DiPrete Engineering

Stormwater Management Report

KEVIN DEMERS

No. 8557

REGISTERED
PROFESSIONAL ENGINEER
CIVIL

South County Commons
Buildings 26 & 28

Located in South Kingstown, RI

Applicant: SCC Investments III LLC.

12-13-2024

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Executive Summary

On behalf of the Client, we are submitting drainage calculations for the proposed buildings (nos. 26 and 28) on Village Square Drive Village Square Drive and Preservation Way. The site is located on Assessors' Plat 50 Lots 14, 15, and 21. The site exists today as an existing parking lot and an undeveloped building lot. The client proposes to redevelop the previously approved commercial building space (Building 26) and Hampton Inn parking lot (Building 28) and construct two new four-story apartment buildings. The proposed buildings will provide affordable housing units for the town of South Kingstown as well as adjacent recreational opportunities.

This is considered a redevelopment site and will provide water quality treatment for 50% of the post development stormwater will be treated for water quality using Best Management Practices (BMPs), as per Minimum Standard 6. The Site has been designed to meet the Rhode Island Stormwater Design and Installation Standards Manual (RISDISM), Standards 2, 3 and 7-11 as required by Minimum Standard 6 (Redevelopment and Infill Projects).

Under the RISDISM, the site is considered a redevelopment site since the existing site is over 40% impervious. The site achieves 50% water quality treatment with a combination of reduction in pavement and 50% water quality treatment. The site meets the RISDISM through the addition of a new best management practice (BMP). This practice is the Barracuda proprietary device.

This report details how the site will show no net increase in stormwater runoff from pre development to post development conditions, and how the proposed BMPs will provide water quality treatment for stormwater runoff. The redevelopment TSS loading calculations are provided within this report on a volume basis to demonstrate the goal of 50% treatment for the watershed area are met i.e. 85% treatment x 50% of site = 42.5% TSS reduction (43% is provided).

APPENDIX A: STORMWATER MANAGEMENT PLAN CHECKLIST AND LID PLANNING REPORT – STORMWATER DESIGN SUMMARY

PROJECT NAME **South County Commons Building 26 & 28**	**(RIDEM USE ONLY)** **STW/WQC File #:** **Date Received:**
TOWN **South Kingstown**	
BRIEF PROJECT DESCRIPTION: Proposed redevelopment/infill apartment sites at the Village at South County Commons	

Stormwater Management Plan (SMP) Elements – Minimum Standards

When submitting a SMP,[1] submit four separately bound documents: Appendix A Checklist; Stormwater Site Planning, Analysis and Design Report with Plan Set/Drawings; Soil Erosion and Sediment Control (SESC) Plan, and Post Construction Operations and Maintenance (O&M) Plan. Please refer to Suggestions to Promote Brevity**.**

Note**: All stormwater construction projects must create a Stormwater Management Plan (SMP). However, not every element listed below is required per the** RIDEM Stormwater Rules **and the** RIPDES Construction General Permit (CGP)**. This checklist will help identify the required elements to be submitted with an Application for Stormwater Construction Permit & Water Quality Certification.**

PART 1. PROJECT AND SITE INFORMATION

PROJECT TYPE (Check all that apply)

☒ Residential	☒ Commercial	☐ Federal	☐ Retrofit	☐ Restoration
☐ Road	☐ Utility	☐ Fill	☐ Dredge	☐ Mine
☐ Other (specify):				

SITE INFORMATION

☒ Vicinity Map (See plan set)

INITIAL DISCHARGE LOCATION(S): The WQv discharges to: (You may choose more than one answer if several discharge points are associated with the project.)

☐ **Groundwater**	☒ **Surface Water**	☐ **MS4**
☐ GAA	☐ Isolated Wetland	☐ RIDOT
☐ GA	☐ Named Waterbody	☐ RIDOT Alteration Permit is Approved
☐ GB	☐ Unnamed Waterbody Connected to Named Waterbody (Tributary to Indian Run Brook)	☐ Town
		☐ Other (specify):

ULTIMATE RECEIVING WATERBODY LOCATION(S): Include pertinent information that applies to both WQ_v and flow from larger storm events including overflows. Choose all that apply, and repeat table for each waterbody.

☐ Groundwater or Disconnected Wetland	☐ SRWP		
☒ Waterbody Name: Indian Run Brook	☐ Coldwater	☒ Warmwater	☐ Unassessed
☒ Waterbody ID: RI0010045R-02	☐ 4th order stream of pond 50 acres or more		
☒ TMDL for: Fecal coliform, copper, zinc	☐ Watershed of flood prone river (e.g., Pocasset River)		
☐ Contributes to a priority outfall listed in the TMDL	☐ Contributes stormwater to a public beach		
☐ 303(d) list – Impairment(s) for:	☐ Contributes to shellfishing grounds		

[1] Applications for a Construction General Permit that do not require any other permits from RIDEM and will disturb less than 5 acres over the entire course of the project do not need to submit a SMP. The Appendix A checklist must still be submitted.

PROJECT HISTORY		
☐ RIDEM Pre- Application Meeting	Meeting Date:	☐ Minutes Attached
☐ Municipal Master Plan Approval	Approval Date:	☐ Minutes Attached
☐ Subdivision Suitability Required	Approval #:	
☐ Previous Enforcement Action has been taken on the property	Enforcement #:	

FLOODPLAIN & FLOODWAY See Guidance Pertaining to Floodplain and Floodways	
☐ Riverine 100-year floodplain: **FEMA FLOODPLAIN FIRMETTE** has been reviewed and the 100-year floodplain is on site	
☒ Delineated from FEMA Maps	
NOTE: Per Rule 250-RICR-150-10-8-1.1(B)(5)(d)(3), provide volumetric floodplain compensation calculations for cut and fill/displacement calculated by qualified professional	
☐ Calculated by Professional Engineer	
☐ Calculations are provided for cut vs. fill/displacement volumes proposed within the 100-year floodplain	Amount of Fill (CY):
	Amount of Cut (CY):
☐ Restrictions or modifications are proposed to the flow path or velocities in a floodway	
☐ Floodplain storage capacity is impacted	
☒ Project area is not within 100-year floodplain as defined by RIDEM	

CRMC JURISDICTION
☐ CRMC Assent required
☐ Property subject to a Special Area Management Plan (SAMP). If so, specify which SAMP:
☐ Sea level rise mitigation has been designed into this project

LUHPPL IDENTIFICATION - MINIMUM STANDARD 8: - NA			
1. OFFICE OF Land Revitalization and Sustainable Materials Management (OLRSMM)			
	☐ Known or suspected releases of HAZARDOUS MATERIAL are present at the site (Hazardous Material is defined in Rule 1.4(A)(33) of 250-140-30-1 of the RIDEM Rules and Regulations for Investigation and Remediation of Hazardous Materials (the Remediation Regulations))		**RIDEM CONTACT:**
	☐ Known or suspected releases of PETROLEUM PRODUCT are present at the site (Petroleum Product as defined in Rule 1.5(A)(84) of 250-140-25-1 of the RIDEM Rules and Regulations for Underground Storage Facilities Used for Regulated Substances and Hazardous Materials)		
	☐ This site is identified on the RIDEM Environmental Resources Map as one of the following regulated facilities		**SITE ID#**:
		☐ CERCLIS/Superfund (NPL)	
		☐ State Hazardous Waste Site (SHWS)	
		☐ Environmental Land Usage Restriction (ELUR)	
		☐ Leaking Underground Storage Tank (LUST)	
		☐ Closed Landfill	
Note: If any boxes in 1 above are checked, the applicant must contact the RIDEM OLRSMM Project Manager associated with the Site to determine if subsurface infiltration of stormwater is allowable for the project. Indicate if the infiltration corresponds to "Red," "Yellow" or "Green" as described in Section 3.2.8 of the RISDISM Guidance (Subsurface Contamination Guidance). Also, note and reference approval in PART 3, Minimum Standard 2: Groundwater Recharge/Infiltration**.**			
2. PER MINIMUM STANDARD 8 of RICR 8.14.C.1-6 "LUHPPLS," THE SITE IS/HAS:			
	☐ Industrial Site with RIPDES MSGP, except where No Exposure Certification exists. http://www.dem.ri.gov/programs/water/permits/ripdes/stormwater/status.php		
	☐ Auto Fueling Facility (e.g., gas station)		
	☐ Exterior Vehicles Service, Maintenance, or Equipment Cleaning Area		

	☐ Road Salt Storage and Loading Areas (exposed to rainwater)	
	☐ Outdoor Storage and Loading/Unloading of Hazardous Substances	
3.	**STORMWATER INDUSTRIAL PERMITTING**	
	☐ The site is associated with existing or proposed activities that are considered Land Uses with Higher Potential Pollutant Loads (LUHPPLS) (see RICR 8.14.C)	Activities: Sector:
	☐ Construction is proposed on a site that is subject to THE MULTI-SECTOR GENERAL PERMIT (MSGP) UNDER RULE 31(B)15 OF THE RIPDES REGULATIONS.	MSGP permit #
	☐ Additional stormwater treatment is required by the MSGP Explain:	

REDEVELOPMENT STANDARD – MINIMUM STANDARD 6		
☒ Pre Construction Impervious Area		
	☒ Total Pre-Construction Impervious Area (**TIA**) 2.344 Acres	
	☒ Total Site Area (**TSA**) 3.287 Acres	
	☐ Jurisdictional Wetlands (**JW**) 0 Acres	
	☐ Conservation Land (**CL**) 0 Acres	
☒ Calculate the Site Size (defined as contiguous properties under same ownership)		
	☒ Site Size (**SS**) = (**TSA**) – (**JW**) – (**CL**) 3.287 Acres	
	☒ (**TIA**) / (**SS**) = 2.344 / 3.287 = 0.713	☒ (**TIA**) / (**SS**) >**0.4**?
☒ YES, Redevelopment		

PART 3. SUMMARY OF REMAINING STANDARDS

GROUNDWATER RECHARGE – MINIMUM STANDARD 2		
YES	**NO**	
☐	☒	The project has been designed to meet the groundwater recharge standard.
☒	☐	If "No," the justification for groundwater recharge criterion waiver has been explained in the Narrative (e.g., threat of groundwater contamination or physical limitation), if applicable (see RICR 8.8.D);
☒	☐	Your waiver request has been explained in the Narrative, if applicable.
☐	☒	Is this site identified as a Regulated Facility in Part 1, Minimum Standard 8: LUHPPL Identification?
☐	☐	If "Yes," has approval for infiltration by the OLRSMM Site Project Manager, per Part 1, Minimum Standard 8, been requested?

TABLE 2-1: Summary of Recharge (see RISDISM Section 3.3.2)
(Add or Subtract Rows as Necessary)

Design Point	**Impervious Area Treated (sq ft)**	**Total Re_v Required (cu ft)**	**LID Stormwater Credits (see RISDISM Section 4.6.1)**	**Recharge Required by Remaining BMPs (cu ft)**	**Recharge Provided by BMPs (cu ft)**
			Portion of Re_v directed to a QPA (cu ft)		
DP-1:					
DP-2:					

DP-3:					
DP-4:					
TOTALS:					

Notes:
1. Only BMPs listed in RISDISM Table 3-5 "List of BMPs Acceptable for Recharge" may be used to meet the recharge requirement.
2. Recharge requirement must be satisfied for each waterbody ID.

☐ Indicate where the pertinent calculations and/or information for the above items are provided (i.e., name of report/document, page numbers, appendices, etc.):

WATER QUALITY – MINIMUM STANDARD 3

YES	NO	
☒	☐	Does this project meet or exceed the required water quality volume WQv (see RICR 8.9.E-I)?
☒	☐	Is the proposed final impervious cover greater than 20% of the disturbed area (see RICR 8.9.E-I)?
☐	☐	If "Yes," either the Modified Curve Number Method or the Split Pervious/Impervious method in Hydro-CAD was used to calculate WQv; or,
☒	☐	If "Yes," either TR-55 or TR-20 was used to calculate WQv; and,
☐	☐	If "No," the project meets the minimum WQv of 0.2 watershed inches over the entire disturbed area.
☐	☐	Not Applicable
☒	☐	Does this project meet or exceed the ability to treat required water quality flow WQf (see RICR 8.9.I.1-3)?
☐	☒	Does this project propose an increase of impervious cover to a receiving water body with impairments? If "Yes," please indicate below the method that was used to address the water quality requirements of no further degradation to a low-quality water.
☐	☒	RICR 8.36. A Pollutant Loading Analysis is needed and has been completed.
☐	☐	The Water Quality Guidance Document (Water Quality Goals and Pollutant Loading Analysis Guidance for Discharges to Impaired Waters) has been followed as applicable.
☒	☐	BMPs are proposed that are on the approved technology list . If "Yes," please provide all required worksheets from the manufacturer.
☒	☐	Additional pollutant-specific requirements and/or pollutant removal efficiencies are applicable to the site as the result of a TMDL, SAMP, or other watershed-specific requirements. If "Yes," please describe: Additional water quality treatment provided as part of a "redevelopment" site.

TABLE 3-1: Summary of Water Quality (see RICR 8.9)

Design Point and WB ID	Impervious area treated (sq ft)	Total WQ_v Required (cu ft)	LID Stormwater Credits (see RICR 8.18) WQv directed to a QPA (cu ft)	Water Quality Treatment Remaining (cu ft)	Water Quality Provided by BMPs (cu ft)
DP-1: B26 & B28 to Ex Pond	28,750	2,396	0	2,396	2,831*
DP-2:			* Per Barracuda certified treatment area x (1"/12)		

DP-3:					
DP-4:					
TOTALS:					

Notes:
1. Only BMPs listed in RICR 8.20 and 8.25 or the Approved Technologies List of BMPs is Acceptable for Water Quality treatment.
2. For each Design Point, the Water Quality Volume Standard must be met for each Waterbody ID.

☐ YES ☐ NO	This project has met the setback requirements for each BMP. If "No," please explain:

☐ Indicate where the pertinent calculations and/or information for the above items are provided (i.e., name of report/document, page numbers, appendices, etc.):

LAND USES WITH HIGHER POTENTIAL POLLUTANTS LOADS (LUHPPLs) – MINIMUM STANDARD 8			
YES	**NO**	**N/A**	
☐	☐	☒	Describe any LUHPPLs identified in Part 1, Minimum Standard 8, Section 2. If not applicable, continue to Minimum Standard 9.
☐	☐	☐	Are these activities already covered under an MSGP? If "No," please explain if you have applied for an MSGP or intend to do so?
☐	☐	☐	List the specific BMPs that are proposed for this project that receive stormwater from LUHPPL drainage areas. These BMP types must be listed in RISDISM Table 3-3, "Acceptable BMPs for Use at LUHPPLs." Please list BMPs:
☐	☐	☐	Additional BMPs, or additional pretreatment BMP's if any, that meet RIPDES MSGP requirements; Please list BMPs:
			Indicate below where the pertinent calculations and/or information for the above items are provided (i.e., name of report/document, page numbers, appendices, etc.).

ILLICIT DISCHARGES – MINIMUM STANDARD 9			
Illicit discharges are defined as unpermitted discharges to Waters of the State that do not consist entirely of stormwater or uncontaminated groundwater, except for certain discharges identified in the RIPDES Phase II Stormwater General Permit.			
YES	**NO**	**N/A**	
☒	☐	☐	Have you checked for illicit discharges?
☐	☒	☐	Have any been found and/or corrected? If "Yes," please identify.
☒	☐	☐	Does your report explain preventative measures that keep non-stormwater discharges out of the Waters of the State (during and after construction)?

SOIL EROSION AND SEDIMENT CONTROL (SESC) – MINIMUM STANDARD 10			
YES	**NO**	**N/A**	
☒	☐	☐	Have you included a Soil Erosion and Sediment Control Plan Set and/or Complete Construction Plan Set?
☒	☐	☐	Have you provided a **separately-bound** document based upon the SESC Template? If yes, proceed to Minimum Standard 11 (the following items can be assumed to be addressed).

	If "No," include a document with your submittal that addresses the following elements of an SESC Plan:	
	☐	Soil Erosion and Sediment Control Plan Project Narrative, including a description of how the fifteen (15) Performance Criteria have been met:
	☐	Provide Natural Buffers and Maintain Existing Vegetation
	☐	Minimize Area of Disturbance
	☐	Minimize the Disturbance of Steep Slopes
	☐	Preserve Topsoil
	☐	Stabilize Soils
	☐	Protect Storm Drain Inlets
	☐	Protect Storm Drain Outlets
	☐	Establish Temporary Controls for the Protection of Post-Construction Stormwater Control Measures
	☐	Establish Perimeter Controls and Sediment Barriers
	☐	Divert or Manage Run-On from Up-Gradient Areas
	☐	Properly Design Constructed Stormwater Conveyance Channels
	☐	Retain Sediment On-Site
	☐	Control Temporary Increases in Stormwater Velocity, Volume, and Peak Flows
	☐	Apply Construction Activity Pollution Prevention Control Measures
	☐	Install, Inspect, and Maintain Control Measures and Take Corrective Actions
	☐	Qualified SESC Plan Preparer's Information and Certification
	☐	Operator's Information and Certification; if not known at the time of application, the Operator must certify the SESC Plan upon selection and prior to initiating site activities
	☐	Description of Control Measures, such as Temporary Sediment Trapping and Conveyance Practices, including design calculations and supporting documentation, as required

STORMWATER MANAGEMENT SYSTEM OPERATION, MAINTENANCE, AND POLLUTION PREVENTION PLAN – MINIMUM STANDARDS 7 AND 9		
Operation and Maintenance Section		
YES	**NO**	
☒	☐	Have you minimized all sources of pollutant contact with stormwater runoff, to the maximum extent practicable?
☒	☐	Have you provided a **separately-bound** Operation and Maintenance Plan for the site and for all of the BMPs, and does it address each element of RICR 8.17 and RISDISM Appendix C and E?
☒	☐	Lawn, Garden, and Landscape Management meet the requirements of RISDISM Section G.7? If "No," why not?
☒	☐	Is the property owner or homeowner's association responsible for the stormwater maintenance of all BMP's? If "No," you must provide a legally binding and enforceable maintenance agreement (see RISDISM Appendix E, page 26) that identifies the entity that will be responsible for maintenance of the stormwater. Indicate where this agreement can be found in your report (i.e., name of report/document, page numbers, appendices, etc.).
☐	☒	Do you anticipate that you will need legal agreements related to the stormwater structures? (e.g. off-site easements, deed restrictions, covenants, or ELUR per the Remediation Regulations). If "Yes," have you obtained them? Or please explain your plan to obtain them:
☐	☒	Is stormwater being directed from public areas to private property? If "Yes," note the following: Note: This is not allowed unless a funding mechanism is in place to provide the finances for the long-term maintenance of the BMP and drainage, or a funding mechanism is demonstrated that can guarantee the long-term maintenance of a stormwater BMP by an individual homeowner.
Pollution Prevention Section		

☒	☐	Designated snow stockpile locations? ***Active project site (snow typically stored within unused parking spaces).***
☒	☐	Trash racks to prevent floatables, trash, and debris from discharging to Waters of the State? ***Existing detention pond has trash rack on outlet structure.***
☒	☐	Asphalt-only based sealants?
☒	☐	Pet waste stations? (Note: If a receiving water has a bacterial impairment, and the project involves housing units, then this could be an important part of your pollution prevention plan). ***Will be included in recreation and/or grilling areas.***
☒	☐	Regular sweeping? Please describe: ***More regular sweeping/maintenance will be provided by conversion from parking area to residential units.***
☒	☐	De-icing specifications, in accordance with RISDISM Appendix G. (NOTE: If the groundwater is GAA, or this area contributes to a drinking water supply, then this could be an important part of your pollution prevention plan).
☒	☐	A prohibition of phosphate-based fertilizers? (Note: If the site discharges to a phosphorus impaired waterbody, then this could be an important part of your pollution prevention plan).

PART 4. SUBWATERSHED MAPPING AND SITE-PLAN DETAILS

Existing and Proposed Subwatershed Mapping (REQUIRED)			
YES	**NO**		
☒	☐		Existing and proposed drainage area delineations
☒	☐		Locations of all streams and drainage swales
☒	☐		Drainage flow paths, mapped according to the DEM *Guidance for Preparation of Drainage Area Maps* (included in RISDISM Appendix K)
☒	☐		Complete drainage area boundaries; include off-site areas in both mapping and analyses, as applicable
☐	☐		Logs of borings and/or test pit investigations along with supporting soils/geotechnical report ***(N/A)***
☐	☐		Mapped seasonal high-water-table test pit locations ***(N/A)***
☐	☐		Mapped locations of the site-specific borings and/or test pits and soils information from the test pits at the locations of the BMPs ***(N/A)***
☒	☐		Mapped locations of the BMPs, with the BMPs consistently identified on the Site Construction Plans
☐	☐		Mapped bedrock outcrops adjacent to any infiltration BMP ***(N/A)***
☐	☐		Soils were logged by a: ***(N/A)***
		☐	DEM-licensed Class IV soil evaluator Name:
		☐	RI-registered P.E. Name:

Subwatershed and Impervious Area Summary				
Subwatershed (area to each design point)	**First Receiving Water ID or MS4**	**Area Disturbed (units)**	**Existing Impervious (units)**	**Proposed Impervious (units)**
DP-1: B26 & B28 to Ex Pond	RI0010045R-02	3.287 Acres	2.344 Acres	2.301 Acres
DP-2:				
DP-3:				
DP-4:				
TOTALS:				

Site Construction Plans (Indicate that the following applicable specifications are provided)		
YES	**NO**	
☒	☐	Existing and proposed plans (scale not greater than 1" = 40') with North arrow
☒	☐	Existing and proposed site topography (with 1 or 2-foot contours); 10-foot contours accepted for off-site areas
☒	☐	Boundaries of existing predominant vegetation and proposed limits of clearing
☒	☐	Site Location clarification
☒	☐	Location and field-verified boundaries of resource protection areas such as: ▸ freshwater and coastal wetlands, including lakes and ponds ▸ coastal shoreline features Perennial and intermittent streams, in addition to Areas Subject to Storm Flowage (ASSFs)
☒	☐	All required setbacks (e.g., buffers, water-supply wells, septic systems)
☒	☐	Representative cross-section and profile drawings, and notes and details of structural stormwater management practices and conveyances (i.e., storm drains, open channels, swales, etc.), which include: ▸ Location and size of the stormwater treatment practices (type of practice, depth, area). Stormwater treatment practices (BMPs) must have labels that correspond to RISDISM Table 5-2; ▸ Design water surface elevations (applicable storms); ▸ Structural details of outlet structures, embankments, spillways, stilling basins, grade-control structures, conveyance channels, etc.; ▸ Existing and proposed structural elevations (e.g., inverts of pipes, manholes, etc.); ▸ Location of floodplain and, if applicable, floodway limits and relationship of site to upstream and downstream properties or drainage that could be affected by work in the floodplain; ▸ Planting plans for structural stormwater BMPs, including species, size, planting methods, and maintenance requirements of proposed planting
☒	☐	Logs of borings and/or test pit investigations along with supporting soils/geotechnical report and corresponding water tables ***(N/A)***
☒	☐	Mapping of any OLRSMM-approved remedial actions/systems (including ELURs) ***(N/A)***
☒	☐	Location of existing and proposed roads, buildings, and other structures including limits of disturbance; ▸ Existing and proposed utilities (e.g., water, sewer, gas, electric) and easements; ▸ Location of existing and proposed conveyance systems, such as grass channels, swales, and storm drains, and location(s) of final discharge point(s) (wetland, waterbody, etc.); ▸ Cross sections of roadways, with edge details such as curbs and sidewalks; ▸ Location and dimensions of channel modifications, such as bridge or culvert crossings
☒	☐	Locations, cross sections, and profiles of all stream or wetland crossings and their method of stabilization ***(N/A)***

1.0 Project Description

The purpose of this report is to specify a Stormwater Management System to be implemented in the new Project on Village Square Drive and Preservation Way.

The development area of the two buildings and associated improvements total approximately 3.3 acres located on Assessor's Plat 50 Lots 14, 15 and 21 in South Kingstown, Rhode Island. The site is located near the south end of The Village at South County Commons accessed from Tower Hill Road (Route 1).

The proposed development will include two new apartment buildings consisting of 104 units, with associated parking. The site will be serviced by public water and sewer.

The stormwater quality will be improved by utilizing a Best Management Practice (BMP) as established by the RISDISM for the treatment of stormwater runoff from the proposed development. The BMP will consist of an ADS Barracuda treatment device. The system has been designed to meet the RIDEM Stormwater Design and Installations Standards Manual.

2.0 Site Conditions

2.1 SOILS

There are the following soil types within the analyzed area of the Site as mapped by the NRCS USDA Soil Conservation service:

Soil Symbol	Description	Hydrologic Group
RaB	Rainbow silt loam, 3 to 8 percent slopes	C
Ur	Urban land	None

2.2 EXISTING SITE CONDITIONS

The project is on Assessor's Plat 50 Lots 14, 15 & 21. The project area totals approximately 2.35 acres. Currently the Building 26 site is an infill building pad between existing Building 25 and the existing Hampton Inn, and Building 28 is sited on an impervious parking area to the rear of the existing Hampton Inn.

The drainage from the area of the proposed building sites discharge to the existing detention basin south of the proposed Building 28. Final discharge from the detention basin is to the A series wooded swamp wetland to the south and west of the project site, which feeds the Indian Run Brook.

2.3 POST SITE CONDITIONS

The proposed drainage analysis uses stormwater management systems to control and treat runoff from the proposed development. The following BMP's are used on site and have been designed to include the following elements:

- Proprietary Water Quality Device (Barracuda S-3)
- Sediment Forebays
    - Existing forebay within detention basin.
- Extended Detention Basins

- Existing basin onsite.

The above elements will used to meet the design standards of the Rhode Island Stormwater Design and Installation Standard.

The primary goal of increasing water quality treatment is accomplished by providing water quality BMPs. Stormwater runoff mitigation is provided through the use of detention basins, as under existing conditions. By reducing impervious area through this redevelopment proposal, the post-development stormwater flow rate will be no greater than the pre-development rate, the second goal of the proposed drainage system is achieved. Any potential impacts from the proposed development on the wetlands have been mitigated.

3.0 Minimum Standards

The site has been designed to meet the minimum standards as outlined in the Rhode Island Stormwater Design and Installation Standards Manual (RISDISM). The following sections outline how the site meets and exceeds the minimum required standards.

3.1 Minimum Standard 1: LID Site Planning and Design Strategies

See "Appendix A: Stormwater Management Checklist" from the RISDISM provided at the beginning of this report.

3.2 Minimum Standard 2: Groundwater Recharge

Based on the infeasibility of recharge based on the historic filling of the site for the adjacent buildings and parking areas, no infiltration is proposed with this project. The net impervious area for the site decreases by 0.043 acres from pre to post-development conditions, and an additional proprietary device (Barracuda) will be installed to address water quality.

3.3 Minimum Standard 3: Water Quality

All stormwater is treated through an approved BMP before being discharged. This site has been designed to use a Barracuda treatment device to treat stormwater before being discharged into the existing detention basin.

Per Section 3.2.6 of the RISDISM, the water quality requirement may be met by a combination of impervious area reduction and BMPs for at least 50% of the redevelopment area.

As shown on the attached Impervious Calculation Map, there is a net decrease of 0.043 acres of impervious area from pre to post-development conditions. Therefore treatment to 50% water quality is the minimum requirement.

Refer to Appendix B for a graphical representation of the impervious calculations.

Existing & Approved Impervious Area: 2.344 acres

Proposed Impervious Area: 2.301 acres

Impervious Area Decrease from Existing & Approved: -0.043 acres

Existing Impervious Area to be Redeveloped: 0.795 acres

WQ Required (Redevelopment) 0.795 * 50% = 0.398 acres

Total WQ Required:

Redevelopment – Impervious Reduction 0.398 – 0.043 = 0.355 acres

Total WQ Provided: 0.629 acres

The provided area treated by a water quality practice is 0.629 acres, greater than the required net impervious area of 0.355 acres.

Barracuda™ Max (proprietary device)

The Barracuda™ Max is approved for 50% removal of total suspended solids (TSS), 60% removal of pathogens and 50% removal of total nitrogen (TN).

A secondary calculation was performed in order to ensure that the entirety of the redeveloped impervious area associated with Building 28 is treated to 50% over this portion of the site. For this purpose, a loading calculation was performed for the entire 1.849 acre subwatershed for the Building 28 area of improvements starting from the northerly limit of the hotel parking area and southern wall of the existing Hampton Inn.

As shown in Appendix 3.3, the use of the Barracuda water quality treatment system (50% TSS removal) will result in a reduction in total TSS loading from 811 lbs/yr to 463 lbs/yr (43% reduction). This is greater than an equivalent fully-approved water quality BMP (85% TSS removal) treating half of the site:

43% proposed reduction in TSS load > 85% x 50% site = 42.5%

3.4 Minimum Standard 4: Conveyance and Natural Channel Protection

N/A: Redevelopment site.

3.5 Minimum Standard 5: Overbank Flood Protection & Downstream Analysis

N/A: Redevelopment site.

3.6 Minimum Standard 6: Redevelopment and Infill Projects.

This site is a redevelopment project. See Minimum Standard 6 in the Appendix A checklist.

3.7 Minimum Standard 7: Pollution Prevention

A Soil Erosion and Sediment Control Plan (SESC) for this development can be found under a separate document. See the Soil Erosion and Sediment Control Plan for the development prepared by DiPrete Engineering. The SESC contains information for construction pollution prevention.

3.8 Minimum Standard 8: Land Uses with High Potential Pollutant Loads (LUHPPLs)

The site is not considered LUHPPL.

3.9 Minimum Standard 9: Illicit Discharges

There are no proposed Illicit Discharges on site. The site will be serviced by public water and sewer.

3.10 Minimum Standard 10: Construction Activity Soil Erosion, Runoff and Sedimentation and Pollution Prevention Control Measure Requirements

See the SESC for this development prepared by DiPrete Engineering.

3.11 Minimum Standard 11: Stormwater Management System Operation and Maintenance

See the O&M for this development prepared by DiPrete Engineering.

Appendix

A3.3 Water Quality TSS Pollutant Loading

South County Commons, Building 26 & 28
Pollutant Loading Calculations - Pre-Development - Total Suspended Solids
Annual RainFall

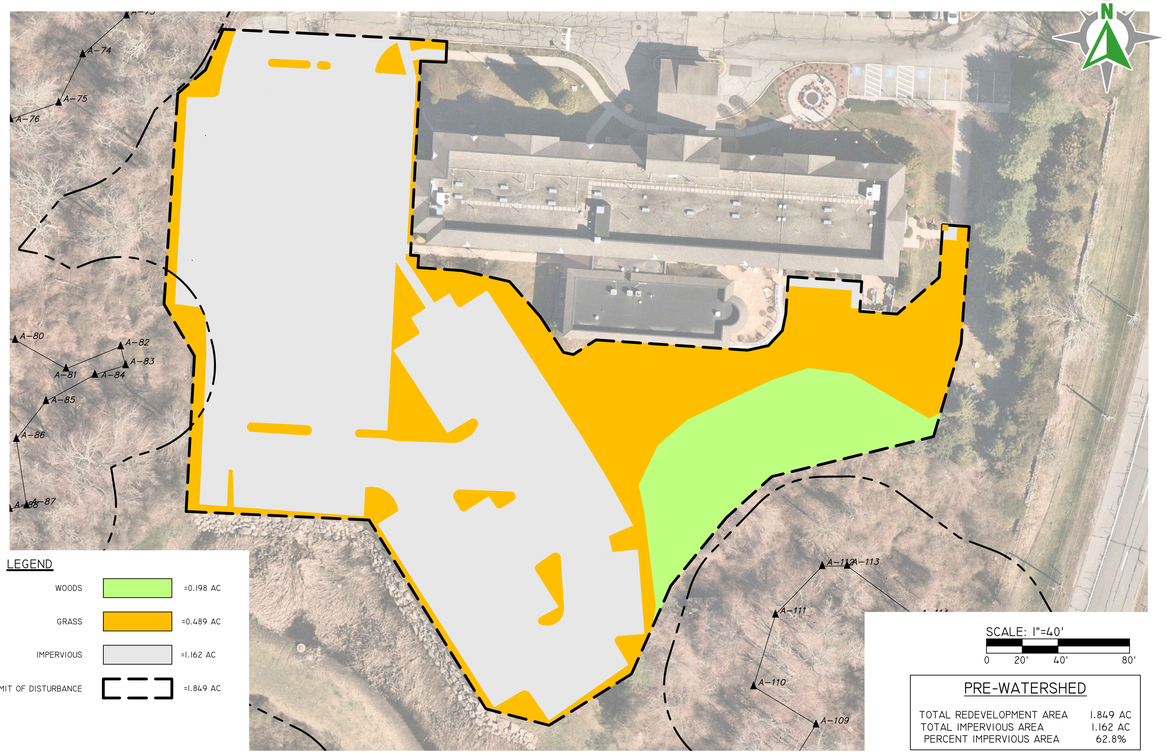
Watershed	Land Use	Area (acres)	Impervious (%)	Runoff Coefficient, Rv	Concentration (mg/l)	Loading lbs/year
Site	Undeveloped	0.69	0.0%	0.05	51	17
	Commercial (Parking Area)	1.16	100.0%	0.95	75	794
			Total Loading From Site			**811**

South County Commons, Buildings 26 & 28
Pollutant Loading Calculations - Post Development -Total Suspended Solids
Annual RainFall

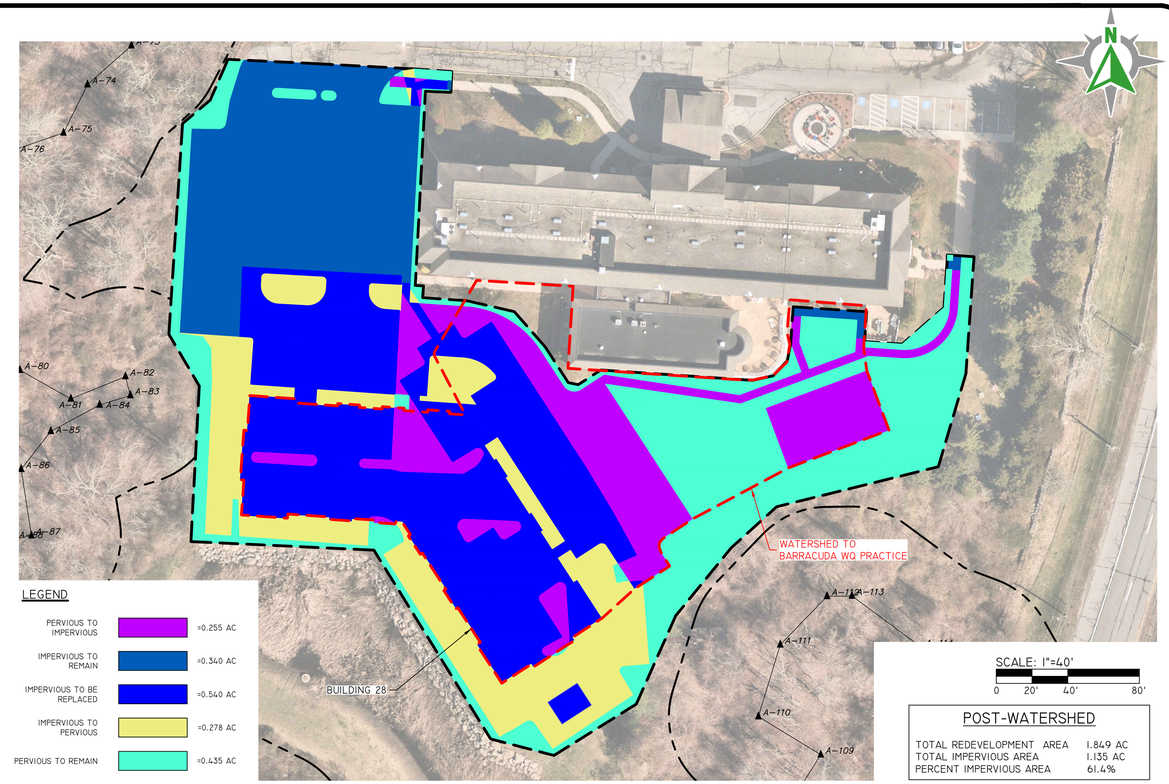
Watershed	Land Use	Area (acres)	Impervious (%)	Runoff Coef., Rv	Concentration (mg/l)	Barracuda 50%	Ext Dry Detention Basin 50%	Overall Efficiency (%)	Resultant Conc. (mg/l)	Loading Total Loading lbs/year	
Site	Undeveloped	0.72	0.0%	0.05	51			0%	51.00	17.6	
	Commercial (Parking Area & Walks)	0.47	100.0%	0.95	75			0%	75.00	321.1	
	Commercial (Parking Area & Walks)	0.32	100.0%	0.95	75	50%		50%	37.50	109.3	
	Commercial (Rooftop)	0.34	100.0%	0.95	10	50%		50%	5.00	15.5	*
								Total Loading From Site		**463**	
								Pre Loading		811	
								Difference		(347)	
								%		43%	

* Note: estimate of "less than 20 mg/l" rooftop concentration from Minnesota Stormwater Manual

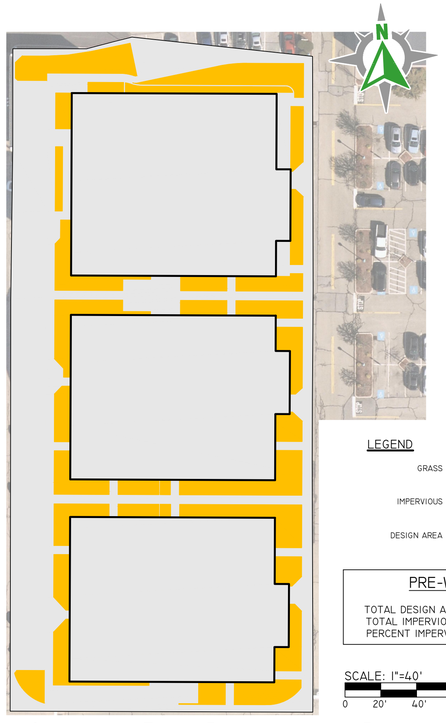
Impervious Calculation Map



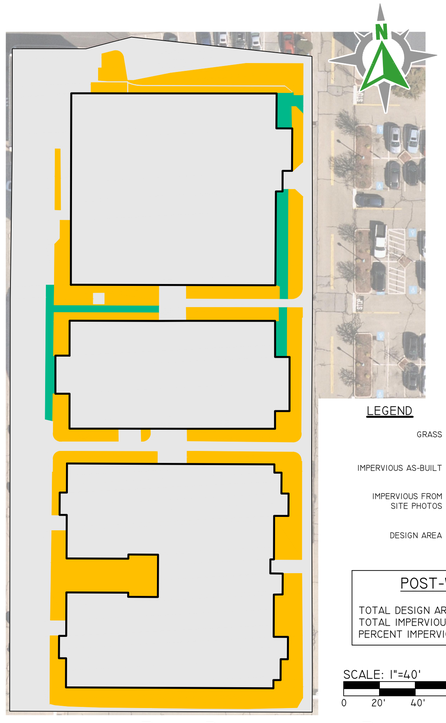
PRE-DEVELOPMENT BUILDING 28



POST-DEVELOPMENT BUILDING 28



APPROVED POST DEVELOPMENT DESIGN BUILDING 26



POST-DEVELOPMENT BUILDING 26

WATER QUALITY CALCULATIONS

IMPERVIOUS AREAS:		
BUILDING 26 PROPOSED IMPERVIOUS AREA		1.166 AC
BUILDING 28 POST-DEVELOPMENT IMPERVIOUS AREA		1.135 AC
BUILDING 26 APPROVED IMPERVIOUS AREA		-1.182 AC
BUILDING 28 PRE-DEVELOPMENT IMPERVIOUS AREA		-1.162 AC
DIFFERENCE IN IMPERVIOUS AREA		-0.043 AC
EX IMPERVIOUS AREA TO BE REDEVELOPED	0.795 AC	
50% OF IMPERVIOUS TO BE REDEVELOPED	0.398 AC	
TOTAL WQ REQUIRED:		
DIFFERENCE IN IMPERVIOUS AREA	-0.043 AC	
50% OF IMPERVIOUS TO BE REDEVELOPED	+0.398 AC	
	0.355 AC	
TOTAL WQ PROVIDED:		
S3 BARRACUDA MAX	0.629 AC	
TOTAL WQ REQUIRED:		0.355 AC
TOTAL WQ PROVIDED:		0.629 AC

IMPERVIOUS CALCULATION MAP
BUILDING 26 & 28 REDEVELOPMENT

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