at least 2 feet. |
| **Location** | Permeable pavement practices must meet the setbacks in Table 5 above  
| | Permeable paving should be located in areas with less than 5% slope. |
| **Treatment** | The water quality volume must exfiltrate through the floor of the practice in the soil horizon  
| | Permeable paving systems shall be designed to fully de-water the entire water quality volume within 24 hours after the storm event  
| | The bottom of the stone reservoir should be completely flat, or nearly so, to allow runoff to infiltrate through the entire bottom surface area. |
| **Vegetation** | The site shall be completely stabilized before any flow is directed to the practice.  
| | Pavers that are planted with grass require species with deep root systems. |
| **Construction** | Pavers should be professionally installed in accordance with the manufacturer’s specifications. Additional information on paver systems including a list of approved installers can be found at Interlocking Concrete Pavement Institute website at: [www.icpi.org](http://www.icpi.org).  
| | Permeable blocks must have a minimum void ratio of 15% and meet the minimum criteria in Section 5.4 of the RI Stormwater Design and Installation Standards Manual.  
| | Solid blocks with open-cell joints must meet the minimum criteria in Section 5.4 of the RI Stormwater Design and Installation Standards Manual.  
| | For crushed stone driveway construction, the crushed stone used must be ¾ inch to 1½ inch diameter, washed, angular crushed stone installed to a minimum depth of 3 inches. The grade of the finished driveway shall not be higher than the adjacent ground elevation. |
| **Maintenance** | The surface of permeable paving or pavers shall be monitored after storms to ensure it drains properly. The surface shall be inspected annually for deterioration and repaired as needed.  
| | Maintenance shall be performed according to the manufacturer’s specifications for paver systems.  
| | Paver grids planted with grass shall be mowed on a regular basis and reseeded as necessary.  
| | Use of sand and salt on permeable paving and pavers shall be minimized.  
| | Porous asphalt or concrete driveways shall not be repaved or resealed with impermeable products.  
| | Crushed stone shall be replaced or re-grading performed as necessary in crushed stone driveways to maintain a minimum 3” depth of stone and a level surface. |
Step 5: Prepare a site plan depicting location of all proposed stormwater treatment practices, drainage areas, stormwater flow paths to each practice and other required elements as detailed in the checklist below

The site plan submitted with the CRMC or DEM application should clearly show:

- New rooftop and driveway areas, with total area in square feet.
- Location of all stormwater management (LID) practices.
- Area of rooftop / driveway / parking area draining to each stormwater management practice,
- Location of collection points (such as downspouts), and direction of overland flowpath or other conveyance measures to stormwater practices.
- Location of buffer zones, freshwater wetlands, coastal features and other natural vegetation
- Depth to Seasonal High Ground Water Table (SHGWT) if proposing infiltration trenches or dry wells (depth to SHGWT not needed for QPAs, vegetated swales, rain gardens or permeable surface construction).
- Planting plan and plant list if proposing rain garden. See Appendix B of the RI Stormwater Installation Standards Manual, the CRMC Rhode Island Coastal Plant Guide at [www.uri.edu/cels/ceoc/coastalPlants/CoastalPlantGuide.htm](http://www.uri.edu/cels/ceoc/coastalPlants/CoastalPlantGuide.htm) or the CRMC Coastal Buffer Zone Planting Guide at [www.crmc.ri.gov/coastallandscapes/Coastal_Buffer_Planting_Guide.pdf](http://www.crmc.ri.gov/coastallandscapes/Coastal_Buffer_Planting_Guide.pdf) for guidance.
Appendix C
Soil Erosion and Sediment Control and Stormwater Pollution Prevention Plan (SWPPP) Ordinance
SECTION 18.

SOIL EROSION AND SEDIMENT CONTROL AND STORMWATER
POLLUTION PREVENTION PLAN (SWPPP)

ARTICLE 1

Section 18.1. Purpose.

The North Smithfield Town Council hereby finds that excessive quantities of soil are
eroding from certain areas that are undergoing development for nonagricultural uses such
as housing development, industrial areas, recreational facilities, and roads. This erosion
makes necessary costly repairs to gullies, washed out fills, roads, and embankments. The
resulting sediment clogs the storm sewers, road ditches, and muddies streams, leave
deposits of silt in ponds and reservoirs and is considered a major water pollutant.

The purpose of this ordinance is to control the discharge of construction waste and
prevent soil erosion and sedimentation from occurring as a result of nonagricultural
development within the Town of North Smithfield by requiring the use of appropriate
best management practices (BMP’s) and proper provisions for water disposal,
construction waste management, and the protection of soil surfaces during and after
construction to reduce or eliminate the pollutants in stormwater discharges, in order to
promote the safety, public health and general welfare of the Town.

Section 18.2. Findings.

(1). The Town Council finds that excessive quantities of soil are eroding from certain
areas of the Town which are undergoing development for certain nonagricultural uses
such as housing developments, industrial areas, recreational facilities, commercial
facilities, and roads.

(2). Soil erosion occurring in areas undergoing nonagricultural development makes costly
repairs necessary to gullies, washed-out fills, roads, and embankments. The resulting
sediment clogs storm sewers and road ditches, and deposits silt into ponds, rivers,
streams, and brooks.

(3). Silt resulting from erosion threatens the water supply, as well as the recreational,
aesthetic, and wildlife habitat values associated with these waters.

(4). Construction debris, litter and spills also clog the storm water management system
and contaminate surface and ground water. Other construction wastes including
construction debris and chemicals, concrete truck washout, oil and grease, litter and
sanitary waste may cause adverse impacts to water quality when discharge from a
construction site.
Where less than a total of one acre is disturbed, a particular land disturbing activity shall not be subject to the requirements of this ordinance if the Building Official or his or her designee finds that erosion resulting from the land disturbing activity is insignificant and represents no threat to adjacent properties or to the quality of any watercourse, as defined herein. The most current "Rhode Island Soil Erosion and Sediment Control Handbook" prepared by the U.S. Department of Agriculture Natural Resources Conservation Service, R.I. Department of Environmental Management, and R.I. State Conservation Committee shall be consulted in making this determination.

In making this determination, the building official will also take into consideration the sensitivity of the waterbody to which the site drains. A waterbody and its watershed will be considered sensitive if a Total Maximum Daily Load or Special Area Management Plan is written or under development for it, or it is included on RIDEM's 303(d) list, or is included on RIDEM's list of Special Resource Protection Waters (Appendix D of the Water Quality Regulations), or has been noted by the municipality to be of special concern.

The Building Official or his or her designee shall accept satisfactory evidence in writing from persons who have been conducting excavation and sand and gravel operations for more than one (1) year prior to the date of the determination of applicability. The evidence shall show that the excavation and the sand and gravel operations have been actively operating for five (5) years and that the procedures followed at the existing operations accomplish the objectives of the statute as such procedures prevent soil erosion and sedimentation from occurring and procedures regarding water disposal and soil surfaces promote the safety, public health and general welfare of the Town.

Exemptions. No determination of applicability is required for the following:

(1) Construction, alteration, or use of any additions to existing single-family or duplex homes or related structures, provided the grounds coverage of such addition is less than 1,000 square feet; such construction, alteration, and use does not occur within 100 feet of any watercourse or coastal feature; and the slopes at the site of land disturbance do not exceed 10%.

(2) Use of a home garden in association with on-site residential use.

(3) Accepted agricultural management practices such as seasonal tilling and harvest activities associated with property utilized for private and/or commercial agricultural or silvicultural purpose.

(4) Excavations for improvements other than those described in Subsection E(1) of this section which exhibit all of the following characteristics:

(a) Does not result in a total displacement of more than 50 cubic yards of material.

(b) Has no slopes greater than 10%.
(2) R.I. Freshwater Wetlands Permit: Where any portion of a proposed development requires approval under any provision of the general laws approved by the general assembly or where the approval contains provisions for soil erosion and sediment controls, that approved plan shall be a component of the overall soil erosion and sediment control plan or SWPPP required under this ordinance for the development.

(3) Construction General Permit: In those cases where a SWPPP is submitted, the applicant will also submit a copy of the Notice of Intent.

Section 18.7. Fees.

(1) The Town may collect fair and reasonable fees from each applicant requesting approval of a SWPPP for the purpose of administering this ordinance.

(2) At the time of submission of a SWPPP to the Office of the Building Official or his or her designee, the applicant shall pay a filing fee. This fee is in addition to any required by the R.I. Freshwater Wetlands Act.

(3) The Building Official or his or her designee may waive the filing fee for an applicant who demonstrates that imposition of the filing fee will result in substantial hardship, or that the imposition of the filing fee will make unnecessarily difficult a project which should enjoy routine approval or which could be beneficial to soil, water, or land resources. Any such determination of waiving a filing fee shall be based upon documentation provided to the Building Official or his or her designee prior to the application for plan approval.

(4) The Building Official or his or her designee may waive the filing fee for an application or request filed by a Town office or agency.

(5) The Building Official or his or her designee may draw upon the fees for costs and expenses in processing applications, plans, and requests; copying plans, technical reports, and other documents for review; advertising, circulating, or otherwise publishing notices and information regarding applications and other matters pending; conducting hearings, meetings, field inspections and other professionally contracted reviews; and communicating with federal and state agencies, consultants and engineers, provided that only those costs and expenses are reasonably attributable to review, approval, disapproval, or other action on plans and determinations of applicability.

(6) This filing fee schedule (see Appendix A) has been determined by the Town to be commensurate with the expenses of providing these municipal services to applicants.

Section 18.8. Plan review.

Within ten (10) days of the receipt of a completed SWPPP, the Building Official or his or her designee shall send a copy of the plan to the review authorities which shall include
or other appropriate board of review, as determined by the Town Council. Appeal procedures shall follow current requirements for appeal to boards above. During the period in which the request for appeal is filed, and until such time as a final decision is rendered on the appeal, the decision of the Building Official or his or her designee shall remain in effect.

18.10.2 Expert opinion. The official or his/her designee and/or the Zoning Board of Review or other board of review, may seek technical assistance on any SWPPP. The expert opinion must be made available in the office of the Building Official or his or her designee as a public record prior to the appeals hearing.

ARTICLE V

Upon determination of applicability by the Building Official or his or her designee, the erosion and sediment control plan and/or SWPPP shall be prepared by a registered engineer, or landscape architect or a Certified Erosion, Sediment and Stormwater Inspector (by CPESC, Inc) and copies of the plan shall be submitted to the Building Official or his or her designee.

The SWPPP shall include sufficient information about the proposed activities and land parcel(s) to form a clear basis for discussion and review and to assure compliance with all applicable requirements of this section. The SWPPP for proposed activities disturbing a total of one (1) acre or greater shall be prepared in conformance with the requirements for a Storm Water Pollution Prevention Plan (SWPPP), as provided in the RI Department of Environmental Management's General Permit for Storm Water Discharge Associated with Construction Activity. For sites disturbing less than one acre, the plan shall be consistent with the data collection, data analysis, and plan preparation guidelines in the current "Rhode Island Soil Erosion and Sediment Control Handbook", prepared by the U.S. Department of Agriculture, Natural Resources Conservation Service, R.I. Department of Environmental Management and R.I. State Conservation Committee, and at a minimum, shall contain:

(1) A brief narrative describing the proposed land disturbing activity and the soil erosion and sediment control measures, waste management measures, and stormwater management measures to be installed to control erosion and mitigate any change in water quality and quantity that could result from the proposed activity. Supporting documentation, such as a drainage area, existing site, and soil maps shall be provided as required by the Building Official or his or her designee.

(2) Construction drawings in detail commensurate with the size of the project, sensitivity of the potentially impacted waterbody and distance to water and/or storm water system. These drawings will illustrate existing and proposed contours, drainage features, and vegetation; limit of clearing and grading, the location of soil erosion and sediment control and storm water management measures, detail drawings of measures; stock piles and borrow areas; waste collection and burial areas; concrete truck wash out sites; sequence
(d) Maintenance: A description of procedures to maintain, in good and effective operating condition, vegetation, stormwater control measures, and other protective measures, identified in the site plan.
(e) Cost estimate: A description of the cost required to implement all control measures as shown on the plan.
(f) Other information: Other information or construction plans and details as deemed necessary by the Building Official or his designee for thorough review of the plan prior to action being taken as prescribed in this article.

Section 18.12. Performance principles.

The contents of the SWPPP shall clearly demonstrate how the principles, outlined below, have been met in the design and are to be accomplished by the proposed development project.

(1) Pursue Low Impact Design (LID) to the maximum extent possible. LID site planning and design strategies must be used to the maximum extent possible in order to reduce the generation of water runoff volumes for both new and redevelopment projects. In the event any of the following LID strategies are rejected as infeasible at a site, the specific rationale for rejection must be provided by the applicant. LID design includes the following:

   a. Protect as much undisturbed open space as possible to maintain pre-development hydrology and allow precipitation to naturally infiltrate into the ground.

   b. Maximize the protection of natural drainage areas, streams, surface waters, and wetlands;

   c. Minimize land disturbance including clearing and grading;

   d. Minimize soil compaction;

   e. Provide low-maintenance landscaping that encourages retention and planting of native vegetation and minimizes the use of lawns, fertilizers, and pesticides;

   f. Minimize impervious surfaces;

   g. Minimize the decrease in the “time of concentration” from pre-construction to post construction, where “time of concentration” means the time it takes for runoff to travel from the hydraulically most distant point of the drainage area to the point of interest within a watershed;

   h. Infiltrate precipitation as close as possible to the point it reaches the ground using vegetated conveyance and treatment systems;

   i. Break up or disconnect the flow of runoff over impervious surfaces; and
(14) Construction wastes will be managed to reduce the potential for stormwater runoff to mobilize them and contaminate surface or ground water. The storage, disposal, or use as fill of material containing asphalt, concrete, construction debris or stumps, even if determined to be non-hazardous, is prohibited.

(15) All areas damaged during construction shall be resodded, reseeded, or otherwise restored. Where soil compaction has occurred through storage of materials or use of equipment, soil infiltration shall be restored through use of soil amendments or other means. Monitoring and maintenance schedules, where required, shall be predetermined.

(16) All controls installed or used to achieve compliance with this SWPPP must be properly operated and maintained at all times.

(17) Sediment controls, stormwater measures, and other controls shall protect downstream water bodies from adverse water quality and quantity impacts resulting from the construction activities.

(18) Groundwater recharge: Stormwater must be recharged to maintain baseflow at pre-development recharge levels to the maximum extent practicable.

(19) Water quality: Stormwater runoff from a site must be adequately treated before discharge.

(20) Pollution prevention: All development sites require the use of source control and pollution prevention measures to minimize the impact that the land use may have on stormwater runoff quality.

ARTICLE VI. ENFORCEMENT
Section 18.13. Performance bond.

Before approving a SWPPP, the Building Official or his or her designee may require the applicant/owner to file a surety company performance bond or deposit of money or negotiable securities or other method of surety, as specified by the Building Official or his or her designee. When any land disturbing activity is to take place within one hundred feet (100’) of any watercourse or within an identified flood hazard district, or on slopes in excess of ten percent (10%), the filing of a performance bond or deposit of money or negotiable securities or other method of surety as specified by the Building Official or his or her designee shall be required. The amount of the bond, as determined by the Public Works Department, or in its absence, the Building Official or his or her designee, shall be sufficient to cover the cost of implementing all control measures as shown on the plan.

The bond or negotiable security filed by the applicant shall be subject to approval of the form, content, amount, and manner of execution by the Public Works Director and the Town Solicitor.
Section 18.15. Maintenance of measures.

Maintenance of all erosion-sediment control devices under this ordinance shall be the responsibility of the owner. The erosion-sediment control measures and controls for other wastes shall be maintained in good condition and working order on a continuing basis. Watercourses originating and located completely on private property shall be the responsibility of the owner to their point of open discharge at the property line or at a communal watercourse within the property.

Section 18.16. Liability of applicant.

Neither approval of a SWPPP nor compliance with any condition of this Section shall relieve the owner/applicant from any responsibility for damage to persons or property, nor impose any liability upon the Town for damages to persons or property.

ARTICLE VII
Section 18.17. Inspections.

18.17.1. Periodic inspections. The provisions of this ordinance shall be administered and enforced by the Building Official or his or her designee. All work shall be subject to periodic inspections by the Building Official or his or her designee. All work shall be performed in accordance with an inspection and construction control schedule approved by the Building Official or his or her designee, who shall maintain a permanent file on all of his or her inspections.

The owner or his/her agent shall make regular inspections of all control measures in accordance with the inspection schedule outlined on the approved Erosion and Sediment Control Plan. The purpose of such inspections will be to determine the overall effectiveness of the control plan and the need for additional control measures. All inspections shall be conducted by a properly trained professional recognized as a Certified Erosion, Sediment and Storm Water Building Official or his or her designee (CESSWI) by the Certified Professional in Erosion and Sediment Control (CPESC, Inc). All inspections shall be documented in written form and submitted to the building official as requested.

The building official or his or her designee will perform a minimum of two (2) inspections; one during construction and one after final stabilization of the site. The developer or owner shall notify the building official of the installation of erosion and sediment control measures, in order for an inspection to be performed during the construction phase of the project. The building official or his/her designee will confirm that wastes are controlled and that the erosion and sediment control practices are installed as planned, meet the needs of the site and conform with the RI Erosion & Sediment Control Handbook.
or her designee after written notification is transmitted by the Building Official or his or her designee to the developer for one or more of the following reasons:

(1) Violation of any condition of the approved plan or specifications pertaining thereto.
(2) Violation of any provision of this chapter or any other applicable law, ordinance, article, rule, or regulation related to the work or site of work.
(3) The existence of any condition or the performance of any act constituting or creating a nuisance, hazard, or endangerment to human life or the property of others or contrary to the spirit or intent of this chapter.

18.20.2. Other penalties. In addition, thereto, whenever there is a failure to comply with the provisions of this Section, the Town shall have the right to notify the applicant/owner that he must cease work immediately and/or has twenty-four (24) hours from the receipt of notice to temporarily correct the violations and thirty (30) days from receipt of notice to permanently correct the violations.

Should the applicant/owner fail to take the temporary corrective measures within the twenty-four (24) hour period and the permanent corrective measure within the thirty-day (30) period, the Town shall then have the right to take whatever actions it deems necessary to correct the violations and to assert a lien on the subject property in an amount equal to the costs of remedial actions. The lien shall be enforced in a manner provided or authorized by law for the enforcement of common law liens on personal property. The lien shall be recorded with the records of land evidence of the Town, and the lien shall incur legal interest from the date of recording. The imposition of any penalty shall not exempt the offender from compliance with the provisions of this Section, including revocation of the performance bond or assessment of a lien on the property by the Town.

A reinspection fee shall be required

ARTICLE IV. DEFINITIONS
Section 18.21. Definitions of Selected Terms.

The following words, terms, and phrases, when used in this chapter, shall have the meanings ascribed to them in this section, except where the context clearly indicates a different meaning:

Applicant: Any person(s), corporation, or public or private organization proposing a development which would involve disturbance to the natural terrain as herein defined.

Best Management Practices (BMPs): Schedules of activities, prohibitions of practices, general good housekeeping practices, pollution prevention and educational practices, maintenance procedures, and other management practices to prevent or reduce the discharge of pollutants directly or indirectly to stormwater, receiving waters, or stormwater conveyance systems. BMPs also include treatment practices, operating procedures, and practices to control site runoff, spillage or leaks, sludge or water disposal, solid waste disposal, or drainage from raw materials storage.
Sediment: Solid material, both mineral and/or organic, that is in suspension, is being transported, or have been moved from its site or origin by wind, water, gravity or ice as a product of erosion.

Soil amendment: Any material, such as compost, lime, animal manures, crop residues, etc., that is worked into the soil. Generally pertains to materials other than fertilizers.

Stormwater Pollution Prevention Plan — SWPPP: The (approved) document required before any person may cause a disturbance to the natural terrain within the Town as herein regulated. The document may also be referred to as "SWPPP."

Runoff: The surface water discharge or rate of discharge of a given watershed after a fall of rain or snow and including seepage flows that do not enter the soil but run off the surface to the land. Also, that portion of water that is not absorbed by the soil, but runs off the land surface.

Watercourse: The term watercourse shall be held to mean any tidewater or coastal wetland at its mean high water level, and any freshwater wetland at its seasonal high water level, including but not limited to, any river, stream, brook, pond, lake, swamp, marsh, bog, fen, wet meadow, or any other standing or flowing body of water. The edge of the watercourse as herein defined shall be used for delineation purposes.

Section 18.22. Severability.

If any provision of this ordinance or any rule or determination made hereunder, or application hereof to any person, agency, circumstances is held invalid by a court of competent jurisdiction, the remainder of this ordinance and its application to any person, agency or circumstances shall not be affected thereby. The invalidity of any section or section of this ordinance shall not affect the validity of the remainder of this Section.
Appendix D
Post-Construction Stormwater Control Ordinance
STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS
THE TOWN OF NORTH SMITHFIELD
ZONING ORDINANCE SECTION 6
SUPPLEMENTARY DISTRICT REGULATIONS

It is ordained by the Town Council of the Town of North Smithfield as follows:

That the Zoning Code of Ordinances, Section 6.22 entitled, "Stormwater Post-Construction Review and Inspection Ordinance", be enacted as follows:

Section 6.22: Stormwater Post-Construction Review and Inspection Ordinance
In order to comply with the stormwater maintenance and inspection requirements of RIPDES Permit No. RIR040013 (North Smithfield coverage under the General Permit)

Section 6.22.1 Purpose
(a) Unmitigated storm water from areas altered by development may pose public health and safety threats. Potential contaminants in storm water runoff may include suspended solids, nitrogen, phosphorus, hydrocarbons, heavy metals, pathogenic organisms (bacteria and viruses), and road salts.

(b) This article establishes the administrative mechanisms necessary for the town to ensure proper storm water management of runoff from new development and redevelopment projects. The ordinance from which this article is derived is written to work in conjunction with the Rhode Island Department of Environmental Management's General Permit, Rhode Island Pollutant Discharge Elimination System (RIPDES) Storm Water Discharge from Small Municipal Separate Storm Sewer Systems and from Industrial Activity at Eligible Facilities Operated by Regulated Small MS4s.

Section 6.22.2 Definitions.

For the purposes of this chapter [article], the following words and terms shall have the meanings respectively ascribed, unless the context otherwise requires:

*Applicant* means any person proposing a development project in accordance with this article. The applicant must be the person who holds a valid purchase and sales agreement for the real property associated with said development project.

*Authorized enforcement agent* means the building official, zoning officer, or other town official authorized to enforce standards in accordance with this article.

*Best Management Practice (BMP)* means any structural and nonstructural means applied to a development project with the intent of controlling storm water flow and quality. Best management practices include, but are not necessarily limited to, means of storm water management described in with the Rhode Island Stormwater Design and Installation Standard Manual (RISDISM), as amended. Use and acceptability of best management practices is at the discretion of the town.
Development project means any construction, reconstruction, demolition, or removal of structures, roadways, parking, or other paved areas, utilities, or other similar facilities, including any action requiring a building permit by the town.

Low-impact development means a best management practice intended to maintain or replicate predevelopment hydrology through the use of site planning, source control, and small-scale structures integrated throughout the site to prevent, infiltrate and manage storm water as close to its source as possible. Low-impact development practices include, but are not necessarily limited to, those described in the state storm water design and installation standards manual, as amended. use and acceptability of low-impact development practices is at the discretion of the town.

Owner or operator means any person who holds legal title to any real property, development project or structural best management practice; or has possession or control of any real property, development project or structural best management practice through any agent, executor, executrix, administrator, administratrix, trustee or guardian of the estate of a holder of a legal title.

Person shall include an individual, trust, firm, joint stock company, corporation (including a quasi-governmental corporation), partnership, association, syndicate, municipality, municipal or state agency, fire district, club, non-profit agency or any subdivision, commission, department, bureau, agency or department of state or federal government (including any quasi-governmental corporation) or of any interstate body.

Storm water management plan means the document required under section 13-82 before any person may initiate a site work associated with a development project pursuant to the applicability of this article.

Storm water means the surface discharge of water associated with a precipitation event or snowmelt.

Section 6.22.3 Applicability

This article shall apply to all development and redevelopment occurring within the town. No person shall engage in development projects without receiving approval from the building official, unless specifically exempted by Section 6.22.4.

Section 6.22.4 Exemptions

The following development projects do not require written approval pursuant to this article:

(1) Construction, alteration, or use of any additions to existing single-family or two-family homes or related structures, when determined by the building official to be insignificant, and such construction, alteration and use does not exceed 1,000 square feet, does not occur within 200 feet of any watercourse or coastal feature, and the slopes at the site of land disturbance do not exceed ten percent.

(2) Accepted agricultural management practices such as seasonal tilling and harvest activities associated with property utilized for private or commercial agricultural or silvicultural purposes.
(3) An excavation which exhibits all of the following characteristics:
   a. Is less than four feet in vertical depth at its deepest point as measured from the
      average elevation of the natural ground surface.
   b. Does not result in a total displacement of more than 50 cubic yards of material on
      any lot, land, parcel or subdivision.
   c. Has no slopes steeper than ten feet vertical in 100 feet horizontal (ten percent).
   d. Has all disturbed surface areas promptly and effectively protected to prevent soil
      erosion and sedimentation from occurring including seeding or sodding, and
      provided that all disturbed surface areas which will be exposed for a period of time
      in excess of 30 days shall be covered with a suitable temporary protective ground
      cover until permanent ground cover is in place.

(4) Grading, as a maintenance measure, or for landscaping purposes on existing developed
land parcels or lots, provided that all of the following conditions are met:
   a. The aggregate area of activity does not exceed 1,000 square feet.
   b. The change of elevation does not exceed two feet at any point.
   c. All bare surface area is promptly seeded, sodded, or otherwise effectively protected
      from erosive actions.
   d. The grading does not involve a quantity of fill greater than 18 cubic yards; except
      where fill is excavated from another portion of the same parcel and the quantity does
      not exceed 50 cubic yards.

(5) Grading, filling, removal or excavation activities and operations undertaken by the town
under the direction and supervision of the Director of Public Works for work on streets,
roads or rights-of-way dedicated to public use; provided, however, that adequate and
acceptable erosion and sediment controls are incorporated in engineering plans and
specifications and employed. Appropriate controls shall apply during construction as well
as after the completion of such activities.

(6) Use of a home garden in association with residential use.

Section 6.22.5 Variance

The building official reviewing an application under this article may:

(1) Vary requirements of this article when strict implementation of the requirements will
create an unnecessary hardship or are not feasible.

(2) Allow use of an innovative management practice where strict adherence to existing
criteria would be costly or of negligible environmental benefit.

(3) Allow use of an innovative management practice where the innovative practice is
expected to have an environmental benefit, which cannot be practicably realized using
standardized management practices.
Section 6.22.6 Submissions and Approvals

(a) In accordance with this article, all persons must obtain approval from the building official prior to engaging in any development project, unless exempted by section 6.22.4. To obtain approval applicants must demonstrate compliance with all policy, standards and requirements of this article to the satisfaction of the building official. Applicants may demonstrate compliance via submission of materials and documentation including but not limited to a storm water management plan, site plan and maintenance agreement in accordance with this article. Plans will be reviewed in conjunction with site plan reviewed by the building official.

(b) Pre-application meetings may be requested by the applicant and held at the discretion of the town for the purpose of informing the representatives of construction projects of any local requirements and any additional limitations that may be imposed.

Section 6.22.7 Technical Standards

All applicants are required to develop and submit a storm water management plan prepared by a professional engineer licensed in the state. All storm water management plans must address storm water management on a site-by-site basis and all requirements of this article. All storm water management practices shall be consistent with the RISDISM and the state soil erosion and sediment control handbook, as amended.

1) Performance standards. Storm water management plans shall incorporate structural and nonstructural best management practices for water quality control, in accordance with the state storm water design and installation standards manual. Development in special resource protection waters or watersheds of impaired waters as defined pursuant to the state water quality regulations may be held to higher standards. As part of such higher standards, low-impact development shall be used as the primary method of storm water control to the maximum extent practicable to manage water quality and maintain groundwater recharge to predevelopment levels.

2) Disallowed storm water best management practices. The placement of storm water structures within a floodplain shall be avoided. If there is no alternative, the applicant must show what effects, if any, the tailwaters created by the floodplain will have on the outflow and effective storage capacity of the storm water best management practice.

3) Facilitation of maintenance. Facilities that require maintenance shall be designed to minimize the need for regular maintenance, facilitate required maintenance, and ensure accessibility of components that require maintenance. At a minimum, all storm water management plans must incorporate best management practices with appropriate maintenance design in accordance with the state storm water design and installation standards manual, as amended.

4) Flood protection. Storm water management plans shall demonstrate that a proposed project provides for protection of life and property from flooding and flood flows. Water quantities must be controlled in accordance with the RISDISM, as amended, or a municipally approved regional storm water management plan for the watershed in which
the project site is located. Storm water management plans shall demonstrate incorporation of the following standards into the proposed project:

a. Control and maintenance of post-development peak discharge rates from the 1-year, 2-year, 10-year, 25-year, and 100-year storm events to predevelopment levels.

b. Downstream analysis of the 100-year storm event and control of the peak discharge rate for the 100-year storm to mitigate downstream impacts.

c. Discharge from any storm water facility must be conveyed through properly constructed conveyance system to provide for nonerosive flows during all storm events. The proposed storm water conveyance system consisting of open channels, pipes, and other conveyance devices shall at a minimum accommodate the runoff from a 25-year storm event. The storm water conveyance system must provide for nonerosive flows to receiving waters.

(5) **Surface water and groundwater.** Storm water management plans shall, in accordance with the RISDISM, as amended, demonstrate that during development and post-development, all receiving waters will be recharged in a manner closely resembling predevelopment conditions and that the developed site will retain hydrological conditions that closely resemble of those prior to disturbance. The goal of the storm water design shall be that hydrologic conditions in each subwatershed match predevelopment conditions.

Where practicable, development and redevelopment projects should aim to reduce runoff volumes. This may include minimizing and eliminating impervious surface areas such as roads, parking, paving or other surfaces, encouraging infiltration of noncontaminated runoff, preventing channelization, encouraging sheet flow, and where appropriate, preserving, enhancing or establishing buffers along surface water bodies and tributaries.

**Section 6.22.8 Stormwater Management Plans**

(a) **Calculations.** In addition to the information required for the site plan the following information must also be included with the application, where applicable:

(1) The area of each subwatershed shall be identified on final site plans.

(2) The area of impervious surfaces (including all roads, driveways, rooftops, sidewalks, etc.) for each sub-basin as identified in the state storm water design and installation standards manual, as amended.

(3) Weighted curve numbers as determined using urban hydrology for small watersheds (USDA Soil Conservation Service, 1986 or as amended).

(4) Invert elevations for inlets and outlets. In addition, invert elevations shall be provided for all basins including permanent and/or flood pool stages, including peak discharge rates for each stage.

(5) The total volume capacity for all flood control and water quality best management practices (e.g., infiltration basin, detention basins, wet ponds, etc.). Volumes must be segregated into permanent and flood pool stage volumes where applicable. Furthermore, the volumes of all sediment storage (basins, forebays, etc.) areas must also be provided.
(6) Predevelopment and post-development peak discharge rates and runoff volumes for the 1-year, 2-year, 10-year, 25-year, and 100-year frequency storm events for each subwatershed to each separate water or discharge point. The water quality volume (WQV) must also be calculated for each subwatershed. All relevant variables such as curve numbers and time of concentration, along with the supporting computations and worksheets must be included. The entire site shall be included in an evaluated subwatershed.

(7) Supporting calculations to demonstrate that the proposed development project will meet section 6.22.7.

(b) Narrative description. As part of the storm water management plan, the applicant shall include a discussion of the protection of environmental resource functions and values. The following outline is provided as guidance for preparing a narrative description for the storm water management plan. Depending on the size and scope of the proposed project, the amount of information required by the town may vary; therefore, it is advised to consult the town for specific requirements.

(1) Site description. General topography, soil types, current vegetative composition and relative abundance, existing infrastructure, and/or adjacent properties, identification of major resources (e.g., wetlands, groundwater, surface waters, etc.), name of receiving water(s), potential water quality and/or hydrologic impacts on resources.

(2) Site input data. Watershed characteristics, area of all impervious surfaces, total area of site, annual mean rainfall, runoff coefficients, curve numbers for various land uses, peak discharge rates.

(3) Land use planning and source control plan.

(4) Best management practices. Identify the type of best management practice(s) employed both during and post construction and justification for selection, including any deviation from the state storm water design and installation standards manual, as amended, and the potential effect on pollutant removal efficiency.

(5) Technical feasibility. Include sizing, location, hydraulic and environmental impacts. Alternatives, which were considered but determined not to be feasible, should also be discussed.

(6) Maintenance schedule of best management practices to be used, both during and post construction including frequency of inspection and maintenance.

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Section 6.22.9 Inspections for Stormwater Best Management Practices (BMPs)

The town shall have the right to inspect best management practices constructed after the passage of the ordinance from which this article is derived. Inspections shall address whether best management practices have been installed in accordance with approved storm water management plans.
Section 6.22.10 Operation and Maintenance Requirements for BMPs

(a) **Routine operation and maintenance and repair procedures.** Routine maintenance shall be performed on a regular basis to ensure proper performance and may include such routine procedures as training of staff, periodic inspections, grass cutting elimination of mosquito breeding habitats, and pond maintenance in accordance with a storm water management plan approved pursuant to this article. Repair procedures may be required to correct a problem or malfunction of a best management practice and to restore the management practice's intended operation and safe condition. Repairs may include such procedures as structural repairs, removal of debris, sediment and trash removal, erosion repair, snow and ice removal, fence repair, mosquito extermination, and restoration of vegetated and nonvegetated linings.

(b) **General operation and maintenance standards for storm water best management practices.** Maintenance design and maintenance procedures for all best management practices shall be documented in storm water management plans in accordance with the state storm water design and installation standards manual, as amended; or manufacturer's specifications. A maintenance schedule for each type of best management practice must be included in the storm water management plan. These schedules shall list the frequency and type of maintenance operations necessary along with the legally responsible party's name, address, and telephone number. The owner, as well as all future owners, shall be required to implement the maintenance schedule of the best management practices. If the storm water facility is to be deeded to the town, the applicant must obtain a letter from the town acknowledging maintenance responsibility and intent of ownership.

Section 6.22.11 Maintenance Agreements

(a) Maintenance agreements shall provide written, contractual documentation, which demonstrates compliance with this article and legal arrangements for the upkeep of storm water facilities to assure their proper function and safety in accordance with this article.

(b) After final construction is completed, the owner or responsible person shall maintain "as built" plans of storm water management practices located on site. The plans must show the final design specifications for all storm water management facilities and must be certified by a professional engineer.

(c) Maintenance agreements, which describe maintenance schedules and requirements, must be developed for each storm water management facility unless the facility is dedicated to and accepted by the town. Schedules shall be based on the complexity and frequency of maintenance needs and shall be subject to the approval of the town. At a minimum, maintenance frequency should be in accordance with the RISDISM, as amended.

(d) Right of entry. Upon the presentation of credentials and other documents, as may be required by law, or if authorized by the owner or other party in control of the property, the Director of Public Works, Building Official, Zoning Officer, and other town representatives designated by the Building Official, Zoning Officer, or Director of Public Works may enter upon privately owned property for the purpose of performing their duties under this article and may make or cause to be made such inspections as the town deems reasonably necessary.
(c) Record keeping for maintenance activities. Maintenance agreements shall include provisions for maintenance record keeping. All activities conducted in accordance with a maintenance agreement must be recorded in a work order and inspection log. Timely updates of the log shall be the responsibility of the storm water management facility owner or other responsible party pursuant to this article. Review of the maintenance and inspection log shall be completed by the town to determine the effectiveness of operation, maintenance and safety activities. Reviews shall occur as part of each on-site inspection. Additional reviews may be made as deemed appropriate by the town.

(f) Responsibility for maintenance to assure function and safety. Appropriate maintenance to assure function and safety of storm water management facilities shall be the responsibility the owner or may be assumed by another party via a written contractual arrangement in accordance with this article.

(g) Alterations to maintenance agreements. Any alterations in maintenance responsibility or alterations to maintenance agreements must be reviewed and approved by the planning board (as applicable) and building official or designee. If portions of the land serviced by a storm water management facility are to be sold, written contractual arrangements shall be made to pass all responsibility of the maintenance agreement to the purchaser and shall be subject to review and approval of the department of public works or designee. All alterations to maintenance agreements shall be made and recorded in accordance with this article.

(h) Recordation of maintenance agreements. All maintenance agreements and alterations to maintenance agreements shall be recorded in the land evidence records of the town. Copies of all maintenance agreements and alterations to maintenance agreements shall be included in storm water management plans. Recordation of maintenance agreements in accordance with this article shall be the responsibility of the owner.

Section 6.22.12 Application Fees

The town shall be empowered to collect fees from permit applicants, which are commensurate with the cost of administering this article.

Section 6.22.13 Notification of Noncompliance

If the authorized enforcement agent finds a violation of this article then a written notice from the authorized enforcement agent to compel correction shall be transmitted to the owner or operator. Such notice shall set forth the nature of corrections required and the time limit within which corrections shall be completed. Failure to comply with the required corrections within the specified time limit shall be considered a violation of this chapter.
Section 6.22.14 Appeal of Notice of Noncompliance

Any person receiving a notice of noncompliance may appeal the determination of the authorized enforcement agent. The appeal must be received within 30 days from the date of the receipt of the notice of noncompliance. The appeal shall be in writing and contain a detailed basis upon which the appeal was taken. The authorized enforcement agent shall then determine whether to accept the appeal or proceed to cause summons of the appellant in accordance with section 6.22.15.

Section 6.22.15 Penalties for Violation

Any person who shall violate any provision of this article shall be punished in accordance with section ???. The authorized enforcement agent may, at the discretion of the court, undertake measures necessary to abate the violation and restore the property at the owner or operators expense.

Section 6.22.16 Cost of Abatement of the Violation

Within 30 days after abatement of the violation by or under the direction of the authorized enforcement agent, the owner or operator will be notified by the authorized enforcement agent of the cost of abatement, including administrative costs. If the amount due is not paid within a timely manner as determined by the authorized enforcement agent, the charges shall become a special assessment against the property and shall constitute a lien on the property for the amount of the assessment. Any person violating any of the provisions of this section shall become liable to the Town by reason of such violation. The liability shall be paid in not more than 12 equal payments. Interest at the rate of 12 percent per annum shall be assessed on the balance beginning on the 31st day following discovery of the violation.

Section 6.22.17 Revocation or Suspension of Approval

The approval of a storm water management plan under this chapter may be revoked or suspended by an authorized enforcement agent and all work on the development or redevelopment project halted for an indefinite time period after written notification is transmitted by the authorized enforcement agent to the owner or operator for one or more of the following reasons:

1. Violation of any condition of the approved plan, or specifications pertaining thereto.
2. Violation of any provision of this article.
3. The existence of any condition or the performance of any act constituting or creating a nuisance, hazard, or endangerment to human life or property of others, or contrary to the spirit or intent of this article.
Section 6.22.18 Remedies not Exclusive

The remedies listed in this article are not exclusive of any other remedies available under any applicable federal, state or local law and it is within the discretion of the authorized enforcement agent to seek cumulative remedies.