

Watershed Assessment Report

Phase 2 of the Watershed Improvement Plan

Ramapo College of New Jersey
Bergen County



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Permit Number: NJG0154661

Stormwater Program Coordinator: Gina Mayer-Costa

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Acronyms

Acronym	Definition
BMP	Best Management Practice
CPA	College Park Apartments
EHS	Environmental Health and Safety
EPA	United States Environmental Protection Agency
FOG	Fats, Oils and Grease
GIS	Geographic Information System
HUC-14	Hydrologic Unit Code 14 Subwatershed
LA	Load Allocation
MS4	Municipal Separate Storm Sewer System
NJDEP	New Jersey Department of Environmental Protection
NJPDES	New Jersey Pollutant Discharge Elimination System
NJ-WET	New Jersey Watershed Evaluation Tool
NOAA	National Oceanic and Atmospheric Administration
NRCS	Natural Resources Conservation Service
RCNJ	Ramapo College of New Jersey
TMDL	Total Maximum Daily Load
TP	Total Phosphorus
TSS	Total Suspended Solids
USGS	United States Geological Survey
WAR	Watershed Assessment Report
WIP	Watershed Improvement Plan
WIR	Watershed Inventory Report
WLA	Wasteload Allocation
WMA	Watershed Management Area

Definitions

Term	Definition
HUC-14 Subwatershed	A hydrologic unit used by NJDEP and USGS to define watershed drainage areas for water-resource planning and assessment.
Watershed Improvement Plan (WIP)	A phased watershed planning process required by the NJPDES Public Complex and Municipal Stormwater Permit programs.
Watershed Assessment Report (WAR)	Phase II of the WIP process, which evaluates watershed conditions and identifies potential watershed improvement projects.
Watershed Inventory Report (WIR)	Phase I of the WIP process, which documents existing watershed conditions, infrastructure, impairments, and TMDLs.
Total Maximum Daily Load (TMDL)	A regulatory planning tool that establishes the maximum pollutant load a waterbody can receive while still meeting water quality standards.

Acknowledgements

This Watershed Assessment Report (WAR) was prepared as Phase II of the Watershed Improvement (WIP) Plan for Ramapo College of New Jersey (RCNJ) and was developed through collaboration between RCNJ personnel and Mott MacDonald. Preparation of this report was led by the following individuals:

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The WAR was prepared in support of compliance with the NJPDES Public Complex Stormwater General Permit (Public Complex Permit) authorization issued to RCNJ under Permit No. NJG0154661 and Program Interest No. 224335.

Preparation of this report was fully funded by RCNJ. No outside grants, loans, cost-sharing agreements, or other external funding sources were utilized for development of the WAR.

Consistent with the requirements of the Public Complex Permit, periodic coordination and information sharing occurred with Mahwah Township during development of the WIP, including discussions regarding stormwater management, watershed conditions, and permit compliance obligations. However, RCNJ and Mahwah Township developed their respective watershed planning efforts independently, and no shared funding, cost participation, or financial assistance was provided by either entity.

Regional Collaboration

Throughout development of the WIP, RCNJ coordinated periodically with Mahwah Township regarding shared stormwater-management interests and public outreach efforts. Coordination included participation in and discussion of public information sessions, watershed conditions, permit requirements, and other topics relevant to development of the WIP.

While these discussions provided valuable opportunities for information sharing, RCNJ has elected to develop and implement a campus-specific WIP tailored to the unique characteristics of RCNJ's stormwater system, water-quality priorities, infrastructure, and operational needs. RCNJ believes it has the personnel, technical resources, institutional knowledge, and financial framework necessary to successfully implement and maintain an independent WIP program.

At this time, no formal regional partnership, joint implementation agreement, shared funding mechanism, or cost-sharing arrangement has been established between RCNJ and Mahwah Township. However, future opportunities for regional collaboration remain possible should mutually beneficial projects or watershed initiatives be identified. Until such opportunities arise, RCNJ will continue to advance its WIP as an independent NJPDES permittee while maintaining open communication with neighboring stakeholders and municipal partners.

Executive Summary

This Watershed Assessment Report (WAR) represents Phase II of the Watershed Improvement Plan (WIP) being developed by RCNJ in accordance with the requirements of the NJPDES Public Complex Stormwater General Permit. The purpose of the WAR is to evaluate watershed conditions within RCNJ's jurisdiction, identify water quality and flooding concerns, review applicable watershed planning efforts, and develop potential watershed improvement projects to support long-term watershed health.

The WAR builds upon the completed Phase I Watershed Inventory Report (WIR), which documented stormwater infrastructure, receiving waters, HUC-14 subwatersheds, applicable Total Maximum Daily Loads (TMDLs), water quality impairments, impervious cover, and localized flooding concerns. The Phase I effort identified two HUC-14 subwatersheds associated with the campus, applicable Total Phosphorus (TP) and Fecal Coliform TMDLs, Dissolved Oxygen and Temperature impairments, and several recurring flooding locations.

Existing watershed plans, restoration efforts, TMDLs, stormwater management activities, pollutant sources, and flooding concerns were evaluated as part of Phase II. The assessment confirmed that stormwater runoff, nutrient loading, bacteria sources, localized flooding, and developed land uses represent the primary watershed concerns affecting the campus and downstream receiving waters.

The assessment identified seven potential watershed improvement projects intended to address phosphorus loading, fecal coliform sources, stormwater quality, and localized flooding concerns. Proposed projects include source-control initiatives, public education programs, stormwater maintenance activities, and targeted drainage improvements. The projects are generally low- to moderate-cost measures that may be implemented through existing operational programs, maintenance activities, and future capital planning efforts.

Public participation was incorporated throughout development of the WIP through stakeholder meetings, coordination with Mahwah Township, public information sessions, and campus outreach activities. Additional opportunities for public involvement will remain available during review of this draft WAR and development of the Phase III WIP.

Implementation of the projects identified in this WAR is expected to improve stormwater management, reduce pollutant loading, mitigate localized flooding, support regulatory compliance, and advance watershed restoration goals within the Ramapo River watershed. The next step in the WIP process will be development of the Phase III WIP, during which final project selection, prioritization, funding strategies, and implementation planning will be completed.

1 General Permittee Information

1.1 Permittee Location

RCNJ is an NJPDES Public Complex permittee located at 505 Ramapo Valley Road in Mahwah Township, Bergen County, New Jersey. RCNJ operates under NJPDES Public Complex Stormwater General Permit Authorization No. NJG0154661 and Program Interest Identification Number 224335. The campus is situated within the Ramapo River watershed and discharges stormwater to receiving waters that are shared with other regulated entities, including Mahwah Township and Ramsey Borough.

RCNJ consists of approximately 284 acres of developed and undeveloped property including academic buildings, residence halls, parking areas, athletic facilities, forested areas, wetlands, and surface waters. Stormwater generated throughout the campus is conveyed through a municipally regulated separate storm sewer system (MS4) consisting of storm drain inlets, pipes, culverts, detention basins, manufactured treatment devices, and discharge points.

1.2 Overview of Watershed Inventory Report Findings (Phase I)

Phase I of the WIP, the Watershed Inventory Report (WIR), was completed to document stormwater infrastructure, receiving waters, drainage areas, pollutant impairments, TMDLs, impervious cover, and localized flooding concerns associated with the RCNJ's separate storm sewer system.

The Phase I effort identified:

- 27 stormwater outfalls owned and operated by RCNJ;
- 419 storm drain inlets;
- One stormwater interconnection with Mahwah Township;
- Approximately 26 percent campus-wide impervious cover;
- Five receiving waterbodies; and
- Two HUC-14 subwatersheds within or bordering the campus.

1.2.1 HUC-14 Subwatersheds

RCNJ is located within two HUC-14 subwatersheds of the Ramapo River watershed. These subwatersheds receive stormwater runoff from the campus and serve as the primary units of analysis for this WAR. Understanding the characteristics and regulatory drivers associated with each subwatershed provides the basis for evaluating water-quality conditions, flooding concerns, pollutant sources, and potential watershed improvement projects. The HUC-14 subwatersheds located within or bordering RCNJ property are summarized in Table 1 below.

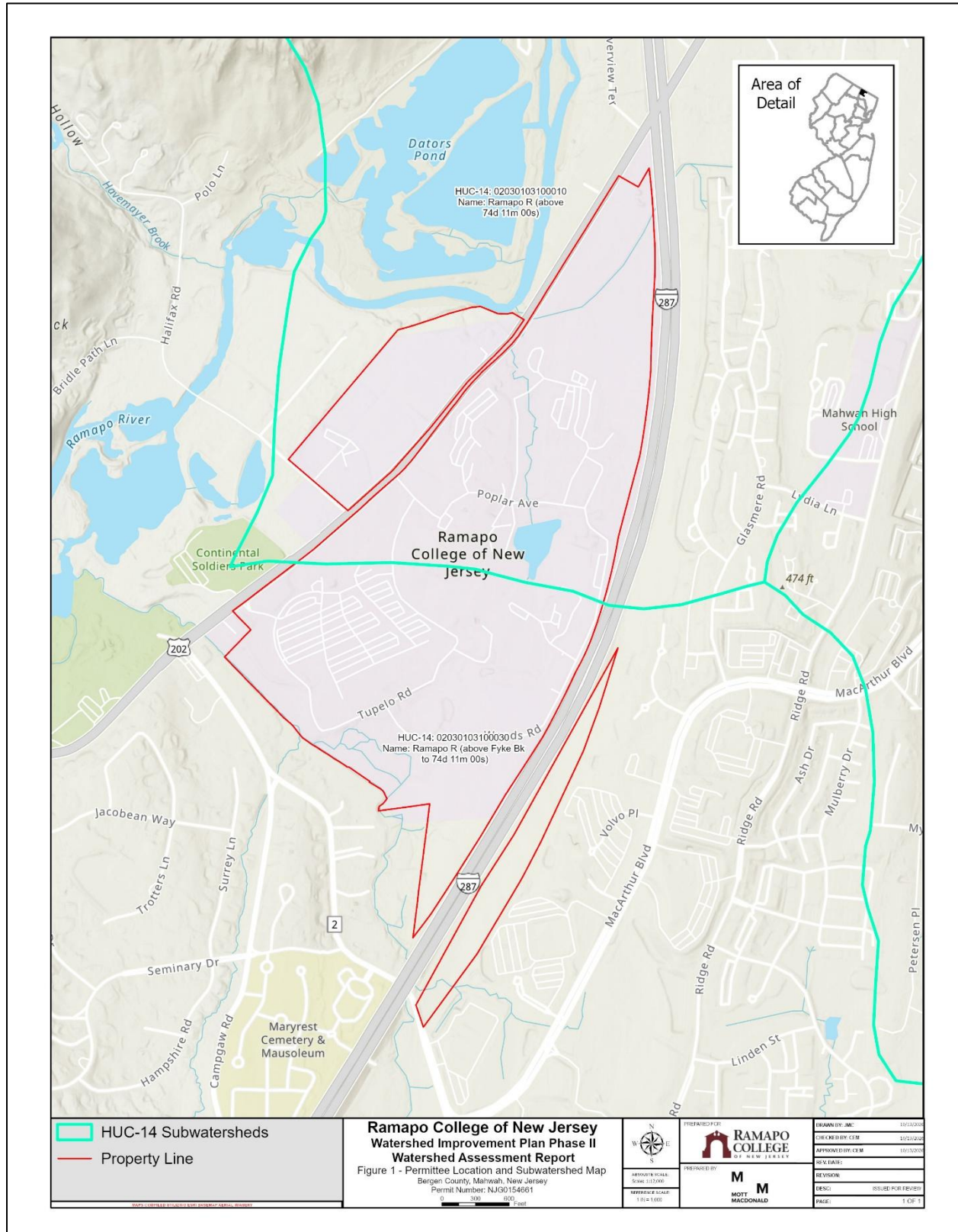
Table 1. HUC-14 Subwatersheds Within or Bordering RCNJ

HUC-14	Subwatershed Name
02030103100010	Ramapo River (Above 74d 11m 00s)
02030103100030	Ramapo River (Above Fyke Brook to 74d 11m 00s)

Both subwatersheds ultimately drain to the Ramapo River system and are therefore important components of RCNJ's watershed-improvement effort.

See [Figure 1](#) (next page) for a map of RCNJ and the subwatersheds it is located within.

Figure 1. Watershed and Subwatershed Location Map



1.2.2 TMDLs and Water Quality Impairments

Applicable TMDLs and water quality impairments within each HUC-14 are summarized in Table 2 below.

Table 2. Applicable TMDLs and Water Quality Impairments by HUC-14 Subwatershed

HUC-14	Applicable TMDLs	Water Quality Impairments
02030103100010	Total Phosphorus; Fecal Coliform	Dissolved Oxygen
02030103100030	Total Phosphorus; Fecal Coliform	Temperature

The Total Phosphorus (TP) and fecal coliform TMDLs are the primary pollutant-reduction drivers considered during development of the WAR and subsequent WIP.

1.2.3 Areas Prone to Flooding

The Phase I WIR and subsequent Phase II planning sessions identified several areas that experience recurring flooding during moderate to significant precipitation events. These locations include:

- Woods Road along the eastern campus boundary;
- College Park Apartments (Mulberry Building area);
- Student Center loading dock and trench drain system;
- Intersection of Poplar Avenue and Sequoia Avenue; and
- Portions of the athletic field complex.

Flooding at these locations ranges from nuisance ponding and roadway overtopping to conditions that have resulted in temporary building impacts and resident relocation during significant storm events.

1.2.4 Overburdened Communities

NJDEP Overburdened Community mapping was reviewed using the current NJ Environmental Justice Mapping, Assessment, and Protection (EJMAP) dataset. No NJDEP-designated overburdened communities were identified within the Ramapo College of New Jersey (RCNJ) property boundary. However, an NJDEP-designated overburdened community block group (Block Group Identifier 9850R) is located immediately adjacent to the campus within Mahwah Township.

1.2.5 Impervious Coverage

Impervious cover was evaluated as part of the Phase I WIR using Geographic Information System (GIS) analysis and campus stormwater mapping. Table 3 provides the findings.

Table 3. Percent Impervious Cover per Subwatershed

Subwatershed Common Name	HUC-14	Impervious Cover
Ramapo R (above 74d 11m 00s)	02030103100010	23.1%
Ramapo R (above Fyke Bk to 74d 11m 00s)	02030103100030	29.5%

Overall campus impervious cover was calculated to be approximately 26 percent. Increased impervious cover contributes to higher runoff volumes, increased pollutant transport, localized flooding, and degraded stream conditions.

1.2.6 Subwatershed Prioritization

Both HUC-14 subwatersheds are considered priorities for future watershed-improvement efforts due to the presence of applicable TMDLs, water quality impairments, and documented flooding concerns. HUC-14 02030103100030 contains the highest impervious cover on campus and includes several developed areas affected by localized flooding. HUC-14 02030103100010 contains documented flooding concerns and includes the dissolved oxygen impairment identified during the Phase I WIR. Because both subwatersheds contribute to TP and fecal coliform loading within the Ramapo River watershed, future watershed improvement projects have been developed to address conditions within each subwatershed.

1.2.7 Community Engagement

Community engagement activities conducted as part of the WIP included stakeholder coordination, campus outreach, and public information sessions. Stakeholders include students, faculty, staff, visitors, Facilities Management, Environmental Health and Safety (EHS), Public Safety, and the Township of Mahwah Department of Public Works (DPW).

RCNJ conducted Public Information Sessions on December 12, 2025, and September 21, 2026, to provide information regarding stormwater management, watershed conditions, and the WIP process. No substantive public comments were received during the session; however, members of the public were encouraged to submit comments during the formal review period associated with this WAR. Documentation associated with public information sessions conducted during development of the WIP is provided in **Attachment A – Public Information Session Documentation**.

RCNJ also conducted a regional coordination meeting with the Township of Mahwah DPW on January 20, 2026, to discuss campus characteristics, regulatory requirements, Phase I WIR deliverables, actions taken by RCNJ to date, next steps, and the overall WIP process. Meeting minutes for the coordination meeting with Mahwah Township are included in **Attachment B – Regional Coordination Documentation**.

RCNJ will continue stakeholder outreach through public information sessions, environmental awareness events, RCNJ's stormwater webpage, and direct engagement with campus personnel throughout development and implementation of the WIP.

Additional information regarding stakeholder participation and public involvement is provided in Section 7.

2 General Assessment of Subwatersheds within the Permittee's Jurisdiction

2.1 Geology and Geomorphology

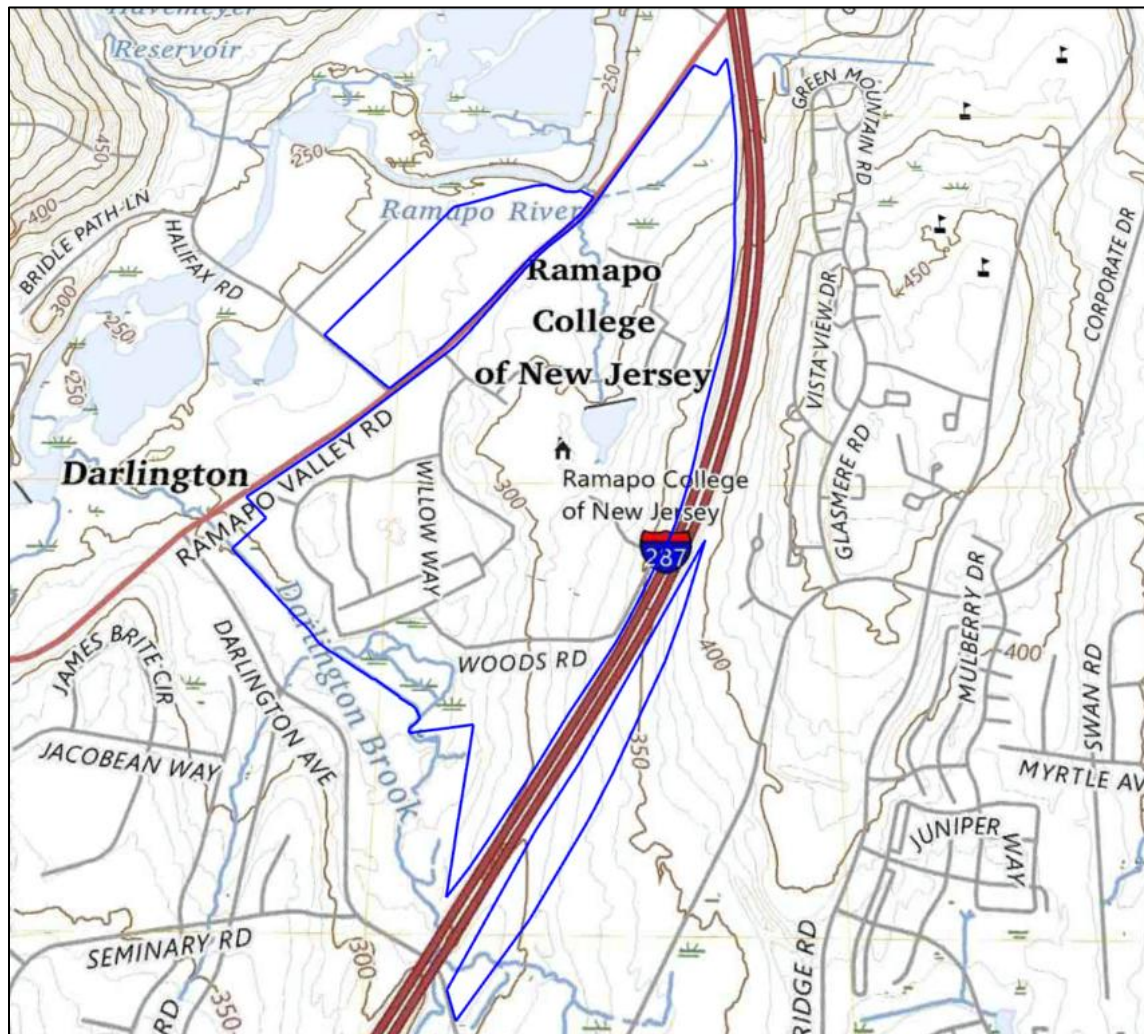
RCNJ is located within the Ramapo River Basin of northeastern Bergen County, New Jersey, near the transition between the Piedmont and Highlands physiographic provinces. The campus contains a mix of developed land, forested areas, surface waters, and wetlands that collectively drain toward the Ramapo River and its tributaries. Topography generally slopes from the northeastern portion of the campus toward lower-elevation areas along Darlington Brook and associated drainage corridors. Review of the most recent USGS Ramsey Quadrangle mapping indicates that elevations generally decrease from approximately 370 feet above mean sea level near the eastern campus boundary adjacent to Route 287 and Woods Road to approximately 250 feet near Darlington Brook and the western portions of campus. See [Figure 2](#) (next page) showing USGS topography for RCNJ.

A relatively broad topographic bench occurs across the central portion of the campus, including A-Wing through H-Wing, the Student Center, the Anisfield School of Business, Padovano Commons, and Scarlet Oak (Kameron) Pond, where elevations generally range from approximately 290 to 310 feet above mean sea level. A distinct topographic valley is visible along the tributary system that drains toward Scarlet Oak Pond, reflecting the natural drainage network that conveys runoff toward downstream receiving waters. These topographic conditions influence runoff generation, stormwater routing, and several localized flooding areas identified elsewhere in this WAR.

NJDEP surficial aquifer mapping indicates that the campus is underlain primarily by a combination of glacial till deposits (Aquifer Unit 110) and sand and gravel aquifer materials (Aquifer Unit 129). The mapped sand and gravel deposits represent the more permeable surficial materials present on campus and provide opportunities for infiltration and groundwater recharge, while the till deposits generally exhibit lower permeability and may contribute to increased surface runoff during precipitation events. These surficial materials, together with the campus topography and extent of developed land, influence stormwater runoff characteristics and watershed response to precipitation.

Historic campus development, including construction of buildings, roadways, parking areas, athletic facilities, and stormwater infrastructure, has altered natural drainage patterns and increased impervious cover. As a result, stormwater management throughout the campus depends on both engineered conveyance systems and remaining natural features that provide infiltration, temporary storage, erosion reduction, and ecological benefits.

Figure 2. USGS Topographic Map – Ramsey Quadrangle, 2023



2.2 Climate

RCNJ is located within a humid continental climate characterized by four distinct seasons and precipitation distributed throughout the year. Rainfall, snowfall, and mixed winter weather contribute to watershed hydrology and influence stormwater runoff, erosion, and pollutant transport throughout the Ramapo River watershed.

Review of recent NOAA climate records for Bergen County indicates relatively stable long-term average temperatures generally in the mid-50°F range during the 2021-2025 period. Monthly precipitation totals during the same period exhibited noticeable variability, generally ranging from approximately 240 to 262 millimeters per month. These fluctuations reflect the variable precipitation patterns typical of northeastern New Jersey and influence runoff generation, stormwater system performance, and localized flooding potential throughout the campus.

Seasonal precipitation and periodic high-intensity rainfall events have contributed to localized flooding concerns documented throughout the campus. Long-term climate projections for the northeastern United States indicate an increasing likelihood of more frequent and intense precipitation events, reinforcing the importance of maintaining stormwater infrastructure and implementing projects that improve resiliency while reducing water quality and flooding impacts.

2.3 Hydrologic Conditions

RCNJ drains to two HUC-14 subwatersheds within the Ramapo River watershed. Stormwater runoff generated throughout the campus is conveyed through a combination of natural drainage features and constructed stormwater infrastructure, including inlets, piping, culverts, outfalls, and BMPs, before discharging to downstream receiving waters.

Runoff generation is strongly influenced by developed land uses and associated impervious surfaces, which increase runoff volume and velocity during precipitation events. Conversely, forested and wetland areas provide opportunities for infiltration, temporary storage, and attenuation of stormwater before discharge.

Groundwater recharge also represents an important hydrologic function within the campus. Review of the NJDEP Groundwater Recharge Areas mapping indicates that portions of the campus are located within high-value recharge areas classified as Groundwater Recharge Rank A, where estimated annual recharge rates range from approximately 16 to 23 inches per year. Additional areas are classified as moderate recharge zones (Rank B) with estimated recharge rates ranging from approximately 11 to 15 inches per year. Conversely, wetlands, open water features, and hydric soil areas are identified as low- or no-recharge areas. Preservation of infiltration opportunities within the higher recharge portions of the campus supports groundwater replenishment, reduces runoff volumes, and complements stormwater management objectives identified throughout this WAR.

Localized flooding has been documented at several campus locations, including Woods Road, the College Park Apartments area, the Student Center loading dock, the Poplar and Sequoia Road intersection, and portions of the athletic field complex. These conditions are generally associated with concentrated runoff, topographic low points, and hydraulic limitations within existing drainage infrastructure. Flood-prone areas are evaluated further in the subwatershed-specific assessments presented in Section 3.

2.4 Existing Stormwater Improvement Project(s)

2.4.1 Overview

RCNJ has implemented several stormwater management and drainage improvement projects to address localized flooding, improve stormwater conveyance, reduce erosion potential, and support compliance with NJPDES Public Complex Stormwater General Permit requirements. These projects complement RCNJ's ongoing stormwater inspection, maintenance, mapping, and operational programs and provide a foundation for future watershed improvement efforts identified in this WAR.

Many of the completed projects were developed in response to recurring flooding concerns, deterioration of stormwater infrastructure, or observations made during routine inspection and maintenance activities. The completed improvements have enhanced stormwater system performance, reduced the risk of erosion and sediment transport, and improved resiliency of critical campus infrastructure during storm events. Table 4 below provides a summary.

Table 4. Existing Stormwater Improvement Projects and Programs

Project / Program	Purpose	Status
Woods Road Drainage Improvements	Improve drainage and reduce localized flooding along the eastern campus boundary	Completed
Culvert C11 Replacement and Drainage Stabilization	Restore conveyance capacity, reduce erosion, and improve stormwater management	Completed
Student Center Loading Dock Drainage Improvements	Restore trench drain functionality and reduce localized flooding	Completed
Annual Storm Drain Inlet Inspection and Cleaning Program	Maintain stormwater conveyance and reduce pollutant accumulation	Ongoing
Outfall Inspection and Maintenance Program	Identify maintenance needs, erosion concerns, and drainage deficiencies	Ongoing
Stormwater BMP and Basin Maintenance	Maintain treatment capacity and stormwater management performance	Ongoing
GIS Stormwater Mapping and Asset Management	Improve infrastructure inventory and stormwater system management	Ongoing
Employee Training and Public Education Programs	Support permit compliance and pollution prevention efforts	Ongoing

2.4.2 Project Specific Descriptions

2.4.2.1 Woods Road Drainage Improvements

Drainage improvements have been implemented within the Woods Road corridor to address recurring flooding along the eastern campus boundary. This area receives runoff from both on-campus drainage systems and several off-campus drainage features associated with the adjacent Route 287 corridor. The completed work improved stormwater conveyance and reduced the impacts of stormwater ponding and flooding that historically affected the roadway during significant rainfall events. Additional information regarding specific project components is being compiled by RCNJ and may support future evaluation of watershed improvement opportunities within this corridor.

2.4.2.2 Culvert C11 Replacement and Drainage Stabilization

A significant stormwater infrastructure improvement completed by RCNJ involved the replacement and stabilization of Culvert C11. The project included removal and replacement of the existing culvert, installation of a new pipe and flared end sections, placement of riprap at both the upstream and downstream ends of the crossing, and regrading of surrounding drainage areas to improve runoff capture and conveyance. Additional stabilization measures were implemented to reduce erosion potential and protect the long-term integrity of the drainage system.

The completed project restored hydraulic capacity, improved stormwater conveyance, reduced erosion and sediment transport, and enhanced resiliency of the surrounding infrastructure. The project represents a successful example of proactive stormwater asset management and demonstrates RCNJ's commitment to maintaining critical drainage infrastructure before more significant failures occur.

2.4.2.3 Student Center Loading Dock Drainage Improvements

The Student Center loading dock historically experienced localized flooding associated with overtopping of a trench drain system serving the area. Investigation determined that accumulated sediment, organic material, and debris within the trench drain and downstream stormwater conveyance piping had reduced hydraulic capacity and contributed to flooding during larger storm events.

To address the issue, a contractor performed mechanical jetting of the trench drain and associated stormwater piping using high-pressure water to remove accumulated debris and restore system functionality. The maintenance activity successfully restored hydraulic capacity, improved drainage performance, and reduced flooding at the loading dock. The project illustrates the importance of routine maintenance and inspection activities as a cost-effective means of improving stormwater system performance.

2.4.2.4 Ongoing Stormwater Management Programs

In addition to these completed projects, RCNJ maintains a comprehensive stormwater management program that includes annual inlet inspections and cleaning, outfall inspections, BMP maintenance, stormwater infrastructure mapping, employee training, public education and events, and routine maintenance of drainage facilities. These ongoing efforts help reduce pollutant loading, maintain hydraulic capacity, improve regulatory compliance, and support long-term watershed protection objectives.

2.4.2.5 Summary of Existing Stormwater Improvement Projects

Collectively, these completed projects and ongoing management programs demonstrate that RCNJ has already invested substantial resources into improving stormwater management, reducing flooding impacts, and maintaining watershed infrastructure. Future watershed improvement projects identified in Section 4 build upon these accomplishments and seek to further address the water quality and flooding concerns documented throughout this WAR.

2.5 Potential Sources of Pollution

Stormwater runoff generated throughout the RCNJ campus has the potential to transport pollutants to downstream receiving waters within the Ramapo River watershed. Pollutant sources within the two HUC-14 subwatersheds include both point and nonpoint sources; however, nonpoint source stormwater

runoff is considered the primary mechanism through which pollutants are conveyed from the campus environment to local surface waters. Understanding the potential pollutant sources present within the watershed is essential for identifying appropriate watershed-improvement projects and developing strategies to address applicable TMDLs, water-quality impairments, and localized flooding concerns.

2.5.1 Point Sources

No significant point-source discharges owned or operated by RCNJ were identified during development of the WIR. Stormwater discharges from the campus are regulated under RCNJ's NJPDES Public Complex Stormwater General Permit authorization and are conveyed through RCNJ's MS4 to downstream receiving waters. Potential pollutant discharges associated with illicit connections, unauthorized discharges, spills, or sanitary sewer failures are addressed through RCNJ's existing inspection, maintenance, employee training, and spill-response programs.

2.5.2 Non-Point Sources

Nonpoint source pollution associated with stormwater runoff represents the most significant contributor of pollutants within RCNJ's subwatersheds. Pollutants may accumulate on impervious surfaces, landscaped areas, roadways, parking lots, athletic facilities, and other developed portions of the campus before being transported during precipitation events.

2.5.2.1 Total Phosphorus

Potential phosphorus sources on campus include fertilizer application associated with landscape maintenance, decaying vegetation, leaf litter accumulation, organically enriched sediments, wildlife waste, pet waste, and other nutrient-containing materials. During storm events, phosphorus may be transported in both dissolved and particulate forms through the campus stormwater conveyance system to downstream receiving waters. Excess phosphorus loading can contribute to algae growth, reduced dissolved oxygen concentrations, and degradation of aquatic habitat.

2.5.2.2 Fecal Coliform

Potential sources of fecal coliform within the campus environment include wildlife, particularly waterfowl and Canada geese, pet waste, potential sanitary sewer leaks, illicit discharges, and other sources of animal waste. Stormwater runoff can mobilize bacteria from landscaped areas, lawns, parking lots, sidewalks, and other developed surfaces and transport these pollutants to receiving waters. Elevated fecal coliform concentrations may adversely affect recreational uses and indicate the potential presence of pathogens harmful to human health.

2.5.2.3 Dissolved Oxygen

The dissolved oxygen impairment identified within HUC-14 02030103100010 is influenced by a variety of watershed conditions. Excess nutrient loading, accumulation of organic material, elevated biological activity, reduced streamflow, and warming water temperatures can contribute to reduced dissolved oxygen levels. Management practices that reduce phosphorus loading and improve overall water quality may indirectly benefit dissolved oxygen conditions within the watershed.

2.5.2.4 *Temperature*

The temperature impairment identified within HUC-14 02030103100030 may be influenced by stormwater runoff from impervious surfaces, limited shading along stream corridors, elevated ambient temperatures, and altered hydrology associated with developed land uses. Runoff from parking lots, roadways, and rooftops may result in increased surface-water temperatures during warmer periods of the year.

2.5.2.5 *Other Regulated Dischargers*

RCNJ shares the Ramapo River watershed with several other regulated entities, including Mahwah Township, Ramsey Borough, and other MS4 permittees that discharge within the same HUC-14 subwatersheds. Pollutants observed within the watershed may therefore originate from sources both within and outside RCNJ property boundaries. While RCNJ's WIP focuses on actions within its jurisdiction, regional watershed conditions and upstream pollutant inputs remain important considerations during project evaluation and implementation.

2.5.3 *Summary*

Based on available watershed information, the primary pollutants of concern for RCNJ are phosphorus and fecal coliform, which are the parameters associated with applicable TMDLs in both campus subwatersheds. Secondary concerns include factors contributing to dissolved oxygen and temperature impairments, as well as localized stormwater flooding associated with impervious cover and drainage-system limitations. The potential improvement projects evaluated later in this report are intended to target these pollutant sources and improve overall watershed conditions within RCNJ's jurisdiction.

2.6 *Summary of Existing Watershed-Based Plan(s)*

Development of this WAR included review of existing watershed planning documents, watershed restoration initiatives, and TMDL implementation efforts applicable to the Ramapo River subwatersheds. These planning efforts were reviewed to identify existing watershed restoration goals, pollutant reduction strategies, implementation priorities, and opportunities for coordination with future watershed improvement projects proposed by RCNJ.

2.6.1 *WMA 3 Restoration Master Plan*

The WMA 3 Restoration Master Plan: Recommendations Plan & Guidebook (Grant No. RP01-107) is a watershed-based planning effort identified through the New Jersey Department of Environmental Protection (NJDEP) Watershed Restoration Application. The plan was prepared by the Hudson Essex Passaic Soil Conservation District, the Ramapo River Interstate Partnership, and TRC Omni Environmental Corporation in December 2003 and was developed to identify, prioritize, and implement restoration projects that address nonpoint source pollution and water quality impairments within WMA 3.

2.6.1.1 *Subwatersheds and Waterbodies Included*

The WMA 3 Restoration Master Plan encompasses the four principal watersheds that comprise WMA 3:

- Ramapo River Basin
- Wanaque River Basin

- Pequannock River Basin
- Pompton River Basin

These waterbodies collectively form the headwaters of the Passaic River system. The Ramapo River Basin, within which RCNJ is located, comprises approximately 20 percent of WMA 3 and includes portions of Bergen and Passaic Counties, including Mahwah Township and Ramsey Borough.

2.6.1.2 Objectives and Goals

The primary objectives of the Restoration Master Plan were to:

- Improve water quality throughout WMA 3;
- Reduce nonpoint source pollution;
- Identify and prioritize restoration opportunities;
- Restore and protect riparian corridors;
- Stabilize eroding streambanks;
- Improve stormwater management practices;
- Enhance aquatic and riparian habitat; and
- Promote watershed stewardship and public involvement.

The plan documented impairments associated with stormwater runoff, nutrient enrichment, degraded riparian buffers, erosion, channel modification, increasing impervious cover, and wildlife-related impacts, all of which remain relevant considerations within the Ramapo River watershed.

2.6.1.3 Progress Toward Watershed Restoration Goals

The Restoration Master Plan established a framework for identifying restoration priorities and implementation projects throughout WMA 3. The plan included watershed inventories, stream visual assessments, restoration prioritization analyses, management recommendations, implementation strategies, and identification of potential funding sources. Several restoration opportunities and implementation projects were identified throughout the Ramapo, Wanaque, Pequannock, and Pompton River basins, including riparian restoration, shoreline stabilization, stormwater BMP implementation, stormwater retrofit projects, streambank stabilization, waterfowl management initiatives, and public education programs.

2.6.1.4 Stakeholder Participation

Development of the WMA 3 Restoration Master Plan incorporated participation from municipalities, watershed stakeholders, soil conservation districts, watershed organizations, technical advisory committees (TACs), public advisory committees (PACs), volunteers, educational institutions, and community groups throughout WMA 3. Volunteer stream assessments, watershed inventories, GIS analyses, and technical evaluations were utilized to identify and prioritize watershed-restoration opportunities.

2.6.1.5 Relevance to RCNJ

The plan identifies several watershed concerns and restoration opportunities directly relevant to the Ramapo River Basin, including stormwater runoff, nutrient enrichment, degraded riparian buffers, erosion, waterfowl impacts, and the need for improved stormwater management practices.

Recommended measures include stormwater BMP implementation, riparian restoration, waterfowl management, stormwater maintenance, public education, employee training, infiltration practices, stormwater retrofits, and shoreline restoration. These recommendations are generally consistent with the watershed improvement projects evaluated in Section 4 of this WAR.

2.6.2 Total Maximum Daily Load Planning Efforts

In addition to the WMA 3 Restoration Master Plan, several NJDEP-approved TMDL reports apply to the HUC-14 subwatersheds associated with RCNJ. These TMDLs establish pollutant reduction goals, identify pollutant sources, and provide implementation strategies intended to restore impaired waters within the Ramapo River watershed and the broader Passaic River Basin. The following TMDLs were reviewed during development of this WAR:

- *Total Maximum Daily Loads for Fecal Coliform to Address 32 Streams in the Northeast Water Region;*
- *Total Maximum Daily Load Report to Address Phosphorus Impairment in Pompton Lake and Ramapo River in the Northeast Water Region; and*
- *Total Maximum Daily Load Report for the Non-Tidal Passaic River Basin Addressing Phosphorus Impairments.*

The fecal coliform and phosphorus TMDLs establish pollutant reduction goals, identify primary pollutant sources, and provide watershed-scale implementation strategies for restoring impaired waters within the Ramapo River watershed and broader Passaic River Basin. These TMDLs serve as the primary regulatory framework supporting development of the watershed improvement projects evaluated in this WAR. Detailed discussion of the applicable TMDLs, reduction targets, and implementation requirements is provided in the subwatershed-specific assessments presented in Section 3.

The Phase I WIR identified TP and Fecal Coliform TMDLs as applicable to both HUC-14 subwatersheds associated with RCNJ. Additional water quality impairments include Dissolved Oxygen within HUC-14 02030103100010 and Temperature within HUC-14 02030103100030. Collectively, these TMDLs and impairments form the primary regulatory framework used to evaluate watershed conditions, identify pollutant sources, develop watershed improvement projects, and prioritize future implementation activities throughout this WAR.

2.6.3 Existing RCNJ Stormwater Planning and Management Efforts

RCNJ maintains an active stormwater management program that supports compliance with the NJPDES Public Complex Stormwater General Permit and protection of water resources within the Ramapo River watershed. Existing stormwater management efforts include stormwater infrastructure mapping, annual inspections, illicit discharge detection and elimination activities, infrastructure maintenance, employee training, public education, and implementation of permit-required BMPs.

Completion of the Phase I WIR represented the first phase of the WIP process and established the foundation for development of this WAR. The WIR documented stormwater infrastructure, receiving waters, HUC-14 subwatersheds, water quality impairments, applicable TMDLs, flooding concerns, and impervious cover throughout the campus and was used to identify priority watershed concerns and potential watershed improvement opportunities.

RCNJ has also completed several stormwater improvement projects focused on reducing flooding, improving conveyance, and protecting water quality. Existing projects and programs are summarized in Section 2.4. Collectively, these efforts provide the planning foundation for the watershed improvement projects evaluated in Section 4 and support broader watershed restoration objectives established through the WMA 3 Restoration Master Plan and applicable TMDLs.

3 Subwatershed Specific Assessment

3.1 HUC-14 02030103100010 Subwatershed Assessment: HUC-14 02030103100010: Ramapo River (Above 74d 11m 00s)

3.1.1 TMDL and Impairment Parameter Review

The Phase I WIR identified three applicable pollutant parameters and water quality impairments within HUC-14 02030103100010 consisting of TP, Fecal Coliform, and Dissolved Oxygen. TP and Fecal Coliform are subject to NJDEP-approved TMDLs, while Dissolved Oxygen is identified as an impairment parameter. A summary of the applicable TMDLs, reduction targets, and implementation measures is provided in Table 5. The following sections provide a detailed discussion of each parameter and its relevance to the subwatershed.

Table 5. Summary of Applicable TMDLs and Impairments for HUC-14 02030103100010

Parameter	Status	Applicable TMDL / Assessment	Approval Date	Applicable Reduction Target	Key Implementation Measures
TP	TMDL	TMDL Report to Address Phosphorus Impairment in Pompton Lake and Ramapo River in the Northeast Water Region	Proposed May 7, 2007; Adopted April 24, 2008	76% reduction from sources upstream of the Mahwah monitoring station; 68% overall New Jersey reduction; approximately 80% reduction for applicable developed land uses where practicable	Fertilizer management ordinance, stormwater BMPs, catch basin cleaning, street sweeping, riparian restoration, public education, employee training, wildlife management, and stormwater retrofits
Fecal Coliform	TMDL	TMDLs for Fecal Coliform to Address 32 Streams in the Northeast Water Region	Proposed January 21, 2003; Established March 28, 2003; EPA Approved July 29, 2003; Adopted June 6, 2013	91% WLA reduction and 91% LA reduction for the Ramapo River near Mahwah segment	Illicit discharge elimination, pet waste management, wildlife feeding prohibitions, catch basin cleaning, stormwater system maintenance, public education, employee training, stormwater BMPs, and watershed monitoring
Dissolved Oxygen	Impairment	No applicable TMDL identified	N/A	N/A	Nutrient reduction, stormwater quality improvements, habitat protection, and reduction of organic loading

3.1.1.1 *Parameter #1 – Total Phosphorus*

3.1.1.1.1 *Impairment/TMDL Status*

TP is an applicable TMDL parameter within HUC-14 02030103100010 (Ramapo River [above 74d11m00s]). The applicable TMDL is documented in the TMDL Report to Address Phosphorus Impairment in Pompton Lake and Ramapo River in the Northeast Water Region, which was proposed on May 7, 2007, and adopted on April 24, 2008. The TMDL was developed to address phosphorus impairments within the Ramapo River watershed and Pompton Lake drainage area, including HUC-14 02030103100010 and other associated assessment units within the Ramapo River Basin.

3.1.1.1.2 *TMDL Overview and Required Reductions*

The TMDL establishes phosphorus reduction targets intended to restore designated uses and attain applicable Surface Water Quality Standards (SWQS) within the Ramapo River watershed. The study determined that a 76 percent reduction in total phosphorus loading is required from contributing sources upstream of the Ramapo River monitoring station near Mahwah, while an overall 68 percent reduction in total phosphorus loading is required from sources located within New Jersey. The TMDL further assigns wasteload allocations (WLAs) and load allocations (LAs) to land-use categories throughout the watershed and identifies reductions of approximately 80 percent for developed land-use categories, including residential, commercial, industrial, transportation, and mixed urban/recreational land uses where reductions are practicable.

3.1.1.1.3 *Implementation Strategy*

The TMDL identifies stormwater management as a primary mechanism for achieving phosphorus reductions. Implementation measures include compliance with the NJPDES Municipal Stormwater Regulation Program, adoption of a fertilizer management ordinance, pet waste controls, wildlife feeding prohibitions, street sweeping, catch basin cleaning, employee training, public education, stormwater BMP maintenance, stormwater retrofit projects, nutrient-removal practices, and restoration of riparian buffers. The TMDL notes that additional phosphorus reductions may also be achieved through septic system management, goose management programs, and riparian restoration projects.

3.1.1.1.4 *Potential Stormwater Sources within the Subwatershed*

Potential phosphorus sources within HUC-14 02030103100010 include stormwater runoff from developed and landscaped portions of the campus, fertilizer application associated with turf and landscape maintenance, leaf litter and other organic debris, wildlife waste, pet waste, and phosphorus attached to sediment transported during storm events. The TMDL identifies urban land uses and stormwater runoff as significant contributors to phosphorus loading within the Ramapo River watershed. As a developed college campus containing buildings, parking areas, roads, athletic facilities, and maintained landscapes, RCNJ contains several of the land-use categories identified within the TMDL as potential phosphorus contributors.

3.1.1.2 *Parameter #2 – Fecal Coliform*

3.1.1.2.1 *Impairment/TMDL Status*

Fecal Coliform is an applicable TMDL parameter within HUC-14 02030103100010. The applicable TMDL is documented in the TMDLs for Fecal Coliform to Address 32 Streams in the Northeast Water Region, which was proposed on January 21, 2003, established on March 28, 2003, approved by United States

Environmental Protection Agency (EPA) Region 2 on July 29, 2003, and adopted on June 6, 2013. The TMDL was developed to address pathogen impairments throughout WMAs 3, 4, 5, and 6, including the Ramapo River near Mahwah monitoring station.

3.1.1.2.2 TMDL Overview and Required Reductions

The applicable impaired waterbody associated with this subwatershed is the Ramapo River near Mahwah (Station 01387500). The TMDL established a 91 percent WLA reduction target for NJPDES-regulated stormwater sources and a corresponding 91 percent LA reduction target for nonpoint sources. These reductions include an incorporated margin of safety and represent the more stringent reduction necessary to attain applicable Surface Water Quality Standards for fecal coliform.

3.1.1.2.3 Implementation Strategy

The fecal coliform TMDL identifies stormwater runoff and nonpoint source pollution as the primary contributors to pathogen loading within the watershed. The TMDL recommends implementation of source-control and stormwater management practices focused on reducing bacteria loading from developed areas. Recommended implementation measures include elimination of illicit sanitary connections, pet waste management programs, wildlife feeding restrictions, catch basin and stormwater system maintenance, public education and outreach, employee training, watershed monitoring, and reduction of stormwater runoff capable of transporting bacteria to receiving waters. The TMDL further recognizes that publicly owned treatment works are not significant contributors to fecal coliform impairment within the watershed and therefore places emphasis on management of stormwater and other nonpoint sources.

3.1.1.2.4 Potential Stormwater Sources within the Subwatershed

Potential fecal coliform sources within HUC-14 02030103100010 include wildlife waste, particularly from waterfowl and Canada geese, pet waste, failing septic systems within the broader watershed, illicit discharges, sanitary infrastructure failures, and stormwater runoff transporting bacteria from developed areas. The applicable fecal coliform TMDL specifically identifies Canada geese observed at RCNJ athletic fields and recreational areas, nearby horse farms, stormwater outfalls, and watershed-wide nonpoint source pollution as potential contributors to bacterial loading within the Ramapo River near Mahwah segment. Implementation of source-control measures and stormwater management practices that reduce the accumulation and transport of bacteria-containing waste may contribute to long-term improvements in water quality within the watershed.

3.1.1.3 Parameter #3 – Dissolved Oxygen

3.1.1.3.1 Impairment/TMDL Status

Dissolved Oxygen is identified as a water quality impairment within HUC-14 02030103100010. Unlike TP and Fecal Coliform, the Phase I WIR did not identify an applicable TMDL associated with dissolved oxygen for this subwatershed. Accordingly, dissolved oxygen is evaluated as an impairment parameter rather than a TMDL parameter.

3.1.1.3.2 Potential Sources and Contributing Conditions

Dissolved oxygen impairments may result from a variety of watershed conditions, including nutrient enrichment, elevated biological oxygen demand, excessive aquatic plant growth, accumulation of decaying organic material, elevated water temperatures, and alterations to stream habitat. Stormwater

runoff can indirectly contribute to reduced dissolved oxygen concentrations by transporting nutrients, organic debris, and sediment to receiving waters. Because phosphorus enrichment is recognized as a contributing factor to excessive biological productivity, implementation of phosphorus reduction measures identified within this WAR may also provide ancillary benefits to dissolved oxygen conditions within the watershed.

3.1.2 Areas prone to flooding

Several areas within HUC-14 02030103100010 have been identified through the Phase I WIR, annual stormwater inspections, and stakeholder coordination as being susceptible to localized flooding and stormwater ponding during heavy rainfall events. These flooding concerns range from nuisance flooding to conditions that have resulted in impacts to campus operations and residential facilities. Information regarding these locations was further refined through coordination with RCNJ's Stormwater Coordination team during development of the WAR. See [Table 6](#) for a summary.

Table 6. Areas Prone to Flooding within HUC-14 02030103100010

Location	Description	Frequency	Operational Impacts	Previous / Planned Improvements
Athletic Field near Parking Area	Localized ponding occurs on the athletic field during significant rainfall events. This area was identified during Phase II planning and was not specifically documented during Phase I.	Heavy rainfall events	Athletic field closure until conditions improve.	Planned drainage improvements include regrading of portions of the athletic field and installation of underdrain infrastructure to improve drainage and reduce localized ponding following storm events. *
College Park Apartments (Mulberry Building)	Low-lying portion of the residential area where runoff flows across pedestrian pathways and may enter residential units.	Heavy rainfall events	Property impacts; temporary resident relocation has occurred during severe events.	Drainage improvements and riprap installation completed; Planned runoff capture and conveyance improvements to improve stormwater management and reduce localized flooding. *
Poplar and Sequoia Road Intersection	Localized roadway flooding is associated with limited inlet capacity within the immediate drainage area.	Heavy rainfall events	Minor roadway ponding; traffic generally remains passable.	No previous improvements; future improvements are being considered through the WIP process.
Woods Road Drainage Corridor ¹	Persistent flooding influenced by runoff from adjacent off-campus drainage systems, including outfalls associated with Route 287.	Heavy rainfall events	Public Safety traffic diversion during severe events.	Previous drainage improvements were completed; additional project information being compiled.

***Note:** These planned improvements are being advanced independently of the WIP process and are not included as proposed WIP projects.

¹ Woods Road is located along the boundary between HUC-14 02030103100010 and HUC-14 02030103100030 and therefore represents a flooding concern that influences both subwatersheds.

Stormwater flooding within this subwatershed is primarily associated with developed portions of the campus where runoff from buildings, parking areas, roads, athletic facilities, and other impervious surfaces accumulates during heavy precipitation. Several of the identified flooding areas occur near existing drainage features that experience hydraulic limitations during larger storm events. These conditions emphasize the need for stormwater quantity management strategies that complement water quality improvement objectives.

The flooding concerns within HUC-14 02030103100010 also provide opportunities for future watershed improvement projects. Potential measures include drainage regrading, additional inlet capacity, stormwater conveyance improvements, infiltration-based practices, stormwater storage enhancements, and green infrastructure approaches that reduce runoff volumes while simultaneously addressing TP and Fecal Coliform loading within the watershed. These opportunities are evaluated further in Section 4 of this report.

3.1.3 Land Cover and Land Use

Land cover within HUC-14 02030103100010 was evaluated using the New Jersey Geographic Information Network (NJGIN) GeoWeb Land Use/Land Cover (2020) dataset. Land cover classifications were grouped into categories consistent with those used in applicable watershed planning documents and phosphorus TMDL evaluations. Existing land cover distribution within the subwatershed is summarized in Table 7 (below) and illustrated on Figure 3. The existing land cover distribution for the RCNJ property is provided in Table 8.

Table 7. Land Use Distribution within HUC-14 02030103100010

Land Use Type	Area (Acres)	Percentage of Total Area
Agriculture	6.72	0.16%
Barren Land	5.71	0.13%
Forest	2,285.00	53.07%
Urban	1,490.03	34.61%
Water	127.20	2.95%
Wetlands	390.80	9.08%
Total	4,305.47	100%

Table 8. Land Use Distribution within the RCNJ property portion of HUC-14 02030103100010

Land Use Type	Area (Acres)	Percentage of Total Area
Forest	46.68	29.27%
Urban	104.43	65.48%
Water	2.63	1.65%
Wetlands	5.75	3.60%
Total	159.49	100%

The full HUC-14 subwatershed is predominantly forested, while the RCNJ property portion is predominantly developed and includes academic buildings, residence halls, athletic facilities, roads,

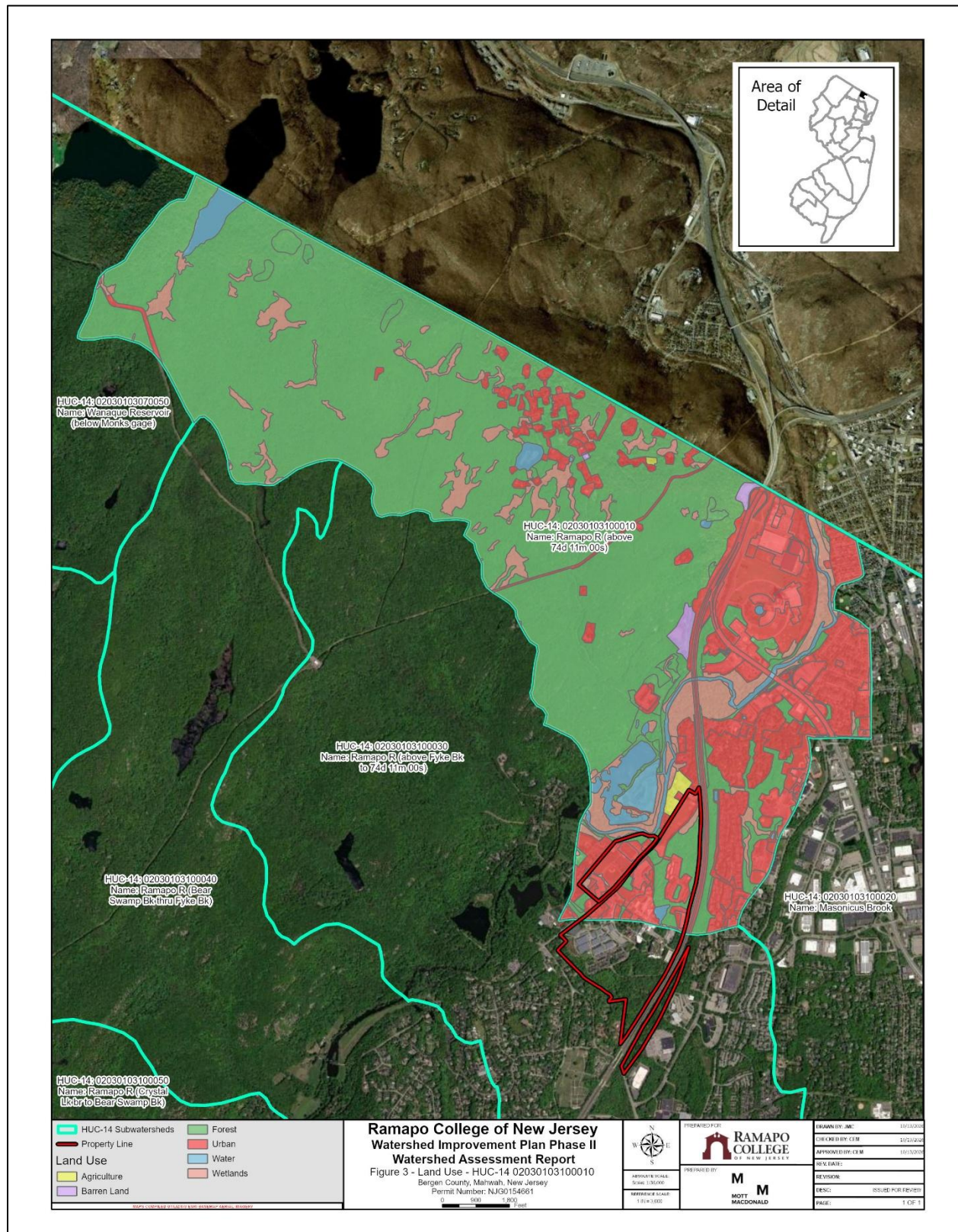
parking areas, and associated campus infrastructure. Forested areas are generally located along the perimeter of the campus and adjacent to the Ramapo River corridor, where they provide important ecological, habitat, and stormwater-management functions. Water features within the subwatershed include a campus pond and associated aquatic resources that ultimately contribute to the broader Ramapo River watershed.

The combination of developed land uses and associated impervious surfaces influences runoff generation, pollutant transport, and localized flooding conditions within the subwatershed. Developed areas increase runoff volume and velocity during precipitation events and contribute to transport of nutrients, bacteria, sediment, and organic material to downstream receiving waters. Conversely, forested and wetland areas provide opportunities for infiltration, pollutant attenuation, stormwater storage, and habitat protection.

Land use changes over the last several decades have primarily been associated with continued campus development and redevelopment activities. While portions of the property remain forested and undeveloped, expansion of buildings, parking areas, pedestrian infrastructure, and recreational facilities has increased the proportion of developed land within the watershed. These changes have contributed to increased impervious cover and reinforce the importance of source-control measures, stormwater maintenance programs, and drainage improvements identified elsewhere in this report.

The land cover distribution documented for HUC-14 02030103100010 supports the watershed concerns identified throughout this assessment, including phosphorus loading, fecal coliform transport, and localized flooding. The proposed watershed improvement projects evaluated in Section 4 were developed to address these developed-land impacts while maintaining the ecological benefits provided by existing forested and natural areas within the subwatershed.

Figure 3. Land Use Map – HUC-14 02030103100010



3.2 Subwatershed Assessment: HUC-14 02030103100030: Ramapo River (Above Fyke Brook to 74d 11m 00s)

3.2.1 TMDL and Impairment Parameter Review

The Phase I WIR identified three applicable pollutant parameters and water quality impairments within HUC-14 02030103100030 consisting of TP, Fecal Coliform, and Temperature (see [Table 9](#)). TP and Fecal Coliform are subject to NJDEP-approved TMDLs, while Temperature is identified as an impairment parameter. The following sections provide a detailed discussion of each parameter and its relevance to the subwatershed.

Table 9. Summary of Applicable TMDLs and Impairments for HUC-14 02030103100030

Parameter	Status	Applicable TMDL / Assessment	Approval Date	Applicable Reduction Target	Key Implementation Measures
TP	TMDL	TMDL Report to Address Phosphorus Impairment in Pompton Lake and Ramapo River in the Northeast Water Region	Proposed May 7, 2007; Adopted April 24, 2008	76% reduction from sources upstream of the Mahwah monitoring station; 68% overall New Jersey reduction; approximately 80% reduction for applicable developed land uses where practicable	Fertilizer management ordinance, stormwater BMPs, street sweeping, catch basin cleaning, riparian restoration, public education, employee training, wildlife management, and stormwater retrofits
Fecal Coliform	TMDL	TMDLs for Fecal Coliform to Address 32 Streams in the Northeast Water Region	Proposed January 21, 2003; Established March 28, 2003; EPA Approved July 29, 2003; Adopted June 6, 2013	91% WLA reduction and 91% LA reduction for the Ramapo River near Mahwah segment	Illicit discharge elimination, pet waste management, wildlife feeding prohibitions, catch basin cleaning, stormwater system maintenance, public education, employee training, stormwater BMPs, and watershed monitoring
Temperature	Impairment	No applicable TMDL identified	N/A	N/A	Thermal mitigation measures, riparian shading, stormwater management, and runoff reduction practices

3.2.1.1 *Parameter #1 – Total Phosphorus*

3.2.1.1.1 *Impairment/TMDL Status*

TP is an applicable TMDL parameter within HUC-14 02030103100030: Ramapo River (above Fyke Brook to 74d11m00s) and is documented in the TMDL Report to Address Phosphorus Impairment in Pompton Lake and Ramapo River in the Northeast Water Region. The TMDL specifically addresses the Ramapo River watershed, including HUC-14 02030103100030, and establishes phosphorus reduction targets necessary to restore aquatic resources and downstream receiving waters.

3.2.1.1.2 *TMDL Overview and Required Reductions*

The applicable TP TMDL for HUC-14 02030103100030 is the same watershed-scale TP TMDL discussed in Section 3.1.1.1. The TMDL establishes a 76 percent reduction in phosphorus loading from sources upstream of the Mahwah monitoring station and an overall 68 percent reduction from New Jersey sources. Approximately 80 percent of reductions are assigned to applicable developed land-use categories where practicable. These watershed-scale reduction goals apply throughout the Ramapo River watershed and provide the regulatory framework for implementation of watershed improvement projects within this subwatershed.

3.2.1.1.3 *Implementation Strategy*

Applicable implementation measures are consistent with those discussed in Section 3.1.1.1 and include stormwater BMP implementation, fertilizer management, catch basin cleaning, street sweeping, riparian restoration, public education, source-control measures, and stormwater retrofits designed to reduce nutrient loading.

3.2.1.1.4 *Potential Stormwater Sources within the Subwatershed*

Potential phosphorus sources within HUC-14 02030103100030 include stormwater runoff from buildings, parking facilities, roadways, pedestrian areas, landscaped grounds, recreational facilities, wildlife waste, pet waste, leaf litter, organic debris, and sediment transport associated with developed land uses. Because this subwatershed contains the highest impervious cover on campus, runoff from developed surfaces represents an important pathway for nutrient transport within the watershed.

3.2.1.2 *Parameter #2 – Fecal Coliform*

3.2.1.2.1 *Impairment/TMDL Status*

Fecal Coliform is an applicable TMDL parameter within HUC-14 02030103100030 and is documented in the TMDLs for Fecal Coliform to Address 32 Streams in the Northeast Water Region. The TMDL establishes fecal coliform reduction targets for impaired surface waters throughout WMAs 3, 4, 5, and 6, including the Ramapo River near Mahwah segment.

3.2.1.2.2 *TMDL Overview and Required Reductions*

The applicable fecal coliform TMDL for HUC-14 02030103100030 is the same watershed-scale TMDL discussed in Section 3.1.1.2. The TMDL establishes a 91 percent WLA reduction target for NJPDES-regulated stormwater sources and a corresponding 91 percent LA reduction target for nonpoint sources associated with the Ramapo River near Mahwah segment. These reduction targets provide the regulatory framework supporting implementation of source-control measures, stormwater

management practices, public education programs, and watershed improvement projects throughout the watershed.

3.2.1.2.3 Implementation Strategy

Applicable implementation measures are consistent with those described in Section 3.1.1.2 and include illicit discharge elimination, pet waste management, wildlife feeding restrictions, catch basin maintenance, public education, employee training, watershed monitoring, and stormwater BMP implementation intended to reduce bacterial loading from stormwater runoff.

3.2.1.2.4 Potential Stormwater Sources within the Subwatershed

Potential fecal coliform sources within HUC-14 02030103100030 include wildlife and waterfowl, pet waste, illicit discharges, stormwater runoff from developed areas, and bacteria transported from lawns, landscaped areas, athletic facilities, parking areas, and other campus land uses. Because this subwatershed contains several of the more intensively developed portions of the campus, management of stormwater runoff and source-control measures may play an important role in reducing bacterial loading to receiving waters.

3.2.1.3 Parameter #3 – Temperature

3.2.1.3.1 Impairment/TMDL Status

Temperature is identified as a water quality impairment within HUC-14 02030103100030. Unlike TP and Fecal Coliform, the Phase I WIR did not identify an applicable TMDL associated with temperature for this subwatershed. Therefore, temperature is evaluated as an impairment parameter rather than a TMDL parameter.

3.2.1.3.2 Potential Sources and Contributing Conditions

Elevated water temperatures may result from a combination of watershed conditions including runoff from impervious surfaces, reduced riparian shading, altered hydrology, shallow stormwater impoundments, and extensive developed land uses. Runoff generated from asphalt surfaces, parking lots, sidewalks, rooftops, and other heat-absorbing surfaces can increase stormwater temperatures and contribute to thermal impacts within receiving waters.

Because HUC-14 02030103100030 contains the highest percentage of impervious cover on campus, stormwater runoff may contribute to elevated temperatures during warmer periods of the year. Future watershed improvement projects that promote infiltration, increase vegetative cover, enhance riparian buffers, reduce runoff volumes, and provide stormwater cooling benefits may contribute to improvements in temperature conditions over time.

3.2.2 Areas prone to flooding

Several flooding and drainage concerns have been identified within or adjacent to HUC-14 02030103100030 through development of the Phase I WIR, annual stormwater inspections, and coordination with Facilities Management personnel. Flooding within this subwatershed primarily affects developed portions of the campus and is generally associated with concentrated runoff from impervious surfaces, localized conveyance limitations, and drainage infrastructure constraints during heavy rainfall events.

While HUC-14 02030103100030 contains fewer documented flooding locations (Table 10) than HUC-14 02030103100010 (Table 6), several areas have experienced operational impacts resulting from stormwater ponding and drainage inefficiencies. These locations remain important considerations during evaluation of future watershed improvement projects because stormwater quantity and water quality are closely linked. Increased runoff volumes can accelerate transport of sediment, nutrients, bacteria, and other pollutants to receiving waters while also contributing to localized flooding.

Table 10. Areas Prone to Flooding within HUC-14 02030103100030

Location	Description	Frequency	Operational Impacts	Previous Improvements
Student Center Loading Dock Trench Drains	Localized flooding occurred at the Student Center loading dock due to reduced hydraulic capacity within the trench drain and downstream stormwater conveyance system.	Heavy rainfall events	Public Safety diverted deliveries away from the area during flooding events.	Mechanical jetting of the trench drain, and stormwater piping restored hydraulic capacity and improved drainage performance.
Woods Road Drainage Corridor ²	Flooding along Woods Road is influenced by runoff from both on-campus and off-campus drainage systems, including outfalls associated with Route 287.	Heavy rainfall events	Public Safety has diverted traffic away from the area during significant storm events.	Previous drainage improvements have been completed; additional project information is being compiled.

The Student Center loading dock represents a notable example of how routine maintenance can significantly improve stormwater system performance. Investigation determined that flooding was primarily caused by accumulated debris, sediment, and organic material within the trench drain and connected storm sewer. Mechanical jetting restored hydraulic capacity and reduced the frequency and severity of localized flooding. This example demonstrates the continued importance of inspection and maintenance activities as a component of RCNJ's overall stormwater management strategy.

Flooding within HUC-14 02030103100030 is also influenced by the relatively high percentage of impervious cover documented during the Phase I WIR. Developed areas, roadways, parking facilities, and buildings generate substantial runoff volumes during precipitation events, increasing demand on localized stormwater infrastructure. As a result, future watershed improvement projects should consider opportunities to reduce runoff volumes, improve conveyance efficiency, and provide additional stormwater storage and treatment where feasible. Such projects may include stormwater retrofits, green infrastructure, infiltration practices, drainage improvements, and conveyance upgrades that simultaneously address flooding concerns and water quality objectives associated with TP, Fecal Coliform, and Temperature impairments.

Based on information currently available, flooding within HUC-14 02030103100030 is generally localized and manageable through maintenance and targeted infrastructure improvements. Continued evaluation

² Woods Road is located along the boundary between HUC-14 02030103100010 and HUC-14 02030103100030 and therefore influences drainage conditions within both subwatersheds

of stormwater system performance and drainage conditions during future storm events will help refine project prioritization as the WIP advances into Phase III implementation.

3.2.3 Land Cover and Land Use

Land cover within HUC-14 02030103100030 was evaluated using the New Jersey Geographic Information Network (NJGIN) GeoWeb Land Use/Land Cover (2020) dataset. Land cover classifications were grouped into categories consistent with those used in applicable watershed planning documents and phosphorus TMDL evaluations. Existing land cover distribution within the subwatershed is summarized in Table 11 (below) and illustrated on Figure 4 (next page). The existing land cover distribution for the RCNJ property is provided in Table 12.

Table 11. Land Use Distribution within HUC-14 02030103100030

Land Use Type	Area (Acres)	Percentage of Total Area
Agriculture	10.98	0.30%
Barren Land	18.51	0.50%
Forest	2,347.74	63.20%
Urban	916.77	24.68%
Water	126.97	3.42%
Wetlands	293.58	7.90%
Total	3,714.55	100%

Table 12. Land Use Distribution within the RCNJ property portion of HUC-14 02030103100030

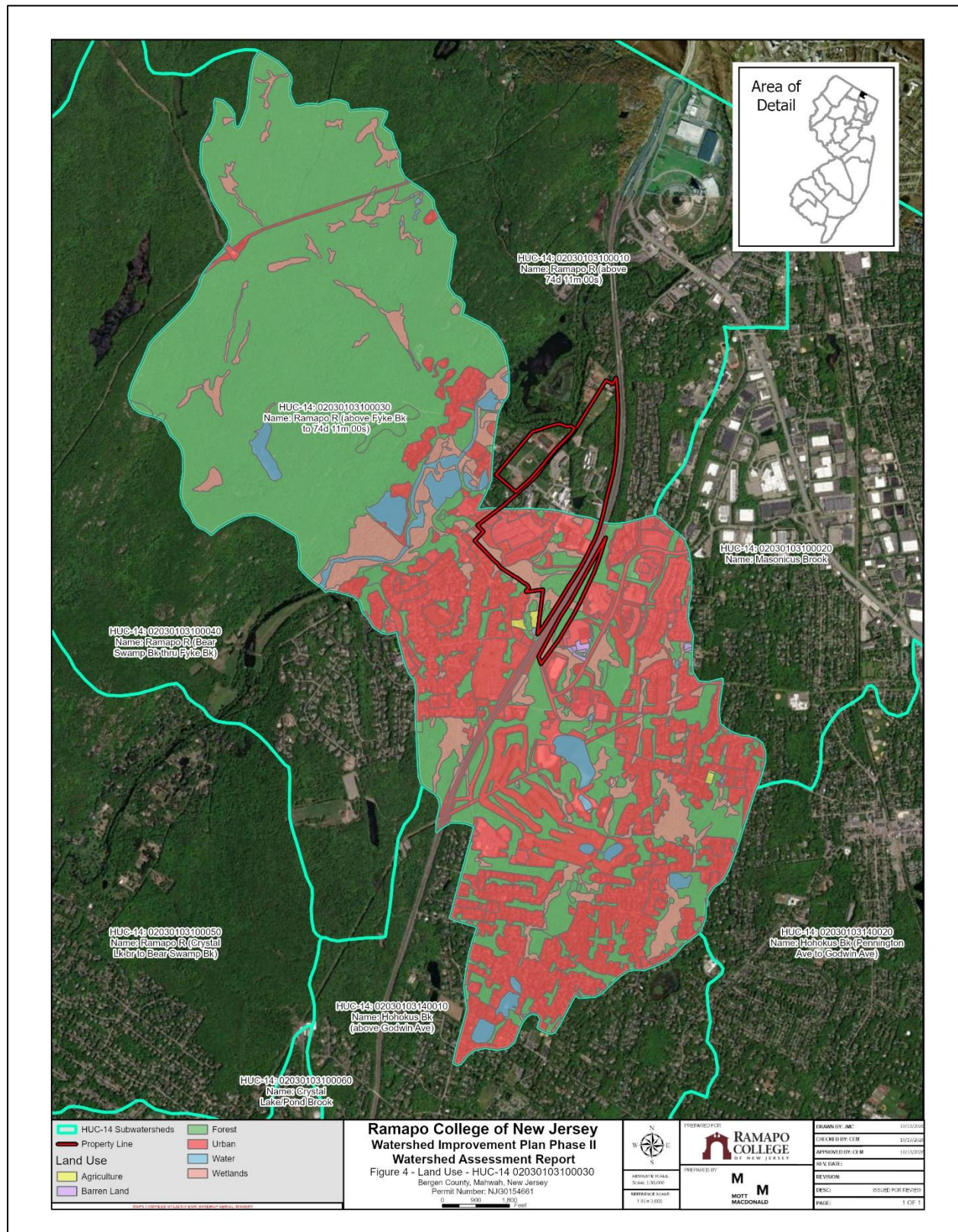
Land Use Type	Area (Acres)	Percentage of Total Area
Agriculture	0.62	0.43%
Forest	40.18	27.68%
Urban	73.42	50.57%
Wetlands	30.95	21.32%
Total	145.17	100%

The full HUC-14 subwatershed is predominantly forested, while the RCNJ property portion of the subwatershed is predominantly developed and includes academic buildings, residence halls, parking areas, roadways, and other institutional infrastructure. Wetlands and land classified as agricultural by the NJGIN land-cover dataset are also mapped within the RCNJ property portion. Although the dataset identifies a limited amount of agricultural land cover on RCNJ property, RCNJ is not aware of any active agricultural uses on campus.

The developed nature of HUC-14 02030103100030 is consistent with the higher impervious cover documented in the Phase I WIR and contributes to increased runoff volumes, pollutant transport, and localized flooding concerns. Stormwater runoff from buildings, parking facilities, roadways, and other impervious surfaces may transport nutrients, bacteria, sediment, and other pollutants to downstream receiving waters during precipitation events. Conversely, forested and wetland areas provide important infiltration, storage, habitat, and pollutant-attenuation functions within the watershed.

Land use changes over recent decades have generally been associated with campus development and expansion of institutional infrastructure. As a result, management of runoff from developed land uses remains an important consideration for implementation of watershed improvement projects intended to address Total Phosphorus, Fecal Coliform, Temperature, and flooding concerns identified within this subwatershed. The proposed watershed improvement projects evaluated in Section 4 were developed to address these watershed conditions while maintaining the benefits provided by existing natural and open-space resources.

Figure 4. Land Use Map – HUC-14 02030103100030



4 Potential Improvement Projects

Potential watershed improvement projects were developed through review of the Phase I WIR, stakeholder coordination meetings, campus field observations, annual stormwater inspection findings, applicable TMDLs, and existing stormwater management practices. Project development was informed by discussions with RCNJ Facilities Management personnel and evaluation of known water quality impairments, TMDL parameters, pollutant sources, and flooding concerns identified throughout the watershed assessment process. Potential projects were also compared against the NJDEP WIP Project Matrix to verify that proposed measures are aligned with pollutant reduction and flood-mitigation strategies recognized by NJDEP for addressing TP, Fecal Coliform, Dissolved Oxygen, Temperature, and stormwater quantity concerns. The WIP Project Matrix was utilized as a screening and validation tool during project development; however, site-specific conditions, feasibility, operational considerations, and stakeholder input were the primary factors used in project selection.

The projects presented below represent potential watershed improvement projects that may be advanced during future phases of watershed planning and implementation. Inclusion of a project within this WAR does not constitute a commitment to construct or implement the project. Final project selection, prioritization, funding, and scheduling will occur during development of the Phase III WIP and subsequent capital planning activities.

Figure 5 (next page) provides a map of the existing and potential stormwater projects discussed in Sections 4.1 through 4.7.

Figure 5 - Existing and Potential Stormwater Projects Map

Ramapo College of New Jersey
Watershed Improvement Plan Phase II
Watershed Assessment Report

Bergen County, Mahwah, New Jersey
 Permit Number: NJ90154661

Legend:

- HUC-14 Subwatershed
- Property Line
- Existing Stormwater Improvement Projects
 - E1: Woods Road Drainage Improvements
 - E2: Culvert C11 Replacement and Drainage Rehabilitation
 - E3: Student Center Loading Dock Drainage Improvements
- Potential Stormwater Projects
 - P1: Pot. Waste Management Action Plan
 - P2: Enhanced Stormwater Management Plan
 - P3: Stormwater Inlet Cleaning Program
 - P4: Enhanced Mobile Foodservice Communication Plan
 - P5: Fats, Oils and Grease Collection Plan

Map Details:

- North Arrow
- Scale: 1" = 100'
- Permit Number: NJ90154661

Project Labels:

- E1, E2, E3, P1, P2, P3, P4

Inset Map:

Area of Detail

4.1 Potential Improvement Project #1 to Address Fecal Coliform and Total Phosphorus for Subwatersheds: HUC-14 02030103100010 and HUC-14 02030103100030: Pet Waste Management Action Plan

4.1.1 Description

The Pet Waste Management Action Plan is a non-structural watershed improvement project intended to reduce bacteria, nutrient, and organic waste loading to the campus stormwater system. The project focuses on improving pet waste collection and disposal practices within residential and high-traffic pedestrian areas where improperly managed pet waste may be transported to stormwater conveyance systems during precipitation events.

The project includes installation of pet waste stations equipped with disposal bags and waste receptacles, along with educational signage placed throughout residential and pedestrian corridors. The stations will be strategically located in areas of higher pedestrian activity and proximity to stormwater infrastructure. Educational materials will reinforce proper disposal practices and increase awareness of the connection between pet waste, stormwater runoff, and downstream water quality.

The project represents a source-control BMP and is consistent with recommendations contained within the applicable fecal coliform TMDL and the NJDEP WIP Project Matrix.

4.1.2 Impairment and/or TMDL Parameters Addressed

4.1.2.1 *Primary Parameters Addressed*

- Fecal Coliform
- Total Phosphorus

4.1.2.2 *Secondary Benefits*

- Reduction of organic waste inputs
- Support for dissolved oxygen improvement through nutrient reduction
- Improved stormwater quality
- Enhanced public awareness of watershed stewardship practices

Improperly managed pet waste has been identified as a potential source of bacteria and nutrient loading within the watershed. The project addresses these concerns through source reduction at the point of generation.

4.1.3 Estimated Load Reduction

The Pet Waste Management Action Plan is a source-control BMP intended to prevent pollutants from entering the stormwater system before transport occurs. The project is consistent with the Improved Source Control BMP category identified in the NJDEP WIP Project Matrix, which references published studies indicating the potential for significant reductions in pollutant loading when source-control measures are effectively implemented and maintained. The Matrix identifies potential reductions of up to approximately 85 percent for TP and documents meaningful reductions in fecal-coliform loading associated with pet waste management and related source-control programs. Actual reductions

achieved at RCNJ will depend on public participation, long-term compliance, maintenance of pet waste stations, and continued educational outreach.

4.1.4 Other Benefits

Additional project benefits include:

- Improved campus cleanliness and aesthetics;
- Reduced accumulation of pet waste in residential and recreational areas;
- Increased awareness of stormwater quality issues; and
- Support for NJPDES public education and pollution-prevention requirements.

Because the project relies on education and behavior modification rather than construction, implementation can occur rapidly with minimal disruption to campus operations.

4.1.5 Funding Needs

The total estimated project cost is approximately \$2,540 and is considered a low-cost project under RCNJ's project prioritization framework. Anticipated cost components include:

- Installation of seven pet waste stations;
- Procurement of waste bags and station supplies;
- Facilities labor associated with installation;
- Administrative time associated with procurement and coordination; and
- Ongoing replenishment and maintenance of supplies.

The project is anticipated to be funded through the RCNJ's EHS operational budget and can be implemented with existing staff resources and procurement mechanisms.

4.2 Potential Improvement Project #2 to Address Flooding, Total Phosphorus, and Related Water Quality Impairments for Subwatershed HUC-14 02030103100010: Poplar/Sequoia Runoff Capture and Conveyance Improvement Project

4.2.1 Description

The Poplar/Sequoia Runoff Capture and Conveyance Improvement Project is a structural stormwater improvement project designed to address recurring flooding at the intersection of Poplar Avenue and Sequoia Avenue. During moderate and heavy rainfall events, stormwater runoff from surrounding higher-elevation campus areas exceeds the capacity of the existing drainage infrastructure, resulting in roadway and pedestrian flooding.

The project will include evaluation of the existing drainage network, identification of hydraulic constraints, and development of engineering alternatives to improve stormwater capture and conveyance. Potential improvements may include additional inlet structures, conveyance modifications, grading improvements, or other stormwater-management measures designed to reduce flooding and improve drainage performance.

The location was identified during both the Phase I WIR and subsequent Phase II stakeholder coordination efforts.

4.2.2 Impairment and/or TMDL Parameters Addressed

4.2.2.1 *Primary Parameters Addressed*

- Flooding
- Total Phosphorus

4.2.2.2 *Secondary Benefits*

- Dissolved Oxygen
- Biological health and aquatic habitat protection
- Reduction of sediment and organic material transport
- Improved stormwater conveyance efficiency

Although this project is primarily intended to address stormwater flooding, improvements to runoff capture and conveyance will also help reduce the transport of sediment, organic debris, nutrients, and other stormwater-borne pollutants to downstream receiving waters. By reducing uncontrolled runoff and erosion, the project supports watershed goals associated with phosphorus reduction and overall water quality improvement.

4.2.3 Estimated Load Reduction

Quantitative pollutant-reduction estimates have not been developed because specific engineering improvements will be determined during future design and evaluation activities. However, the project is expected to reduce uncontrolled runoff, improve conveyance efficiency, and reduce transport of sediment-bound pollutants during storm events.

The project is consistent with stormwater-management approaches identified in the NJDEP WIP Project Matrix for addressing flooding and pollutant transport.

4.2.4 Other Benefits

Additional project benefits include:

- Reduced roadway and pedestrian flooding;
- Improved public safety during storm events;
- Reduced maintenance associated with recurring flooding;
- Improved campus resiliency during heavy rainfall;
- Reduced erosion and sediment transport; and
- Protection of downstream stormwater infrastructure.

The project may also provide opportunities to incorporate future green infrastructure or infiltration-based practices during design development.

4.2.5 Funding Needs

The total estimated project cost is approximately \$15,000 and is categorized as a medium-cost project within RCNJ's planning framework. Anticipated costs include:

- Stormwater system evaluation and engineering analysis;
- Development of drainage improvement alternatives;

- Survey and design services (if required);
- Construction of additional inlet structures and conveyance improvements; and
- Associated installation and restoration activities.

The project is currently identified as a potential watershed improvement project and may be funded through future EHS budgets, campus capital planning efforts, stormwater improvement programs, or external grant opportunities if pursued.

4.3 Potential Improvement Project #3 to Address Total Phosphorus, Dissolved Oxygen, and Stormwater Source Control for Subwatersheds: HUC-14 02030103100010 and HUC-14 02030103100030: Aggregate Storage Containment Improvement

4.3.1 Description

The Aggregate Storage Containment Improvement Project is a source-control initiative intended to reduce pollutant exposure and prevent aggregate materials from being transported to nearby stormwater infrastructure during precipitation events. The project will upgrade the existing aggregate storage area by increasing the height of existing concrete dividers, improving separation between stored materials, and adding storage capacity where necessary to improve containment and site organization.

By improving physical containment and reducing stormwater contact with stored materials, the project will minimize off-site migration of sediment and aggregate materials while supporting ongoing housekeeping and stormwater management efforts.

The project is consistent with source-control BMPs identified in the NJDEP WIP Project Matrix and supports continued improvement of material management practices throughout the campus.

4.3.2 Impairment and/or TMDL Parameters Addressed

4.3.2.1 *Primary Parameters Addressed*

- Total Phosphorus

4.3.2.2 *Secondary Benefits*

- Dissolved Oxygen
- Biological and habitat conditions
- Sediment reduction
- Improved stormwater quality

Sediment transport associated with aggregate storage operations may contribute particulate-bound nutrient loading and increased turbidity within stormwater runoff. By reducing sediment mobilization, the project supports TP reduction objectives and may provide indirect benefits to dissolved oxygen conditions and aquatic habitat quality.

4.3.3 Estimated Load Reduction

Quantitative pollutant-removal efficiencies have not been calculated because the project functions as a source-control BMP rather than a stormwater treatment system. However, the project is expected to

reduce sediment transport, minimize stormwater contact with stored materials, and reduce pollutant exposure within the aggregate storage area.

The project is consistent with source-control and housekeeping practices identified in the NJDEP WIP Project Matrix as appropriate measures for addressing TP and other stormwater pollutants through prevention at the source.

4.3.4 Other Benefits

Additional project benefits include:

- Improved stormwater permit compliance;
- Reduced sediment accumulation within nearby drainage structures;
- Improved operational efficiency within the aggregate storage area;
- Reduced maintenance requirements; and
- Improved housekeeping and material management practices.

Because the project addresses pollutant exposure at the source, it represents a cost-effective and easily maintainable stormwater-quality improvement measure.

4.3.5 Funding Needs

The estimated project cost is approximately \$7,000 and is classified as a medium-cost project within RCNJ's project planning framework. Anticipated cost components include:

- Modifications to existing concrete containment structures;
- Construction of additional storage bays;
- Material procurement and installation;
- Facilities labor and construction coordination; and
- Minor site restoration activities.

The project is anticipated to be funded through the RCNJ's EHS operating budget and may be implemented using existing facilities and maintenance resources.

4.4 Potential Improvement Project #4 to Address Total Phosphorus, Dissolved Oxygen, and General Stormwater Quality for Subwatersheds HUC-14 02030103100010 and HUC-14 02030103100030: Enhanced Littering Communication Plan

4.4.1 Description

The Enhanced Littering Communication Plan is a non-structural watershed improvement project intended to reduce stormwater pollution through expanded public outreach and education. Litter generated on walkways, parking lots, roadways, landscaped areas, and gathering spaces can be transported by stormwater runoff and contribute debris, nutrients, sediment, plastics, and other pollutants to the campus stormwater system and downstream receiving waters.

The project will include installation of educational signage in high-traffic areas and implementation of outreach materials describing the relationship between littering, stormwater pollution, and water

quality. Outreach efforts may include campus-wide emails, social media campaigns, educational graphics, and seasonal awareness initiatives focused on litter prevention and watershed stewardship.

The project supports water quality improvement by reducing the amount of trash and organic debris available for transport during storm events and is consistent with public education and source-control measures identified in the NJDEP WIP Project Matrix.

4.4.2 Impairment and/or TMDL Parameters Addressed

4.4.2.1 *Primary Parameters Addressed*

- Total Phosphorus

4.4.2.2 *Secondary Benefits*

- Dissolved Oxygen
- Biological and aquatic habitat conditions
- Stormwater conveyance performance
- General stormwater quality

Litter and organic debris contribute nutrients, oxygen-demanding materials, and floatable waste to stormwater systems. Reducing these inputs may improve overall watershed conditions and help prevent pollutants from entering the stormwater system.

4.4.3 Estimated Load Reduction

The Enhanced Littering Communication Plan functions as a source-control BMP by reducing litter, organic debris, and associated pollutants before they enter the stormwater conveyance system. Consistent with the NJDEP WIP Project Matrix, pollutant reductions are dependent upon implementation effectiveness, public participation, and long-term behavioral changes within the campus community. Specific pollutant-removal efficiencies have not been quantified for this project.

4.4.4 Other Benefits

Additional project benefits include:

- Improved campus appearance and cleanliness;
- Reduced maintenance associated with litter removal;
- Reduced blockage of storm drain inlets and conveyance structures;
- Increased awareness of stormwater quality issues; and
- Support for NJPDES public education requirements.

Because the project relies on outreach rather than physical construction, implementation can occur quickly with minimal disruption to campus operations.

4.4.5 Funding Needs

The estimated project cost is approximately \$2,020 and is categorized as a low-cost project. Anticipated project costs include:

- Design and procurement of educational signage;

- Printing and fabrication of signage materials;
- Facilities labor associated with installation;
- Administrative coordination and project management activities; and
- Supplemental digital outreach materials.

The project is anticipated to be funded through the RCNJ EHS operating budget and can be implemented using existing campus communication and facilities resources.

4.5 Potential Improvement Project #5 to Address Total Phosphorus, Dissolved Oxygen, and Stormwater System Performance for Subwatersheds HUC-14 02030103100010 and HUC-14 02030103100030: Strategic Inlet Cleaning Program

4.5.1 Description

The Strategic Inlet Cleaning Program is a proactive stormwater maintenance initiative designed to improve performance of the campus stormwater conveyance system by increasing inlet-cleaning activities during periods when sediment, leaves, organic matter, and debris accumulation are most likely to impair drainage performance.

The program expands upon existing stormwater maintenance practices by implementing condition-based cleaning schedules focused on peak leaf-drop periods, major storm events, and inspection findings that identify excessive sediment, litter, leaves, or organic matter within storm drain structures. Targeted maintenance will improve hydraulic capacity, reduce localized flooding, and minimize transport of sediment, nutrients, organic material, and debris during storm events.

The project is consistent with stormwater maintenance and source-control measures identified in the applicable TMDLs and the NJDEP WIP Project Matrix.

4.5.2 Impairment and/or TMDL Parameters Addressed

4.5.2.1 *Primary Parameters Addressed*

- Total Phosphorus
- Fecal Coliform

4.5.2.2 *Secondary Benefits*

- Dissolved Oxygen
- Biological and habitat conditions
- Stormwater conveyance performance
- Localized flooding reduction

Removal of sediment, organic debris, and accumulated waste materials before storm events reduces the quantity of pollutants available for transport to receiving waters while improving overall stormwater system performance.

4.5.3 Estimated Load Reduction

Published evaluations of catch basin and storm drain maintenance programs indicate that routine cleaning may reduce TP loading by approximately 15 percent and TSS by approximately 35 percent,

depending on maintenance frequency, sediment accumulation rates, and watershed conditions. Additional pollutant reductions may occur through removal of accumulated organic material and debris before mobilization during storm events. Consistent with the NJDEP WIP Project Matrix, actual pollutant reductions achieved at RCNJ will depend on maintenance frequency and inlet conditions throughout the campus stormwater system.

4.5.4 Other Benefits

Additional benefits of the Strategic Inlet Cleaning Program include:

- Improved stormwater conveyance efficiency;
- Reduced likelihood of inlet overtopping during storm events;
- Reduced localized roadway and walkway flooding;
- Improved condition and longevity of stormwater infrastructure;
- Reduced emergency maintenance requirements; and
- Support for NJPDES permit compliance.

Because the project builds upon existing maintenance practices, implementation can occur with minimal disruption to campus operations.

4.5.5 Funding Needs

The estimated project cost is approximately \$6,240 and is categorized as a medium-cost project. Costs are based on the addition of three supplemental inlet-cleaning events beyond the current annual maintenance schedule and include:

- Contractor or maintenance crew mobilization;
- Additional cleaning events during peak debris-generation periods;
- Disposal of collected sediment and organic material; and
- Administrative coordination and inspection support activities.

The project is anticipated to be funded through the RCNJ EHS operating budget and can be incorporated into existing stormwater maintenance and facilities management programs.

4.6 Potential Improvement Project #6 to Address Fecal Coliform and Total Phosphorus for Subwatersheds: HUC-14 02030103100010 and HUC-14 02030103100030: Enhanced Wildlife Feeding Communication Plan

4.6.1 Description

The Enhanced Wildlife Feeding Communication Plan is a non-structural watershed improvement project intended to reduce water quality impacts associated with intentional feeding of wildlife on campus. Feeding wildlife can increase local wildlife populations and contribute nutrients, bacteria, and organic waste to areas adjacent to stormwater infrastructure and receiving waters.

The project will expand existing public education efforts through installation of educational signage in high-traffic pedestrian areas, residence halls, recreational areas, and locations near stormwater infrastructure. Educational materials will explain the relationship between wildlife feeding, fecal

contamination, nutrient loading, and stormwater pollution. Outreach may also include campus communications, social media messaging, and seasonal awareness campaigns.

The project supports recommendations contained in the applicable fecal coliform and phosphorus TMDLs and is consistent with source-control practices identified in the WIP Project Matrix.

4.6.2 Impairment and/or TMDL Parameters Addressed

4.6.2.1 *Primary Parameters Addressed*

- Fecal Coliform
- Total Phosphorus

4.6.2.2 *Secondary Benefits*

- Dissolved Oxygen
- Biological and habitat conditions
- Stormwater quality improvement
- Campus environmental stewardship

Wildlife waste contains bacteria, nutrients, and organic material that may be transported through stormwater runoff to downstream receiving waters. Reducing wildlife congregation in sensitive areas may help reduce pollutant loading associated with these sources.

4.6.3 Estimated Load Reduction

The Enhanced Wildlife Feeding Communication Plan is a source-control BMP intended to reduce the accumulation of nutrient- and bacteria-containing waste within developed portions of the campus. Consistent with the NJDEP WIP Project Matrix, pollutant reductions are dependent upon implementation effectiveness, wildlife response, and public participation. Specific pollutant-removal efficiencies have not been quantified for this project.

4.6.4 Other Benefits

Additional project benefits include:

- Reduced wildlife congregation in developed portions of campus;
- Improved campus cleanliness and aesthetics;
- Reduced accumulation of wildlife waste near pedestrian areas and stormwater infrastructure;
- Increased awareness of watershed stewardship; and
- Support for NJPDES public education requirements.

The project complements other source-control initiatives by reducing pollutant generation before pollutants enter the stormwater system.

4.6.5 Funding Needs

The estimated project cost is approximately \$1,010 and is categorized as a low-cost project. Project costs include:

- Design and production of educational signage;

- Procurement and installation of signage;
- Digital communication materials;
- Administrative coordination and outreach efforts; and
- Supplemental seasonal educational campaigns.

The project is anticipated to be funded through the RCNJ EHS operating budget and can be implemented using existing communication and facilities resources.

4.7 Potential Improvement Project #7 to Address Fecal Coliform, Total Phosphorus, and Dissolved Oxygen for Subwatersheds: HUC-14 02030103100010 and HUC-14 02030103100030: FOG Communication Plan

4.7.1 Description

The Fats, Oils and Grease (FOG) Communication Plan is a non-structural watershed improvement project designed to reduce improper disposal of cooking oils, food grease, and related waste materials that may adversely impact stormwater systems and downstream receiving waters.

The project consists of a targeted public education and outreach program directed toward students, residents, staff, food service vendors, and visitors. Educational materials will be distributed through signage, digital communications, and awareness campaigns that promote proper disposal practices and explain the relationship between FOG disposal, stormwater quality, infrastructure maintenance, and water quality impairments.

The project supports watershed protection by reducing pollutant inputs before they enter the stormwater system and is consistent with source-control BMPs identified in the applicable TMDLs and the NJDEP WIP Project Matrix.

4.7.2 Impairment and/or TMDL Parameters Addressed

4.7.2.1 *Primary Parameters Addressed*

- Total Phosphorus
- Fecal Coliform

4.7.2.2 *Secondary Benefits*

- Dissolved Oxygen
- Organic waste reduction
- Stormwater conveyance protection
- General stormwater quality improvement

Improved disposal practices help reduce organic waste inputs, minimize infrastructure blockages, and support broader stormwater quality objectives associated with phosphorus and dissolved oxygen impairment reduction.

4.7.3 Estimated Load Reduction

The FOG Communication Plan is a source-control and public education BMP and therefore site-specific pollutant-removal efficiencies cannot presently be quantified. Project effectiveness is dependent upon

behavioral changes associated with waste disposal practices across the campus community. However, reducing improper disposal of FOG is expected to decrease the amount of organic waste available for transport through stormwater runoff and reduce maintenance issues within stormwater and sanitary infrastructure.

The project is consistent with Public Education and Housekeeping/Source Control BMP categories identified within the WIP Project Matrix and represents a practical approach for reducing pollutant inputs before they enter the stormwater system.

4.7.4 Other Benefits

Additional project benefits include:

- Improved public awareness regarding proper waste disposal practices;
- Reduced maintenance associated with grease accumulation and infrastructure blockages;
- Improved performance of stormwater and sanitary conveyance systems;
- Reduced risk of improper waste discharges; and
- Support for permit compliance and pollution prevention objectives.

Because the project relies on outreach and communication rather than physical construction, implementation can occur quickly and with minimal operational disruption.

4.7.5 Funding Needs

The estimated project cost is approximately \$950 and is categorized as a low-cost project. Anticipated cost components include:

- Design and preparation of educational materials;
- Printing and installation of signage;
- Administrative coordination and outreach efforts; and
- Development of digital communication materials and awareness campaigns.

The project is anticipated to be funded through the RCNJ EHS operating budget and can be implemented using existing communication and facilities resources.

5 Overview of Funding Needs and Potential Funding Sources

Implementation of the watershed improvement projects identified in Section 4 will require a combination of operational funding and potential external funding opportunities. Most of the proposed projects were intentionally selected because they are practical, scalable, and capable of being implemented using existing RCNJ resources while providing measurable water quality and stormwater management benefits. The proposed projects range from low-cost source-control initiatives and public education programs to larger projects intended to address localized flooding and stormwater conveyance concerns.

RCNJ anticipates that many of the proposed projects can be implemented through RCNJ's existing EHS operational maintenance budget. Several proposed projects consist primarily of education, communication, maintenance, and source-control programs and therefore require minimal capital

investment. Other projects, particularly drainage and conveyance improvements, may require future engineering design and construction funding.

Potential external funding opportunities may also become available during future implementation phases. Such opportunities may include applicable NJDEP grants, Clean Water Act Section 319(h) funding, watershed restoration grants, green infrastructure grant programs, resiliency initiatives, and other State or federal funding sources that align with water quality improvement, flood mitigation, and stormwater management objectives. Eligibility for these programs will be evaluated as individual projects advance into design and implementation phases.

Project costs are preliminary planning-level estimates intended to support project comparison and prioritization within the WAR. Actual project costs may vary depending on final design, construction requirements, permitting considerations, procurement methods, market conditions, and long-term maintenance requirements. Cost estimates will be refined during future engineering evaluation and design efforts. [Table 13](#) (next page) provides a summary of the funding considerations.

Given the predominance of low- and medium-cost implementation measures identified during Phase II, RCNJ anticipates that several projects may be implemented using existing staff resources and annual operating budgets. More complex capital improvements may require phased implementation over multiple budget cycles or coordination with future campus improvement projects. This flexible funding approach will allow RCNJ to continue advancing watershed improvement objectives while maintaining the ability to adapt project priorities in response to operational needs, funding availability, and future watershed conditions.

Table 13. Potential Funding for Proposed Projects

Project Name	HUC 14(s)	Estimated Cost	Potential Funding Sources	Estimate Timeline of Funding Acquisition
Pet Waste Management Action Plan	02030103100010, 02030103100030	\$2,540	EHS Operating Budget	Year 1-2
Poplar/Sequoia Runoff Capture and Conveyance Improvement Project	02030103100010	\$15,000	EHS Operating Budget and/or Capital Planning	Year 1-2
Aggregate Storage Containment Improvement	02030103100010, 02030103100030	\$7,000	EHS Operating Budget	Year 1-2
Enhanced Littering Communication Plan	02030103100010, 02030103100030	\$2,020	EHS Operating Budget	Year 2-3
Strategic Inlet Cleaning Program	02030103100010, 02030103100030	\$6,240	EHS Operating Budget	Year 2-3
Enhanced Wildlife Feeding Communication Plan	02030103100010, 02030103100030	\$1,010	EHS Operating Budget	Year 3-4
FOG Communication Plan	02030103100010, 02030103100030	\$950	EHS Operating Budget	Year 3-4

6 Estimated Implementation Schedule

The implementation schedule presented in Table 14 provides a planning-level framework for advancing the watershed improvement projects identified in this WAR. The schedule was developed based on project complexity, anticipated resource requirements, estimated costs, and stakeholder priorities identified during the Phase II assessment process. Projects are organized to prioritize practical source-control, public education, and maintenance initiatives while maintaining flexibility for future engineering evaluation, funding acquisition, permitting, design, and construction activities.

The implementation schedule is intended to satisfy the requirements of the WIP process and should not be interpreted as a commitment by RCNJ to implement a specific project on a specific date. Project prioritization, funding availability, future regulatory requirements, operational considerations, and ongoing watershed conditions may result in revisions to the schedule during development of the Phase III WIP and future updates to the RCNJ's stormwater management program.

Table 14. Estimated Implementation Schedule

Phase / Timeline	Project No.	Project Name	Pollutants / Issues Mitigated	Key Implementation Activities
Phase 1 (Year 1-2)	1	Pet Waste Management Action Plan	Fecal Coliform, TP	Installation of pet waste stations, educational signage, and public outreach materials
	2	Poplar/Sequoia Runoff Capture and Conveyance Improvement Project	Flooding, TP	Drainage evaluation, design, and conveyance improvements
	3	Aggregate Storage Containment Improvement	TP, Dissolved Oxygen	Upgrade storage area containment and improve material management practices
Phase 2 (Year 2-3)	4	Enhanced Littering Communication Plan	TP, Dissolved Oxygen	Public education, outreach, and signage program
	5	Strategic Inlet Cleaning Program	TP, Fecal Coliform	Expanded inlet maintenance and cleaning activities during high-debris periods
Phase 3 (Year 3-4)	6	Enhanced Wildlife Feeding Communication Plan	Fecal Coliform, TP	Educational signage, outreach, and wildlife feeding prevention measures
	7	FOG Communication Plan	Fecal Coliform, TP, Dissolved Oxygen	Campus-wide FOG education and awareness campaign

7 Public Involvement and Feedback

Meaningful stakeholder engagement has been an important component of development of the WIP. Throughout completion of the Phase I WIR and Phase II WAR, RCNJ coordinated with campus stakeholders, municipal representatives, consultants, and members of the public to identify watershed concerns, review existing stormwater-management practices, and evaluate potential improvement projects. Stakeholder participation assisted in identifying localized flooding concerns, water-quality challenges, operational constraints, and future opportunities for watershed improvement.

7.1 Stakeholders

Development of the WAR involved coordination between RCNJ personnel and the project team to evaluate watershed conditions, identify impairments and TMDLs, review existing stormwater management practices, and develop potential watershed improvement projects. Stakeholders directly involved in development of the WAR included:

- Gina Mayer-Costa, Stormwater Program Coordinator, RCNJ
- Samuel Antoshak, RCNJ
- RCNJ Facilities Management personnel
- RCNJ EHS personnel
- Cameron Morissette, Mott MacDonald
- Jenna Calderone, Mott MacDonald

These individuals and organizations participated in project coordination meetings, review of watershed conditions, identification of flooding concerns, review of existing stormwater infrastructure, and development of the potential watershed improvement projects presented in this report.

In addition to the stakeholders directly involved in preparation of the WAR, RCNJ has undertaken public outreach activities and provided opportunities for participation by the broader campus and surrounding community. The following stakeholder groups have been invited to participate in public information sessions, campus clean-up activities, educational events, and review of planning documents associated with development of the WIP:

- Students of RCNJ
- Faculty and staff of RCNJ
- Retirees of RCNJ
- Campus residents, and
- Township of Mahwah Department of Public Works

These stakeholder groups have also been invited to review and comment on this draft WAR in accordance with the requirements of the NJPDES Public Complex Stormwater General Permit and the WIP guidance developed by NJDEP.

7.2 Previously Held Meetings and Public Information Sessions

Several meetings and public outreach efforts have been conducted as part of the WIP process. [Table 15](#) below provides a summary.

Table 15. WIP Meetings and Public Information Sessions

Meeting / Event	Date	Purpose
Phase I Public Information Session	December 12, 2025	Introduce the WIP process and present Phase I findings
Coordination Meeting with Mahwah Township	January 20, 2026	Discuss watershed conditions and coordination opportunities
Phase II Planning Meeting	August 27, 2026	Review flooding locations, candidate projects, and watershed concerns
Phase II Public Information Session I	September 21, 2026	Present watershed inventory report findings and proposed watershed improvement concepts
Phase II Public Information Session II	December 3, 2026 (scheduled)	Present watershed assessment findings and proposed watershed improvement concepts

Meeting minutes and presentation materials associated with the WIP public information sessions are included in **Attachment A – Public Information Session Documentation**.

Meeting minutes for the coordination meeting with Mahwah Township are included in **Attachment B – Regional Coordination Documentation**.

7.3 Summary of Feedback

Input received during development of the WAR primarily focused on:

- Recurring flooding at Woods Road;
- Flooding affecting the College Park Apartments (Mulberry Area);
- Drainage concerns at the Student Center loading dock;
- Runoff issues near the Poplar Avenue and Sequoia Avenue intersection;
- Flooding observed at athletic fields;
- Existing stormwater maintenance practices;
- Potential watershed improvement projects; and
- Prioritization of practical, implementable stormwater improvements.

Stakeholder coordination played an important role in refining project concepts and identifying opportunities to improve stormwater management while minimizing impacts to campus operations.

The Phase II Public Information Session conducted on September 21, 2026, provided attendees with an overview of watershed conditions, stormwater-management practices, applicable impairments and TMDLs, and the WIP process. No substantive public comments were received during the meeting; however, attendees were encouraged to continue participating throughout future phases of watershed planning and implementation.

7.4 Future Public Involvement

Following completion of the WAR, the document will be made available for public review and comment in accordance with NJDEP WIP requirements. RCNJ intends to provide a minimum 60-day public comment period and maintain access to WIP materials through the RCNJ's stormwater webpage and other appropriate public information channels.

Future outreach efforts may include:

- Additional public information sessions;
- Stakeholder coordination meetings;
- Updates posted to RCNJ's stormwater webpage;
- Educational outreach materials related to watershed-improvement projects; and
- Public review of future WIP updates and implementation activities.

7.5 Public Comment Review Process

Comments received during the public review period will be documented and evaluated by RCNJ and its consultant team. Comments relevant to watershed conditions, stormwater management, flooding concerns, pollutant sources, project prioritization, and implementation strategies will be reviewed and considered during development of the Phase III WIP.

A summary of comments received, responses provided, and any resulting modifications to the WIP will be maintained as part of the public record. Where appropriate, stakeholder feedback may be incorporated into future project planning, prioritization, or implementation activities.

8 References

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- New Jersey 2022 Integrated Water Quality Report, including the 303(d) Impaired Waters List. NJDEP, Bureau of Environmental Analysis, Restoration and Standards website: <https://dep.nj.gov/wms/bears/integrated-wq-assessment-report-2022/>.
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- Ramapo College of New Jersey. 2026. Phase I Watershed Inventory Report (WIR). Prepared for compliance with the NJPDES Public Complex Stormwater General Permit and the Watershed Improvement Plan (WIP) Program.
- Total Maximum Daily Load (TMDL) Look-Up Tool. NJDEP, Bureau of NJPDES Stormwater Permitting website: <https://dep.nj.gov/njpdes-stormwater/municipal-storm>.
- U.S. Geological Survey (USGS). 2023. Ramsey Quadrangle, New Jersey–New York, 7.5-Minute Series (US Topo). The National Map. U.S. Department of the Interior, U.S. Geological Survey.

Attachment A.1. – Public Information Session Documentation – December 12, 2025 Meeting Minutes & Slides

Date: December 12, 2025
Location: Student Center Room 158
Subject: **Meeting Minutes**
Watershed Improvement Plan Phase 1 Information Session

At 1pm, the session began with a presentation by Sam Antoshak.



The below items were reviewed.

- I. Introduction
 - a) Regulatory Context: NJAC 7:14A, NJPDES Permit #NJG0154661, MS4 Section 5.H
 - b) Purpose: Improve water quality and comply with NJDEP and EPA regulations.

- II. Stormwater Basics
 - a) Definition and importance of stormwater management.
 - b) Key stakeholders at Ramapo College (EHS, Facilities, Public Safety, Capital Planning, all employees/visitors).
- III. Program Objectives
 - a) Implement Best Management Practices (BMPs) to reduce pollutant discharge.
 - b) Protect water quality and meet Clean Water Act requirements.
- IV. Regulatory Framework
 - a) NJDEP Campus-Wide Permit for RCNJ.
 - b) Federal and state mandates: Clean Water Act, NJPDES, Bureau of Nonpoint Pollution Control.
- V. Why It Matters
 - a) 95% of NJ waterways impaired.
 - b) Historical lack of stormwater management prior to 1983 and poor practices before 2004.
- VI. Actions Taken by RCNJ
 - a) Policies and written stormwater plan.
 - b) Website updates, street sweeping, infrastructure mapping.
 - c) Campus cleanups (204 volunteer hours, 870 lbs trash removed).
 - d) Employee training and educational events.
 - e) Spill kit program (37 kits across campus).
 - f) General policies (pet waste, deicing, herbicide, litter control, etc.).
- VII. Watershed Improvement Plan (WIP)
 - a) Goals: Reduce pollutants, address flooding, prioritize health and environmental impacts.
 - b) Phases: Phase 1 (Inventory Report), Phase 2 (Assessment Report), Phase 3 (Improvement Plan Report).

VIII. Phase 1 Deliverables

- a) Infrastructure mapping: 27 outfalls, 33 groundwater discharge points, 419 storm drain inlets, BMPs, maintenance yards.
- b) Outfall details and drainage areas.
- c) Existing BMPs (10 identified, including detention basins, sand filters, forebays, seepage pits).

IX. Water Quality Issues

- a) Two HUC14 subwatersheds within campus: Ramapo River Upper Segment and Lower Segment.
- b) Impairments: Total Phosphorus (TMDL), Dissolved Oxygen, Temperature.
- c) Pollutants of concern: phosphorus, Dissolved Oxygen, elevated temperature.

X. Flood-Prone Areas

- a) Woods Road (east boundary).
- b) College Park Apartments (Mulberry).
- c) Rear of Student Center and Poplar/Sequoia intersection.

XI. Next Steps

- a) Use findings to guide Phase 2 (Assessment Report).
- b) Identify BMPs and projects to improve water quality and reduce flooding.

XII. Contact

- a) Samuel Antoshak, Fire and Safety Specialist (ehs@ramapo.edu).

XIII. Discussion and Feedback

- a) Common pollutants on campus were reviewed
- b) The recent project on Woods Rd near the parking deck was reviewed
- c) Opportunities to expand projects to students was discussed. EHS will investigate potential projects for students to assist with ongoing stormwater efforts.

RCNJ

RCNJ- Watershed Improvement Plan Phase 1

NJAC 7:14A

NJPDES #NJG0154661

R11 - MS4 - Section 5.H

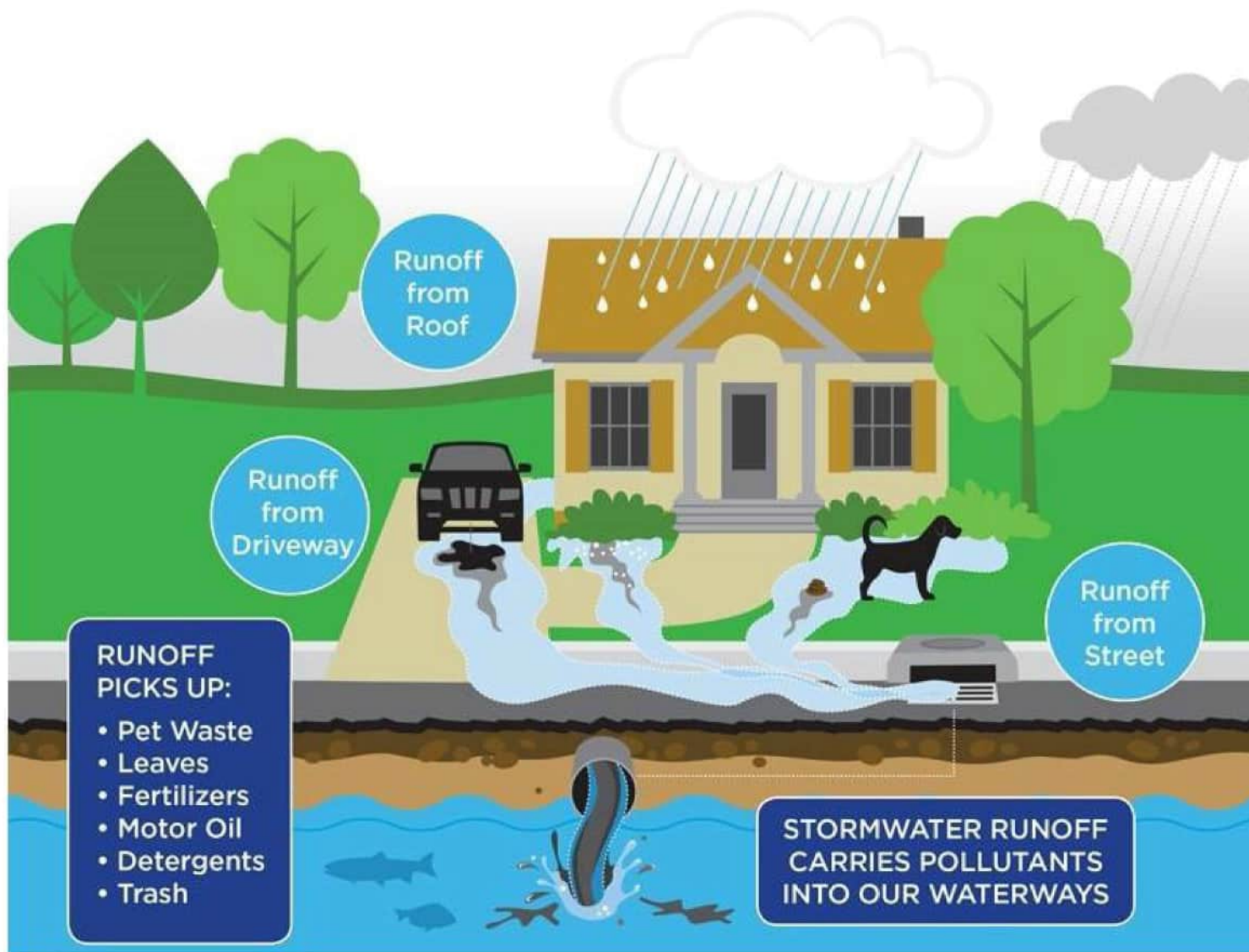
<https://www.ramapo.edu/ehs/stormwater/>



RCNJ

What is Stormwater?





Who at RCNJ is involved with stormwater?

- Environmental Health and Safety (EHS)
- Facilities (grounds and administration)
- Public Safety
- Capital Planning (new construction)
- All employees and visitors of RCNJ have a job in keeping the campus clean!



A primary objective of the stormwater program

To implement best management practices and other measures that are designed to reduce the discharge of pollutants from the permittee's storm system, municipal maintenance yards and other ancillary operations to the maximum extent practicable pursuant to N.J.A.C. 7:14A-25.6(a)1 and 40 CFR 122.34(a), to protect water quality, and to satisfy the applicable water quality requirements of the Clean Water Act.

Environmental Permit

The College has a permit with the NJ Dept of Environmental Protection:

- NJ State Colleges are considered a Public Complex
- The NJDEP has assigned Ramapo College of New Jersey (RCNJ) a Campus Wide Permit

It's the law:

- NJ - Permitting program was created in 2004 and is required by both federal and state regulations to addresses water quality and flooding issues in stormwater systems.
- EPA - Clean Water Act
- NJDEP - N.J.A.C 7:14A-1
 - NJPDES - New Jersey Pollutant Discharge Elimination System
 - Bureau of Nonpoint Pollution Control

Why is this important?

Nearly 95% of waterways impaired in NJ

Lack of stormwater management for developments -

- Prior to 1983 (no management)
- Prior to 2004 (poor WQ management)

What has the College Done?

- Establish policies to address surface water pollution
- Develop and maintain a written stormwater policy
- Update a dedicated stormwater website
- Monthly street sweeping
- Monthly maintenance yard inspections
- Routine Inspection and maintenance of stormwater infrastructure
- Complete mapping of stormwater infrastructure
- Frequent campus clean-ups
- Annual training of designated employees
- Educational events and giveaways
- New Construction review and design

DASHBOARD OF ACCOMPLISHMENTS

The statistics below reflect how the campus Stormwater program has positively impacted our environment while educating the campus community. Our goal is to address nonpoint source pollution by empowering students, faculty and staff to make responsible and informed decisions regarding their watershed on campus and at home. Listed below are the measurable campus stormwater statistics from 2024 to present.



Campus Activities and Their Impact

- 93 miles of streets swept (all streets are swept monthly)
- 34 cubic yards of material removed from streets
- 13 campus cleanup and educational events hosted
- 870 pounds of trash/recycling collected at campus clean ups
- 204 volunteer service hours for campus clean ups
- 240 students/staff trained and educated
- 44,833 pounds of electronic waste collected, recycled and diverted from landfills

Website - [Ramapo.edu/ehs/stormwater/](https://ramapo.edu/ehs/stormwater/)



Home » About » Environmental Health and Safety » Stormwater – Help Keep Our Waterways Clean

STORMWATER – HELP KEEP OUR WATERWAYS CLEAN



- Environmental Health & Safety
- Stormwater – Help Keep Our Waterways Clean
 - Stormwater Documents
 - Stormwater Events
 - Stormwater Resources
 - Watershed Improvement Plan
- Fire Safety

What is stormwater?

Human activity is largely responsible for stormwater pollution. Everything that we put on the ground or into the storm drain ends up in our water. Each of us has a responsibility to make sure these contaminants stay out of our water. Whether we have clean water is up to you.

The official definition of stormwater under the N.J.A.C. 7:14A rules is as follows:

'Stormwater' means water resulting from precipitation (including rain and snow) that runs off the land's surface, is transmitted to the subsurface, or is captured by separate storm sewers or other sewage or drainage facilities, or is conveyed by snow removal equipment.

Campus Stormwater Links



Stormwater Pollution Documents >

Review the College's Stormwater Permit, Stormwater Prevention Plan, Infrastructure Map and other stormwater-related documents.



Stormwater Events >

Join us for a campus cleanup or visit us to learn more about how stormwater and environmental sustainability on campus is managed.



Stormwater Resources >

Learn more information about stormwater including educational resources and the policies Ramapo College has implemented to minimize stormwater pollution.



Watershed Improvement Plan (WIP) >

The WIP will identify opportunities to improve water quality and reduce stormwater contribution of pollutants. Find out more information about this Plan and how it will be completed in 3 phases.

Campus Cleanups

- Hosted 3-4 times per semester open to all students and staff!
- Postings go out in the daily digest!



Since October 2024

- 204 volunteer hours
- 104 bags of trash collected
- 870 lbs of trash removed from our waterway

Educational Events



Training

- All new hires receive in person stormwater training
 - Then annual online training
- EHS also hosts periodic stormwater tabling events to educate and answer any questions from the public
- EHS has educated 240 students and staff

RCNJ

Stormwater Pollution Prevention Plan (SPPP)

NJAC 7:14A

NJPDES #NJG0154661

<https://www.ramapo.edu/ehs/stormwater/>



Spill Kit Program

- 37 Spill are kits located in strategic spots across campus
- All EHS vehicles carry spill control equipment
- In the event of a spill EHS can use defensive tactics to mitigate spills from reaching our waterways



General Policies

- Pet Waste
- Deicing
- Herbicide
- Litter control
- Wildlife feeding
- Housekeeping
- Yard Waste
- Vehicle Fueling/ Waste disposal
- General storage
- Illicit connections
- Maintenance Yards



Watershed Improvement Plan (WIP)

- Designed to improve water quality problems
- Focused on reducing the contribution of pollutants to water bodies with listed impairments and Total Maximum Daily Load (TMDLs)
- Reducing or eliminating flooding with priority given based on human health and safety, environmental impacts, and frequency of occurrence

Watershed Improvement Plan (WIP)

NJ DEP requirements - develop in 3 Phases

- Phase 1: Inventory Report - due January 1, 2026
 - Infrastructure Mapping
- Phase 2: Assessment Report - due January 1, 2027
- Phase 3: Improvement Plan Report - due January 1, 2028

Infrastructure Map

The College prepared a map that includes:

- 27 Outfalls (receiving surface water name, type of outfall)
- 33 Groundwater discharge points
- Interconnections (between municipalities, county, or others)
- Storm drain inlets (419)
- Manholes
- Conveyance (directs stormwater)
- Stormwater facilities (BMPs)
- Property boundaries of maintenance yard(s) and other ancillary operations

Outfalls on campus

Outfalls **discharge directly to navigable waters or within 300 ft.**

- There are 27 outfalls on campus

Receiving Surface Waters

Scarlet Oak Pond (referred to as Kameron pond on campus)– 3 outfalls.

Ramapo River Tributary – 16 outfalls.

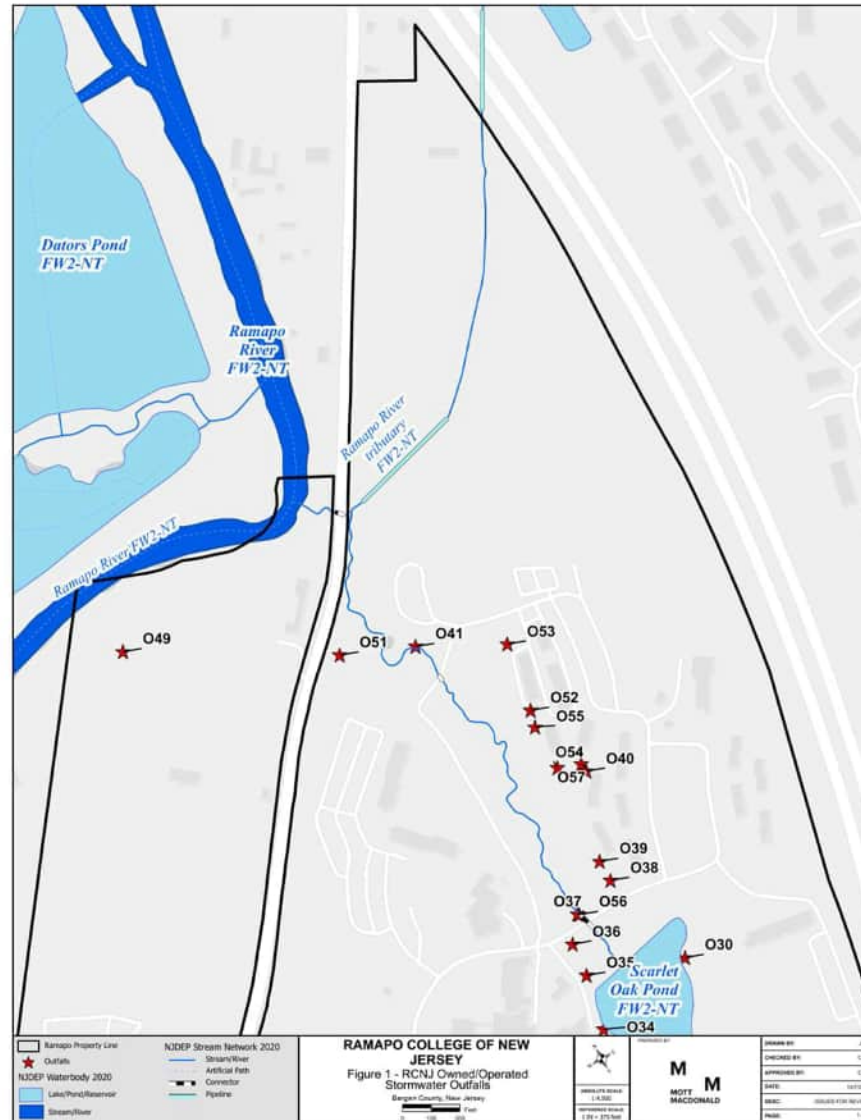
Ramapo River – 1 outfall.

Darlington Brook – 4 outfalls.

Darlington Brook Tributary – 3 outfalls.

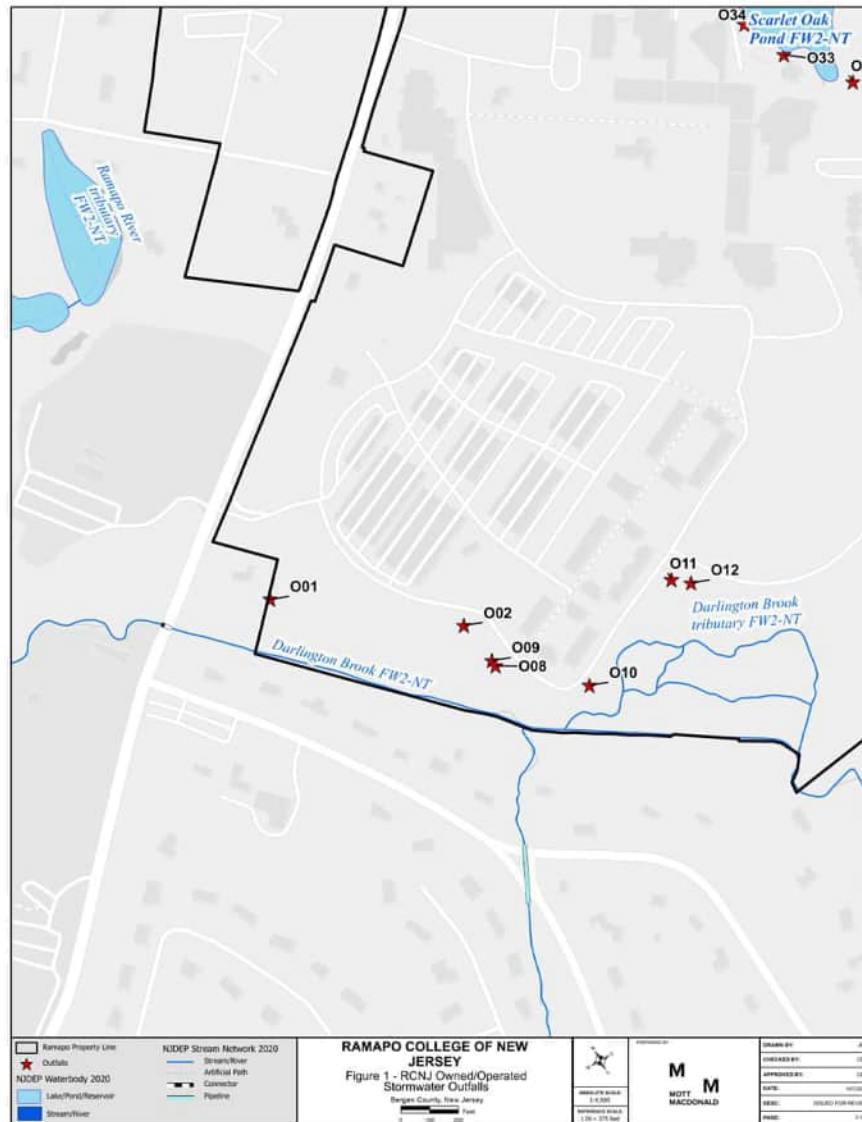
Outfalls

CPA's, Upper Pond, and Athletic Field



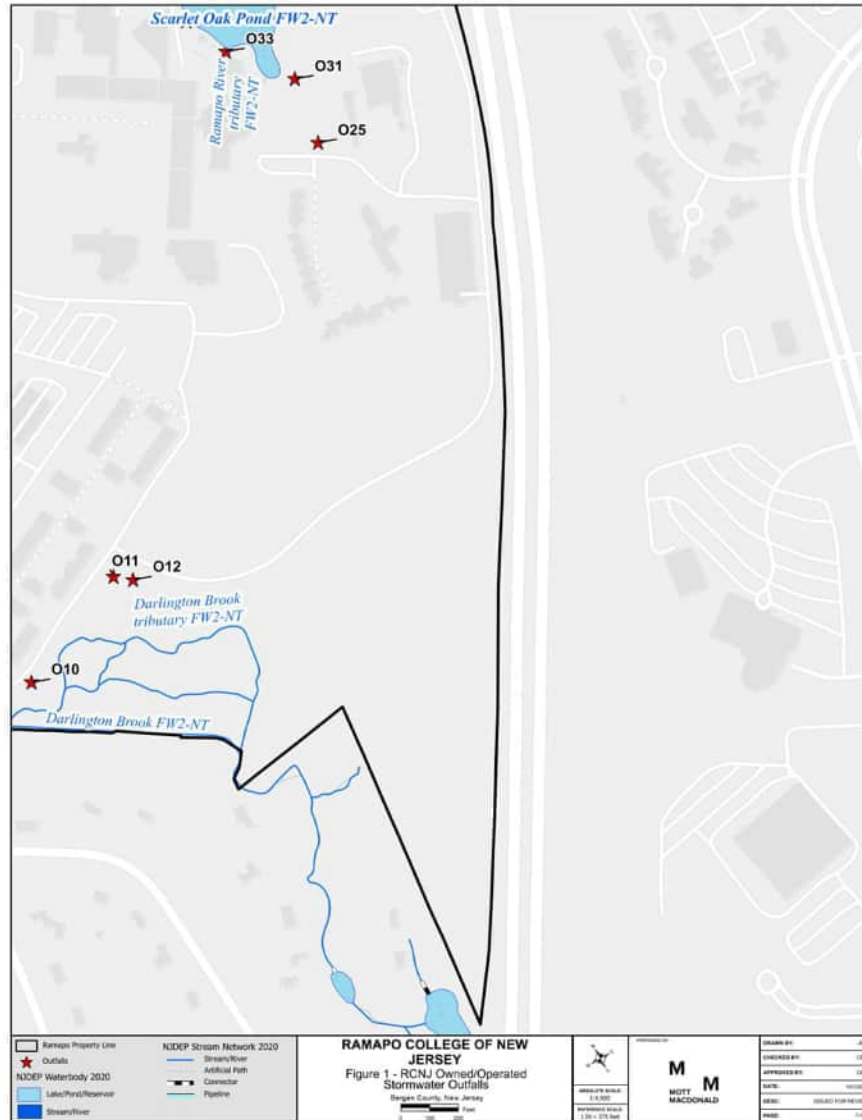
Outfalls

Village & commuter lots



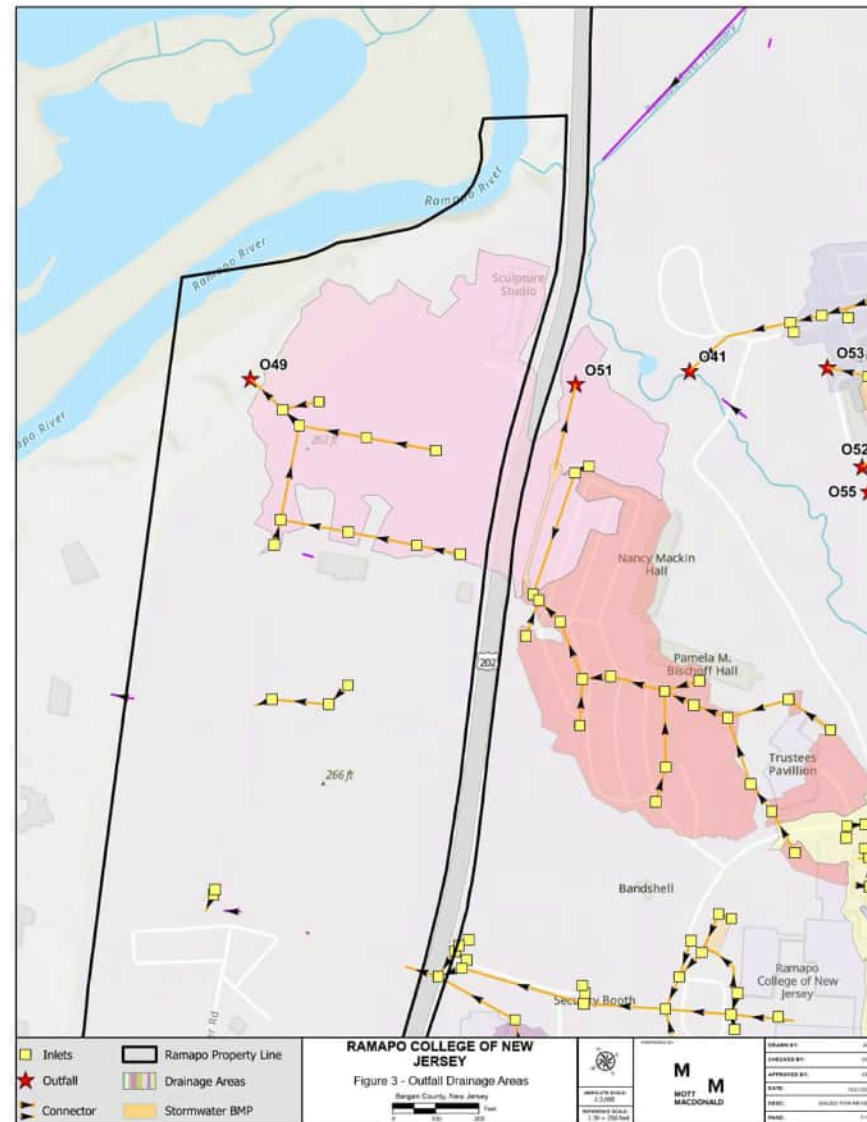
Outfalls

Village & Lower Pond



Outfall Drainage Areas

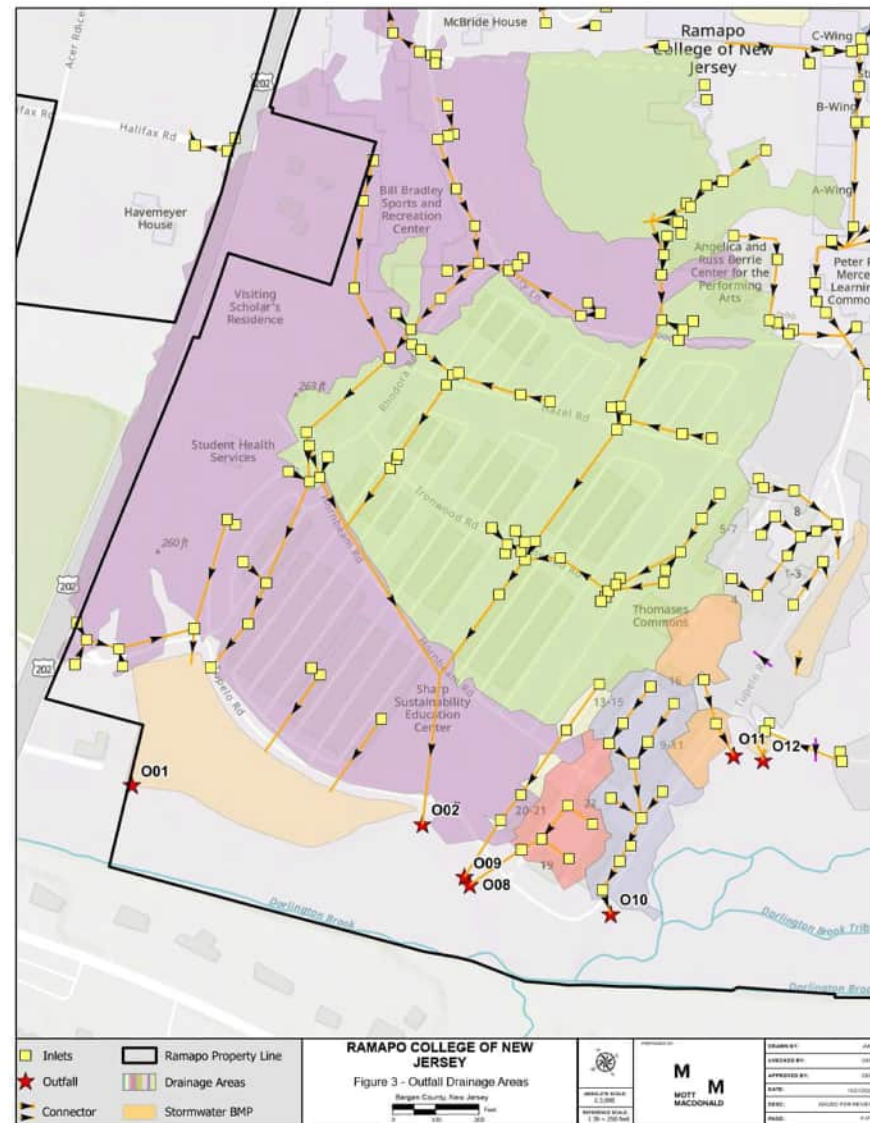
Mackin, Bischoff and Athletic Fields





Outfall Drainage Areas

Village and commuter lots



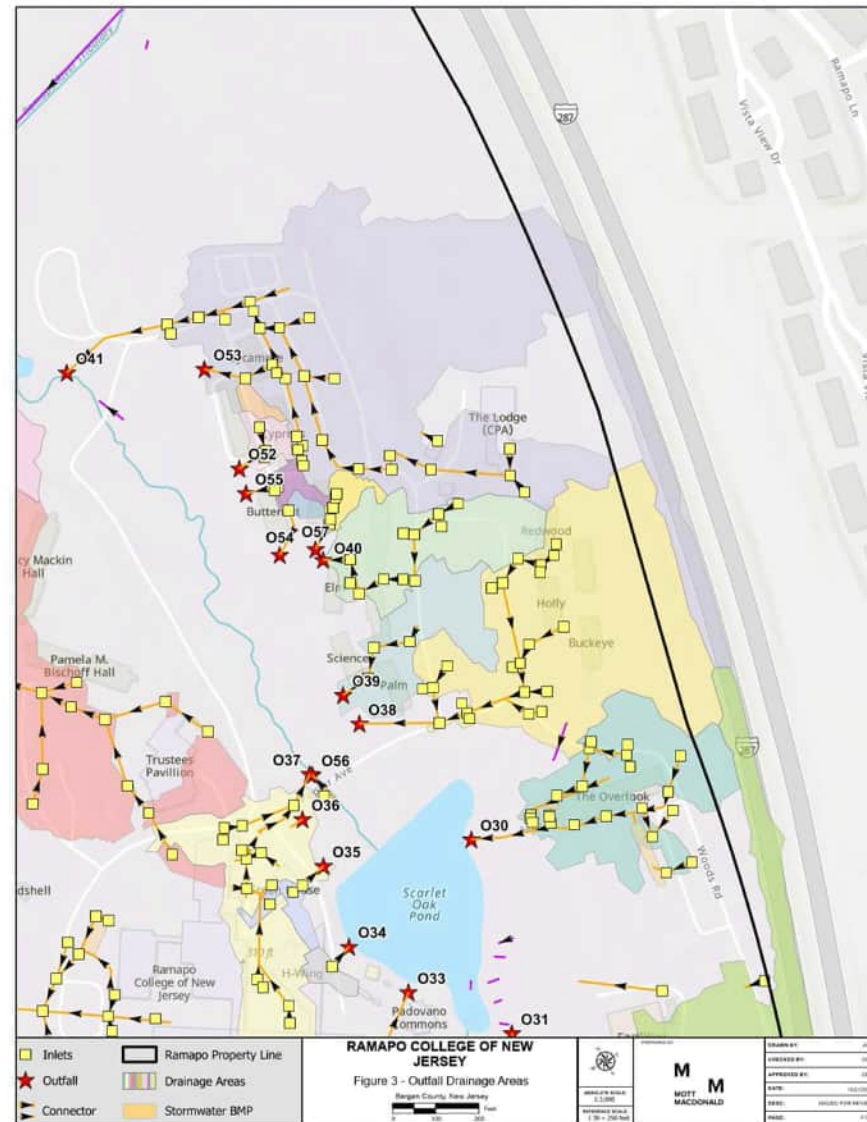


Outfall Drainage Areas

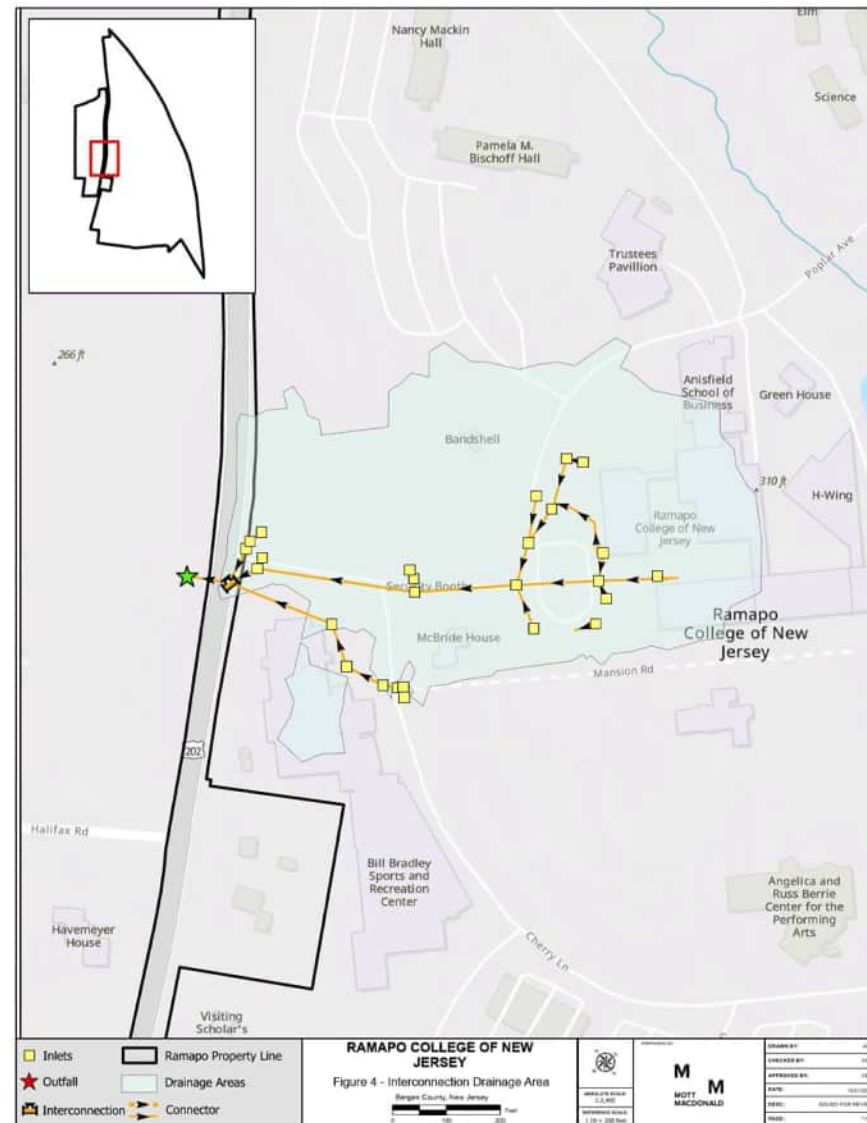
Overlook, Laurel Quad



Outfall Drainage Areas Upper CPA



Interconnected Drainage Areas



Best Management Practices (BMPs)

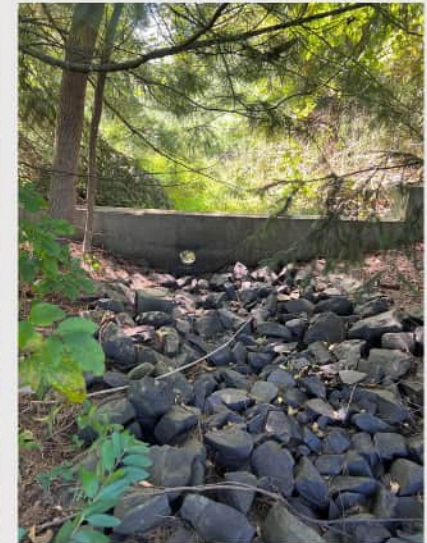
Key purposes of stormwater BMPs

- **Improve water quality:** BMPs filter out pollutants like sediment, oil, and chemicals from runoff before it reaches rivers, lakes, and oceans.
- **Reduce flooding:** By controlling the amount and rate of runoff, BMPs help prevent localized flooding and overload of drainage systems.
- **Protect ecosystems:** They help preserve natural habitats and aquatic biodiversity by reducing the negative impacts of urban runoff, which can include erosion and sedimentation.
- **Conserve water resources:** Practices like infiltration basins replenish groundwater, which is an important source of water.
- **Prevent pollution:** By managing waste and controlling potential pollution sources, BMPs prevent them from being washed into storm drains.

Best Management Practices on campus



Best Management Practices (BMPs)



- **BMP 1** is a detention basin between Parking Loop Road and Darlington Brook, near the western access road off Route 202.

Best Management Practices (BMPs)



- **BMP 2** is a detention basin northeast of Loop Road and just southeast of Parking Loop Road.

Best Management Practices (BMPs)

- **BMP 3** consists of a forebay, sand filter, and detention basin on the north side of Loop Road.



Best Management Practices (BMPs)

- **BMP 4** consists of a sand filter and detention basin just north and west of Pine Hall.



Best Management Practices (BMPs)

- **BMP 5** is a forebay and sand filter located in the infield area just southwest of the Facilities parking area.



Best Management Practices (BMPs)



- **BMP 6** is a detention basin just west of the Phase VIII Overlook parking area.

Best Management Practices (BMPs)

- **BMP 7** consists of a stone settling basin with gabion walls that drains to an underground sand filter.



Best Management Practices (BMPs)

- **BMP 8** is a detention basin located between the Mackin Hall parking area and Route 202.



Best Management Practices (BMPs)

- **BMP 9** is a manufactured treatment device with filter cartridges inside.



Best Management Practices (BMPs)

- **BMP 10** is an underground seepage pit near the Overlook dormitory building.



Water Quality Impairments Identified in the local Watersheds

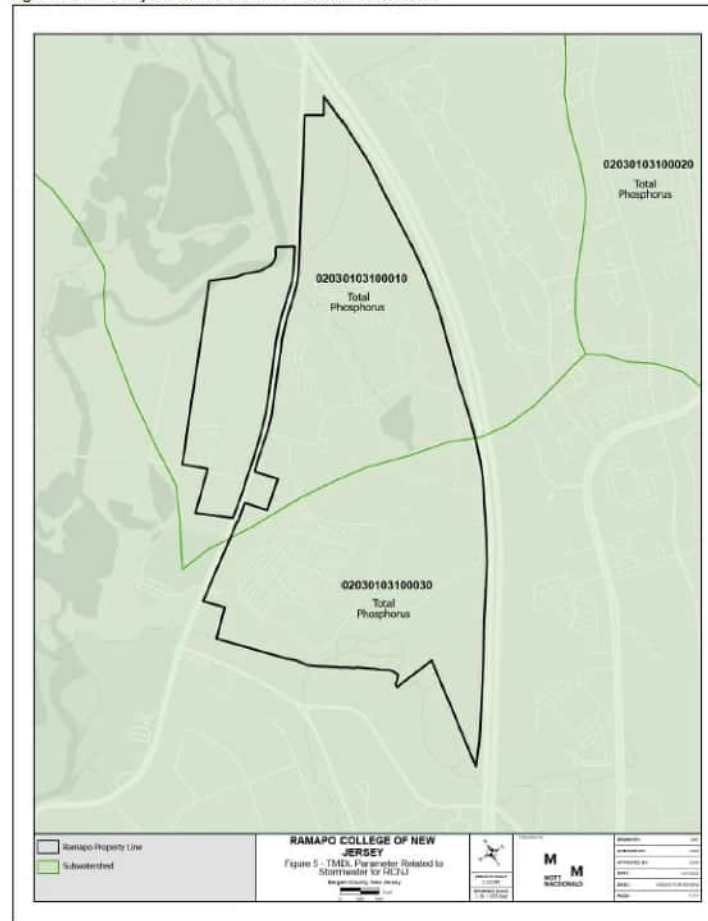
Two HUC14 subwatersheds are located within the RCNJ property boundary:

- 02030103100010 – Ramapo River Subwatershed (Upper Segment)
- 02030103100030 – Ramapo River Subwatershed (Lower Segment)

Both subwatersheds are part of the Ramapo River watershed and are subject to a TMDL for Total Phosphorus, as established under the Non-Tidal Passaic River Basin TMDL.

Ramapo River Subwatersheds (Upper and Lower Segments)

Figure 10: TMDLs by Parameter Related to Stormwater for RCNJ



Surface Water Quality Standards for Total Phosphorus

Per N.J.A.C. 7:9B-1.14(d), the Surface Water Quality Standards for Freshwater 2 classifications specify the following limits for total phosphorus:

- **Streams:** Total phosphorus shall not exceed 0.1 mg/L, unless it can be demonstrated that phosphorus is not a limiting nutrient and will not otherwise render the waters unsuitable for designated uses.
- **Lakes, Ponds, and Reservoirs:** Total phosphorus shall not exceed 0.05 mg/L in any lake, pond, reservoir, or in a tributary at the point where it enters such a waterbody, unless site-specific criteria are developed under N.J.A.C. 7:9B-1.5(g)3.

These standards apply to all receiving waters identified within the RCNJ drainage network.



Identified Water Quality Impairments

In addition to the phosphorus TMDLs, each HUC14 exhibits specific water quality impairments listed under NJDEP's Integrated Water Quality Monitoring and Assessment Report (Integrated Report):

- HUC14 02030103100010: **Dissolved Oxygen Impairment**
- HUC14 02030103100030: **Temperature Impairment**

Pollutants of Concern and Environmental Impacts

- **Total Phosphorus** (HUC14 02030103100010 and 02030103100030): Elevated phosphorus levels can promote excessive algal and aquatic plant growth (eutrophication), leading to fluctuations in pH and dissolved oxygen that degrade aquatic habitat and may violate water quality standards. Excess phosphorus also increases the risk of Harmful Algal Blooms, which produce toxins that threaten human and animal health.
- **Dissolved Oxygen** (HUC14 02030103100010): Dissolved oxygen is a key indicator of a waterbody's ability to support aquatic life. Low dissolved oxygen concentrations can stress or kill sensitive aquatic organisms, impair biological diversity, and alter ecosystem function. Dissolved oxygen levels fluctuate seasonally and diurnally, particularly in nutrient-enriched or stagnant waterbodies.
- **Temperature** (HUC14 02030103100030): Elevated water temperatures reduce the solubility of oxygen, compounding low dissolved oxygen impacts. Thermal pollution or canopy loss can raise stream temperatures to levels unsuitable for cold-water fish species, including trout. Temperature regulation is therefore essential for maintaining biological integrity within the Ramapo River system.

Area(s) Prone to Flooding

Localized flooding within the RCNJ property has been observed:

1. **Along Woods Road**, at the approximate midpoint of the campus' eastern boundary. This area contains multiple stormwater drain inlets, outfalls, and adjacent impervious surfaces. There are several outfalls off campus that drain from Rt 287 to this area and contribute to surface runoff during significant storm events.
2. There is also flooding noted in front of the "New Evergreen" College Park Apartments (Specifically **Mulberry**)
3. The rear of the student center by the loading dock and **at the intersection of Poplar and Sequoia Road.**

Summary and Next Steps

- Both HUC-14 subwatersheds within the RCNJ property – 02030103100010 and 02030103100030 – are subject to a Total Phosphorus TMDL and exhibit dissolved oxygen and temperature impairments, respectively.
- Three areas have been identified that are prone to flooding.
- These findings will inform future watershed assessments and will help identify appropriate Best Management Practices (BMPs) and stormwater quality improvement projects to reduce pollutant loading and enhance water quality compliance.

Questions / Input

- Please let us know if you have any feedback
- We will soon prepare Phase 2 of the Watershed Improvement Plan. This is an assessment of potential projects to address water quality and quantity concerns.
- Email ehs@ramapo.edu with feedback / comments

Thank you!



Samuel Antoshak
Fire and Safety Specialist
Santosha@Ramapo.edu
(201)-684-7614



Attachment A.2. – Public Information Session Documentation –
September 21, 2026 – Meeting Minutes & Slides



Ramapo College of New Jersey Watershed Improvement Planning

Phase II – Watershed Assessment Report Meeting Minutes – Public Information Session September 21, 2026

Project: Ramapo College of New Jersey – Watershed Improvement Plan – Phase 2

Prepared by: C. Morissette **Date:** 9/21/2026

Subject: Public Information Session – September 21, 2026 – Meeting Minutes

1 Purpose

On September 21, 2026, Ramapo College of New Jersey (RCNJ) conducted a virtual Public Information Session to provide students, employees, and members of the public with information regarding the College's stormwater management program and ongoing development of its Watershed Improvement Plan (WIP). The session was conducted as part of RCNJ's public outreach efforts under the NJDEP Public Complex Stormwater General Permit and focused on stormwater and watershed fundamentals, the College's stormwater infrastructure and management activities, and the three-phase WIP process.

The session also provided an opportunity for attendees to ask questions and submit comments regarding stormwater management, watershed conditions, and potential improvement opportunities on campus. Any comments received during the session or subsequent public review of the Phase II Watershed Assessment Report (WAR) will be documented and considered during development of the final WIP.

2 Public Notice and Meeting Access

Notice of the Public Information Session was posted on RCNJ's publicly accessible Watershed Improvement Plan webpage and included the meeting date, time, purpose, and Microsoft Teams access link. The session was open to students, employees, and members of the public, and no advance registration was required. Anyone with the publicly posted meeting link could join the session. Attendees could view the presentation and submit questions or comments through the Microsoft Teams Q&A/chat function. The webpage notice also identified how comments could be submitted to RCNJ's Environmental Health and Safety Department.

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3 Presenters

The Public Information Session was hosted by Mott MacDonald, RCNJ's environmental consultant supporting stormwater permit compliance and WIP development. The following project representatives participated in the Public Information Session:

Organization	Name	Role
Mott MacDonald	Cameron Morissette	Consultant – Presenter
Mott MacDonald	Jenna Calderone	Consultant – Project Support
RCNJ	Gina Mayer-Costa	RCNJ Representative – Stormwater Program Coordinator
RCNJ	Samuel Antoshak	RCNJ Representative – Fire & Safety Specialist

The meeting was attended by members of the public; however, no substantive questions or comments pertaining to the WIP were submitted through the Q&A/chat function.

4 Meeting Summary

The following items were discussed as part of the Public Information Session:

- **Stormwater And Watershed Fundamentals:** Cameron Morissette explained how rain and snowmelt become runoff, how watersheds drain to shared water bodies, and how RCNJ connects to the upper and lower Ramapo River subwatersheds.
 - **Stormwater Definition:** Cameron defined stormwater as precipitation, including rain and snowmelt, that flows across natural or developed surfaces as runoff. On pervious areas, water can infiltrate, recharge groundwater, and return to the broader water cycle; on developed surfaces, it may enter stormwater inlets and be conveyed through pipes and management facilities.
 - **Watershed Definition:** A watershed is an area of land that drains to a common stream, river, lake, or other waterbody. Cameron explained that RCNJ is located within the Ramapo River watershed and contributes to both the upper and lower Ramapo River subwatersheds.
 - **Campus Waterways:** Cameron emphasized that activities on campus can affect downstream waters because stormwater ultimately reaches local receiving waters, including the Ramapo River, Darlington Brook, Scarlet Oak Pond, and associated tributaries.
- **Water Quality And Flooding Impacts:** Cameron described how runoff carries pollutants and how impervious campus surfaces increase runoff, contributing to water-quality degradation, flooding, erosion, and stream impacts.
 - **Stormwater Pollutants:** Runoff can collect sediment, litter, nutrients such as phosphorus and nitrogen, fecal coliform, petroleum products, vehicle fluids, and road salt. Cameron identified six common pollutant categories—litter, household waste, auto waste, pesticides and herbicides, yard waste, and pet waste—and explained that these materials can reach local and downstream waterways.
 - **Storm Drain Protection:** Cameron explained that most campus storm drains convey water directly to a receiving waterbody without treatment. The key practice is therefore “only rain down the drain”; liquids, chemicals, oil, paint, waste, and other materials must be kept out of the stormwater system.
 - **Runoff And Flooding:** Natural areas allow substantially more infiltration and evaporation, while roofs, pavement, and parking areas increase runoff and reduce infiltration. Cameron stated that increased

runoff can cause localized flooding, erosion, and impacts to streams, making stormwater controls important for both water quality and water quantity.

- **Stormwater Infrastructure And Maintenance:** Cameron outlined the campus stormwater system's collection, conveyance, storage, treatment, infiltration, and maintenance functions, including detention basins, manufactured treatment devices, settling basins, and routine inlet cleaning.
 - **Management Functions:** Stormwater management uses engineering controls and administrative procedures to collect runoff through inlets, convey it through pipes or channels, store it in basins, treat pollutants through best management practices, infiltrate water into the ground where feasible, and maintain the system through inspections and cleaning.
 - **Campus Treatment Facilities:** Cameron described campus detention basins that temporarily hold and slow runoff, manufactured storm filters that remove sediment and other pollutants, and a stone settling basin that supports treatment and infiltration before water reaches Kameron Pond (AKA Scarlett Oak Pond) and other surface waters.
 - **Routine Maintenance:** Ramapo inspects hundreds of inlets and other stormwater assets, removes leaves, sediment, refuse, and debris, and uses a vacuum truck and pressure washing for catch-basin cleaning. The college also performs street sweeping, inlet labeling, infrastructure repair, and routine maintenance of areas affected by erosion or scouring at outfalls.
 - **Maintenance Timing:** Cameron said inlet inspections and cleaning occur annually or semi-annually depending on inspection results and winter conditions, with particular attention to the substantial leaf debris generated by the wooded campus.
- **Permit Compliance And Campus System:** Cameron explained that Ramapo operates a separate storm sewer system regulated by the NJDEP Public Complex Stormwater General Permit, which requires mapping, inspections, maintenance, pollution prevention, public outreach, reporting, and watershed improvement planning.
 - **Permit Requirements:** Ramapo's publicly owned separate storm sewer system is distinct from the sanitary sewer system. The active NJDEP permit requires pollution-prevention activities, infrastructure inventory and mapping, annual inspections, maintenance, public outreach, and reporting.
 - **System Scale:** Cameron reported that the campus system includes 419 storm drain inlets, 27 stormwater outfalls, 10 stormwater best management practices, one municipal interconnection, two Ramapo River subwatersheds, approximately 26% impervious cover, and five receiving water bodies.
 - **Program Activities:** The college's compliance program includes inlet and catch-basin cleaning, outfall and erosion inspections, stormwater pollution-prevention planning, GIS mapping and documentation, regulatory reporting, public outreach, and watershed improvement planning.
- **WIP Development:** Cameron described the three-phase WIP process: Ramapo completed its inventory report in 2025, is preparing the assessment report for completion in 2026, and must finalize improvement projects, priorities, and an implementation schedule by the end of 2027.
 - **Completed Inventory:** Phase I, the Watershed Inventory Report, was completed at the end of 2025. It documented and mapped the stormwater system, drainage areas, outfalls, receiving waters, impervious surfaces, and stormwater facilities, establishing the baseline for subsequent planning.
 - **Current Assessment:** Phase II is the WAR, due by the end of 2026. Ramapo and its consultants are evaluating stormwater conditions and water-quality concerns, identifying potential improvement opportunities, and considering technical feasibility, engineering needs, budgeting, and available information.

- **Final Improvement Plan:** Phase III is due by the end of 2027 and will select improvement projects and other actions, establish priorities and an implementation schedule, and document the college's planned path forward. The plan will be tracked and updated periodically.
- **Partnership Approach:** Cameron explained that the process requires partnerships and coordinated effort across the college, including staff time, funding, technical support, maintenance, and public participation.
- **Public Review And Community Input:** Cameron, Gina, and Sam asked the campus and wider public to review the Phase II assessment and submit observations or questions that can influence the final WIP.
 - **Report Availability:** The draft WAR is expected to be posted on RCNJ's Stormwater Management webpage on or about October 9, 2026. Members of the public and campus community may review the report after publication.
 - **Comment Process:** Cameron asked participants to submit comments, questions, and observations about stormwater management or watershed conditions to stormwater coordinators Gina and Sam. Feedback will be compiled and considered during development of the final WIP.
 - **Coordinator Contacts:** Gina and Sam are available through EH&S and invited campus community members to contact them by email or meet with them on campus. The stated contacts are gmayerco@ramapo.edu for Gina and santosha@ramapo.edu for Sam.
 - **Public Outreach:** Gina and Sam described their continuing outreach through campus events, safety fairs, Earth Day activities, tabling, and other opportunities where community members can ask questions or discuss stormwater concerns.
- **Community Stormwater Practices:** Cameron identified practical actions for students, employees, residents, and visitors, including preventing dumping, managing waste, reporting problems, reducing pollutants, and participating in cleanups and sustainability initiatives.
 - **Waste Prevention:** Community members should place litter and recyclables in appropriate containers, participate in campus cleanups, pick up pet waste, and avoid putting liquids, chemicals, oil, paint, or other materials into storm drains.
 - **Problem Reporting:** Spills, dumping, clogged inlets, erosion, unusual discharges, recurring flooding, and drainage concerns should be reported to Gina, Sam, or the relevant campus stormwater contacts so they can be investigated and addressed.
 - **Pollution Reduction:** At home and on campus, people should minimize unnecessary fertilizer, pesticide, and deicing-material use, maintain vehicles and address leaks promptly, and support campus sustainability and watershed initiatives.
 - **Upcoming Outreach:** Gina and Sam said they would staff a table at the Public Safety Fair the following day at 1:00 p.m.; the event would be outdoors if weather permitted or in the appropriate indoor venue otherwise.
- **Public Comments Received:** No substantive questions or comments were submitted through the Microsoft Teams Q&A/chat function during the session. One attendee expressed appreciation for the information presented. Attendees were reminded that comments may also be submitted to RCNJ's stormwater contacts following the session.

5 Action Items & Next Steps

- **Watershed Assessment Report:** Mott MacDonald will provide the draft Watershed Assessment Report to RCNJ for review. Following RCNJ review, RCNJ will post the report on its Stormwater Management webpage and invite public comments.
- **Public Feedback:** RCNJ will provide comments received through its designated stormwater contacts to Mott MacDonald. Mott MacDonald will compile and document applicable feedback for consideration during development of the final Watershed Improvement Plan.
- **Stormwater Issue Reporting:** The campus community is encouraged to report observed spills, dumping, clogged inlets, recurring flooding, erosion, or other drainage concerns to RCNJ's stormwater contacts.
- **Continued Public Outreach:** RCNJ will continue stormwater outreach through campus events and other public-information opportunities.



Ramapo College of New Jersey

Watershed Improvement Plan
Public Information Session
September 21, 2026



Presented by:
Cameron Morissette, PG, CHMM
Principal Geologist
Mott MacDonald



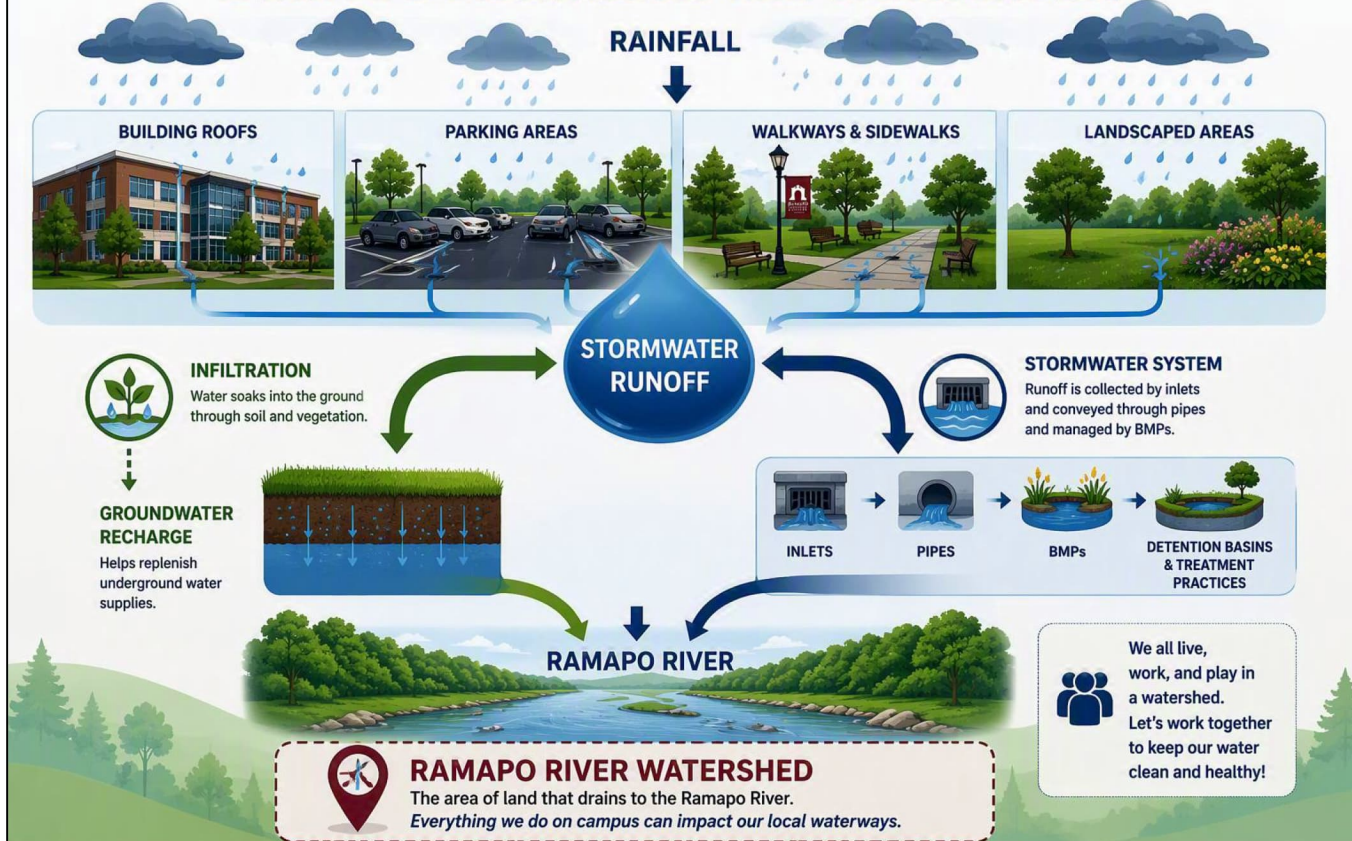
Agenda



- Stormwater and Watershed Basics
- Why Stormwater Management Matters
- Ramapo College's Stormwater Management Program
- NJDEP Public Complex Stormwater Permit
- Watershed Improvement Plan Process
- How the Campus Community Can Help

How Stormwater Moves Through the Landscape

What Are Stormwater and Watersheds?



Stormwater

Rainwater or snowmelt that flows across the land and developed surfaces as runoff.

Watershed

The area of land that drains to a common stream, river, lake, or other waterbody.

DID YOU KNOW?

RCNJ is located within the Ramapo River watershed

Why Stormwater Management Matters

Water Quality and Water Quantity Issues

Water Quality Concerns

- Runoff can collect sediment, litter, nutrients, petroleum products, road salt, and other pollutants.
- Materials entering storm drains can ultimately affect local streams and downstream waterways.
- Individual activities on the land can either pollute or protect receiving waters.

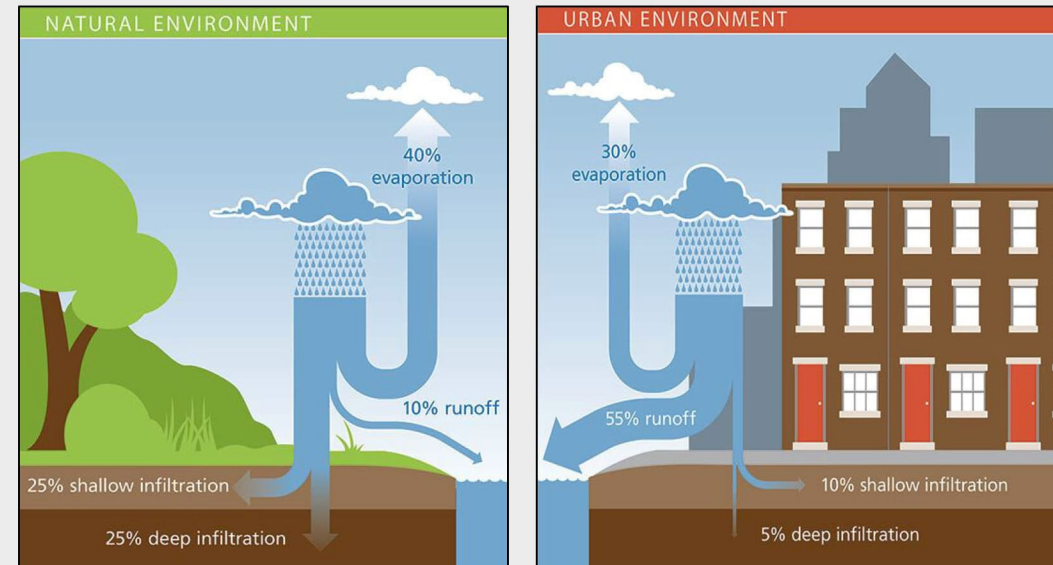


Why Stormwater Management Matters

Water Quality and Water Quantity Issues

Water Quantity Concerns

- Pavement, rooftops, and other impervious surfaces reduce infiltration.
- Increased runoff can contribute to localized flooding, erosion, and stream impacts.
- Stormwater management facilities help slow, store, infiltrate, or treat runoff.



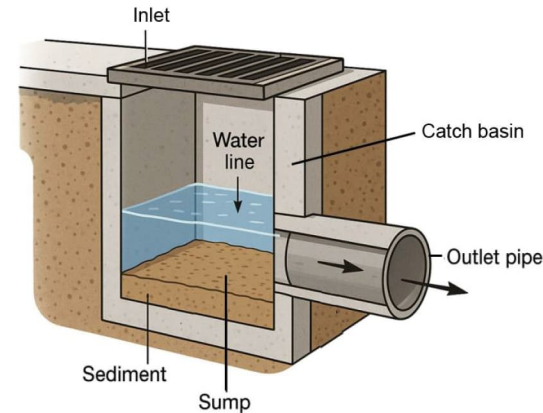
How Stormwater is Managed

Infrastructure and BMPs

- **Collect:** Inlets and drainage systems collect runoff.
- **Convey:** Pipes, swales, and channels safely move water.
- **Store:** Basins and other facilities temporarily hold runoff.
- **Treat:** Best management practices remove sediment and pollutants.
- **Infiltrate:** Green infrastructure and pervious areas allow water to soak into the ground.
- **Maintain:** Routine inspection and cleaning keep systems functioning.

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How Stormwater is Managed

Infrastructure and BMPs

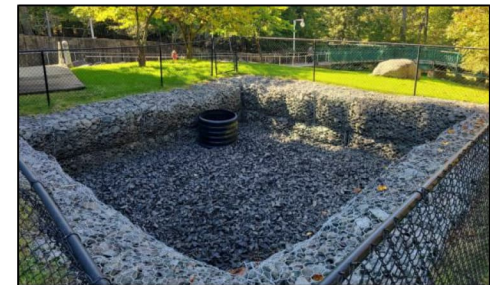
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- **Maintain:** Routine inspection and cleaning keep systems functioning.



Detention Basin (store)



Manufactured Treatment
Device – (treat)

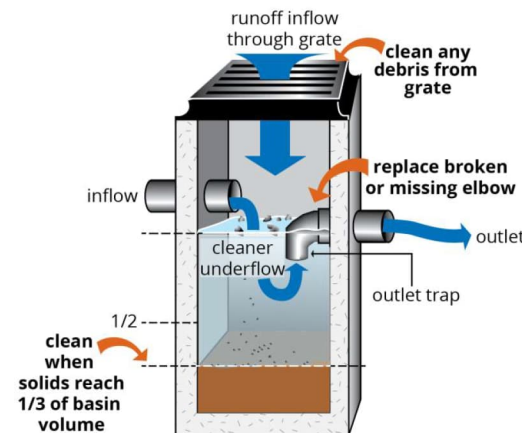


Stone Settling Basin
(treat / infiltrate)

How Stormwater is Managed

Infrastructure and BMPs

- Collect: Inlets and drainage systems collect runoff.
- Convey: Pipes, swales, and channels safely move water.
- Store: Basins and other facilities temporarily hold runoff.
- Treat: Best management practices remove sediment and pollutants.
- Infiltrate: Green infrastructure and pervious areas allow water to soak into the ground.
- **Maintain:** Routine inspection and cleaning keep systems functioning.



Why are we here?

NJDEP Public Complex Stormwater Permit

- Ramapo operates a publicly owned separate storm sewer system.
- The campus is regulated under the NJDEP Public Complex Stormwater General Permit.
- The permit establishes requirements for pollution prevention, mapping, inspection, maintenance, public outreach, and reporting.
- The permit also requires development of a Watershed Improvement Plan.



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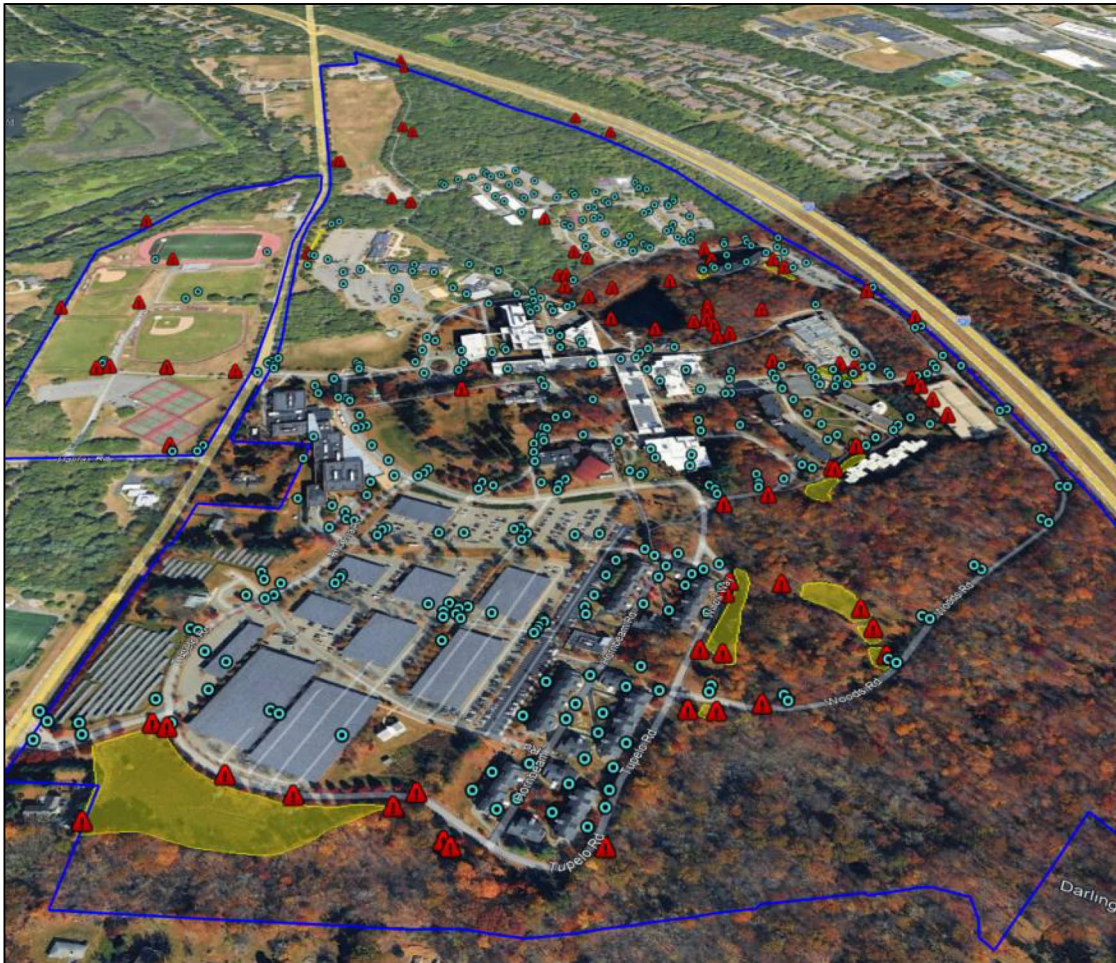
Public Complex

Stormwater Guidance Document
NJPDES General Permit No NJ0141879



New Jersey Department of Environmental Protection
Division of Water Quality
Municipal Stormwater Regulation Program

Ramapo Stormwater System at a Glance



- **419** Storm Drain Inlets
- **27** Stormwater Outfalls
- **10** Stormwater BMPs
- **1** Municipal Interconnection
- **2** Ramapo River Subwatersheds
- **26%** Impervious Cover
- **5** Receiving Water Bodies
 - Scarlet Oak Pond
 - Ramapo River Tributary
 - Ramapo River
 - Darlington Brook
 - Darlington Brook Tributary

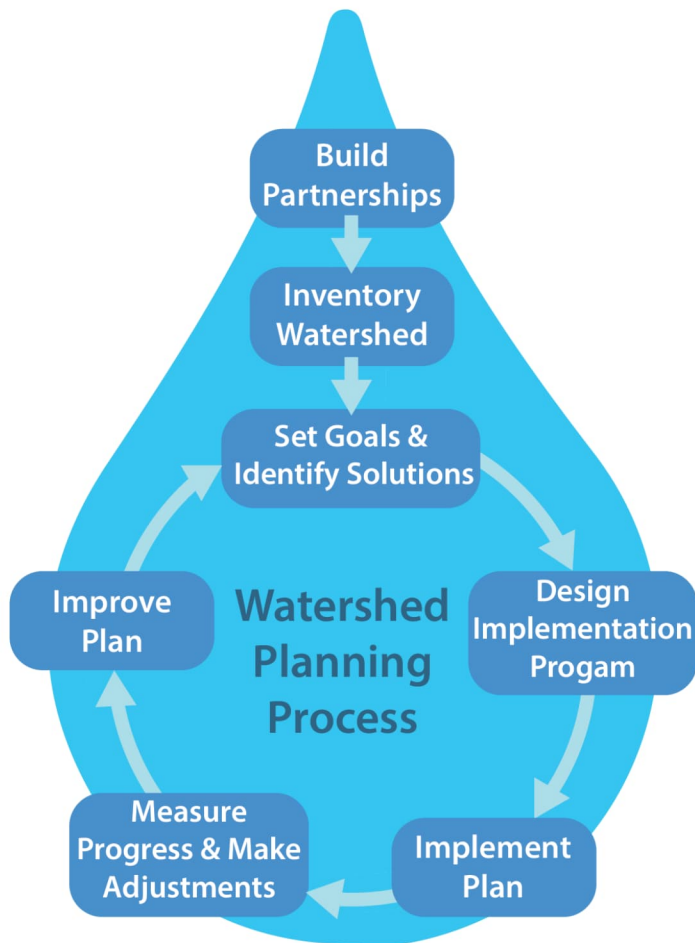
Ramapo's Stormwater Program



Stormwater Permit Compliance Activities

- Infrastructure inspection and maintenance
- Inlet and catch-basin cleaning
- Outfall and erosion inspections
- Stormwater pollution prevention planning
- GIS mapping and system documentation
- Public outreach and regulatory reporting
- Watershed Improvement Planning ★

Watershed Improvement Plan Process



Phase I: Watershed Inventory Report

- Document and map the stormwater system
- Identify drainage areas, outfalls, receiving waters, impervious surfaces, and stormwater facilities
- Establish the baseline inventory

Phase II: Watershed Assessment Report

- Evaluate water-quality and stormwater conditions
- Identify potential improvement opportunities
- Consider public input and available information

Phase III: Watershed Improvement Plan

- Select improvement projects and actions
- Establish priorities and an implementation schedule
- Document the College's planned path forward

Watershed Assessment Report: Public Review



Your input matters!

As part of the Watershed Improvement Plan process, Ramapo College will make the **Phase II Watershed Assessment Report (WAR)** available for public review upon completion. The report will be posted to the College's Stormwater Management webpage on or about October 9, 2026.

How to Participate

- Review the Watershed Assessment Report.
- Submit comments, questions, or observations regarding stormwater management and watershed conditions on campus.
- Feedback received will be considered during development of the final Watershed Improvement Plan (WIP).

Where to Find the Report:

<https://www.ramapo.edu/ehs/stormwater/watershed/>

Submit comments to your Stormwater Coordinators



Stormwater Coordinator Contacts

Gina Mayer-Costa
Director / Environmental
Health & Safety
E-mail:
gmayerco@ramapo.edu
Phone: (201) 684-7531
Office: EHS

Samuel Antoshak
Fire & Safety Specialist
E-mail:
santosha@ramapo.edu
Phone: (201) 684-7614
Office: EHS

What the Campus Community Can Do



Responsible Practices

- Place litter and recyclables in appropriate containers. Participate in campus cleanups.
- Do not pour liquids, chemicals, oil, paint, or other materials into storm drains.
- Pick up pet waste.
- Report spills, dumping, clogged inlets, erosion, or unusual discharges.
- Minimize unnecessary use of fertilizers, pesticides, and deicing materials.
- Keep vehicles maintained and address leaks promptly.
- Participate in campus sustainability and watershed initiatives.
- Share observations regarding recurring flooding or drainage concerns.

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Stormwater Coordinator Contacts

Gina Mayer-Costa
Director / Environmental
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santosha@ramapo.edu
Phone: (201) 684-7614
Office: EHS



Thank you

Questions and Public Input

Please submit questions or comments through
Teams Q&A/chat.



Attachment B – Regional Coordination Documentation – January 20,
2026 – RCNJ & Mahwah Township Meeting Minutes

Date: January 20th, 2026
Location: EHS Building
Subject: **Meeting Minutes**
Watershed Improvement Plan Phase 1 Information Session (with Mahwah)

At 10am, the session began with a presentation by Sam Antoshak. In attendance were representatives from Mahwah Department of Public Works, Ramapo College Facilities, and Ramapo College Environmental Health and Safety.



MAHWAH TOWNSHIP
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The below items were reviewed.

- I. Introduction
 - a) Regulatory Context: NJAC 7:14A, NJPDES Permit #NJG0154661, MS4 Section 5.H
 - b) Purpose: Improve water quality and comply with NJDEP and EPA regulations.
- II. Stormwater Basics
 - a) Definition and importance of stormwater management.
 - b) Key stakeholders at Ramapo College (EHS, Facilities, Public Safety, Capital Planning, all employees/visitors).
- III. Program Objectives
 - a) Implement Best Management Practices (BMPs) to reduce pollutant discharge.
 - b) Protect water quality and meet Clean Water Act requirements.
- IV. Regulatory Framework
 - a) NJDEP Campus-Wide Permit for RCNJ.
 - b) Federal and state mandates: Clean Water Act, NJPDES, Bureau of Nonpoint Pollution Control.

V. Why It Matters

- a) 95% of NJ waterways impaired.
- b) Historical lack of stormwater management prior to 1983 and poor practices before 2004.

VI. Actions Taken by RCNJ

- a) Policies and written stormwater plan.
- b) Website updates, street sweeping, infrastructure mapping.
- c) Campus cleanups (204 volunteer hours, 870 lbs trash removed).
- d) Employee training and educational events.
- e) Spill kit program (37 kits across campus).
- f) General policies (pet waste, deicing, herbicide, litter control, etc.).

VII. Watershed Improvement Plan (WIP)

- a) Goals: Reduce pollutants, address flooding, prioritize health and environmental impacts.
- b) Phases: Phase 1 (Inventory Report), Phase 2 (Assessment Report), Phase 3 (Improvement Plan Report).

VIII. Phase 1 Deliverables

- a) Infrastructure mapping: 27 outfalls, 33 groundwater discharge points, 419 storm drain inlets, BMPs, maintenance yards.
- b) Outfall details and drainage areas.
- c) Existing BMPs (10 identified, including detention basins, sand filters, forebays, seepage pits).

IX. Water Quality Issues

- a) Two HUC14 subwatersheds within campus: Ramapo River Upper Segment and Lower Segment.
- b) Impairments: Total Phosphorus (TMDL), Dissolved Oxygen, Temperature.
- c) Pollutants of concern: phosphorus, Dissolved Oxygen, elevated temperature.

X. Flood-Prone Areas

- a) Woods Road (east boundary).
- b) College Park Apartments (Mulberry).
- c) Rear of Student Center and Poplar/Sequoia intersection.

XI. Next Steps

- a) Use findings to guide Phase 2 (Assessment Report).
- b) Identify BMPs and projects to improve water quality and reduce flooding.

XII. Contact

- a) Samuel Antoshak, Fire and Safety Specialist (ehs@ramapo.edu).

XIII. Discussion and Feedback

- a) Discussions of future joint projects between the college and the township of Mahwah.
- b) Mahwah provided helpful tips and vendors for stormwater maintenance.
- c) Ramapo is providing Mahwah with logs of all recycling metrics for the existing campus programs.