NEW YORK STATE | Department of Environmental Conservation

QUALITY ASSURANCE PROJECT PLAN

PROCEDURES FOR COLLECTING, REPORTING AND VERIFYING WASTEWATER AND DEVELOPED SECTOR DATA IN THE CHESAPEAKE BAY WATERSHED

Kathy Hochul, Governor | Basil Seggos, Commissioner

Version Tracking

This quality assurance project plan (QAPP) replaces the point source portion of New York's QAPPs dated September 2, 2011, April 2015, June 2015, November 2015, and March 2016, and May 2018 for DEC's Chesapeake Bay Watershed Program. This version of the QAPP updates verification procedures described in the June 2015, November 2015, and March 2016 versions by including information requested by EPA in comments dated May 18, 2018. This version, dated November 18, 2021, incorporates the development and use of the nonpoint source database built to collect and report implementation and verification of non-agricultural BMPs and will be effective upon EPA approval in August 2022. Work will not commence until QAPP is approved.

QAPP Overview

The QAPP integrates all technical and quality aspects of a project, including planning, implementation, and assessment (USEPA 2006). The QAPP documents how quality assurance (QA) and quality control (QC) are applied to an environmental data operation to assure that the results obtained are of the type and quality needed and expected. The QAPP must be composed of standardized, recognizable elements covering the entire project from planning, through implementation, to assessment. These elements are presented in that order and have been arranged for convenience into four general groups. The four groups of elements and their intent are summarized as follows:

A. Project Management - The elements in this group address the basic area of project management, including the project history and objectives, roles and responsibilities of the participants, etc. These elements ensure that the project has a defined goal, that the participants understand the goal and the approach to be used, and that the planning outputs have been documented.
B. Data Generation and Acquisition - The elements in this group address all aspects of project design and implementation. Implementation of these elements ensures that appropriate methods for sampling, measurement and analysis, data collection or generation, data handling, and QC activities are employed and are properly documented.
C. Assessment and Oversight - The elements in this group address the activities for assessing the effectiveness of the implementation of the project and associated QA and QC activities. The purpose of assessment is to ensure that the QA Project Plan is implemented as prescribed.
D. Data Validation and Usability - The elements in this group address the QA activities that occur after the data collection or generation phase of the project is completed. Implementation of these elements ensures that the data conform to the specified criteria, thus achieving the project objectives.

This QAPP governs the operation of New York Department of Environmental Conservation's (DEC) Chesapeake Bay Watershed Program as it relates to the collection, reporting, and verification of wastewater and developed sector data. Each person listed in the organization chart adheres to the procedural requirements of the QAPP and ensures that subordinate personnel do likewise. This QAPP is reviewed periodically to ensure that the objectives of the CBRAP grant are met. All appropriate persons listed in the organization chart will participate in the review of the QAPP. The Watershed Program Coordinator is responsible for determining that data are of adequate quality to support this project. The project will be modified as directed by the Watershed Program Coordinator and the Watershed Program

Coordinator will be responsible for implementing changes to the project and for documenting the effective date of all changes made.

A. Project Management

A1. Approval Sheet

Concurrence

Name: Lauren Townley

Title: Section Chief, NYSDEC, Division of Water, Chesapeake Bay Watershed Program

Signature: *Lauren A. Townley*   Date: 9/12/2022

Name: Jason Fagel

Title: Assistant Quality Assurance Officer, NYSDEC, Division of Water

Signature: *Jason R. Fagel*   Date: 9/13/2022

Name: Holly Waldman

Title: CBRAP Grant Project Officer, U.S. Environmental Protection Agency, Chesapeake Bay Program Office, EPA Region 3

Signature: Holly Waldman   Date: 08/17/2022

Approval

Name: Durga Ghosh

Title: QA Coordinator, USGS, Chesapeake Bay Program Office, EPA Region 3

Signature: *Durga Ghosh*   Date: 08/17/2022

Note: This approval action represents EPA's determination that the document(s) under review comply with applicable requirements of the EPA Region 3 Quality Management Plan [https://www.epa.gov/sites/production/files/2020-06/documents/r3qmp-final-r3-signatures-2020.pdf] and other applicable requirements in EPA quality regulations and policies [https://www.epa.gov/quality]. This approval action does **not** represent EPA's verification of the accuracy or completeness of document(s) under review, and is **not** intended to constitute EPA direction of work by contractors, grantees or subgrantees, or other non-EPA parties.

A2. Table of Contents

A3. Distribution List

The following individuals must receive a copy of the approved QAP in order to complete their role in this project (Table 1).

Table 1 Distribution List

Name	Title	Organization	Document Type
Jason Fagel	Program Manager QA Officer	NYS DEC	Electronic
Lauren Townley	Section Chief	NYS DEC	Electronic
Cassandra Davis	Environmental Program Specialist	NYS DEC	Electronic
Tara Blum	Region 8 Regional Water Engineer	NYS DEC	Electronic
Thomas Vigneault	Region 7 Regional Water Engineer	NYS DEC	Electronic
Victoria Schmitt	Region 4 Regional Engineer	NYS DEC	Electronic
Janet Thigpen	Flood Mitigation Specialist	Southern Tier Central Regional Planning Board	Electronic
Jen Gregory	Executive Director	Southern Tier 8 Regional Planning Board	Electronic

A4. Project/Task Organization

DEC staff in DEC's central office in Albany and three regional field offices (Bath, Schenectady, and Syracuse) have roles in the collection, reporting and verification of point source data (Table 2). Regional Planning Board staff also have roles in the collection and reporting of developed sector data.

Table 2. Watershed Program Staff and Office Locations

Position	Location	DEC Region
Watershed Program Coordinator	Albany	Central Office
Environmental Engineer	Albany	Central Office
Environmental Program Specialist	Albany	Central Office
Program Manager QA Officer	Albany	Central Office
Environmental Engineer	Bath	Region 8
Environmental Engineer	Bath	Region 8
Environmental Engineer	Schenectady	Region 4
Environmental Engineer	Syracuse	Region 7
Environmental Program Specialist	Syracuse	Region 7
Regional Development Analyst/ Planner	Southern Tier Central Regional Planning Board	N/A
Regional Development Analyst/ Planner	Southern Tier 8 Regional Planning Board	N/A

A4.1 Organization chart

The Watershed Program Coordinator oversees DEC's Chesapeake Bay Watershed Program, participation in the EPA Chesapeake Bay Program, and administration of the CBRAP grant. The regional employees focus on compliance and enforcement activities to meet CBRAP grant obligations. The Regional Planning staff contribute to DEC's data collection efforts, under the supervision of the Watershed Program Coordinator. Detailed job descriptions are in the Descriptions of duties section below (Figure 1).
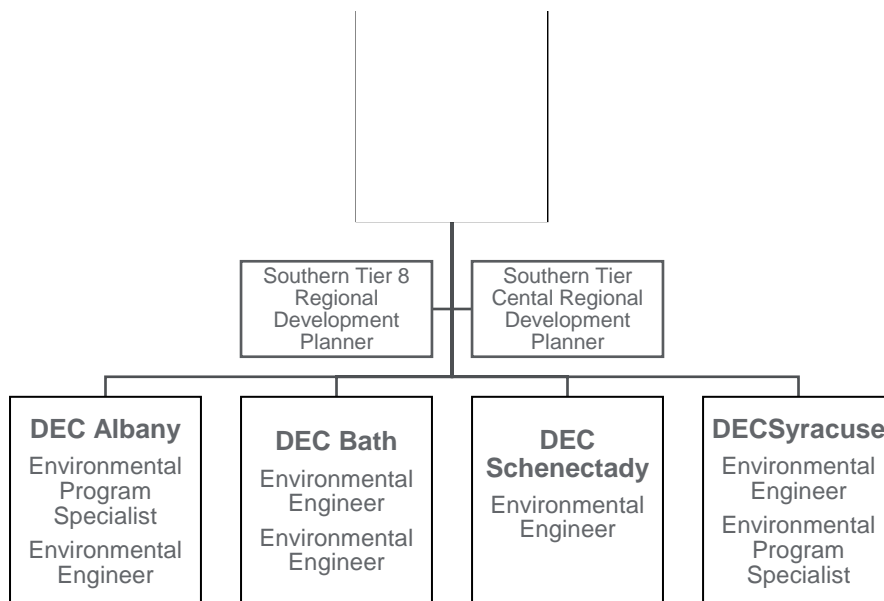
Figure 1. Project Organizational Chart

A4.2 Description of Duties

Watershed Program Coordinator – Albany

The Watershed Program Coordinator oversees day-to-day operations of DEC's Chesapeake Bay Watershed Program and administration of the CBRAP and CBIG grants. In addition, the position works to (1) research improvements to best management practices for road ditch maintenance, animal stream exclusion, enhanced phosphorus removal, nitrogen reduction technology, and riparian set back programs; (2) recommend the course forward to achieve New York's water quality goals and satisfy watershed requirements, (3) coordinate attendance or participation in Chesapeake Bay Program committees and workgroups, as resources permit, and (4) track and assure completion of CBRAP- and CBIG-funded activities and commitments in accordance with established schedules and priorities. The Watershed Program Coordinator manages the QAPP. The Program Coordinator will ensure any changes to the project documents receive technical and management review. Once changes are accepted by all, updated documents will be distributed to project staff per the Distribution List (A3).

Environmental Engineer – Albany

This Environmental Engineer modifies SPDES discharge permits for wastewater treatment plants as described by New York's Watershed Implementation Plan and reviews engineering plans for modifications to treatment plants in the Chesapeake Bay watershed.

Environmental Program Specialist – Albany

This Environmental Program Specialist provides overall program development and coordination to ensure completion of goals and commitments and represents New York in Chesapeake Bay Program workgroups, committees, panels, etc. This Environmental Program Specialist ensures that federal and state requirements regarding accountability and transparency are met and that sufficient information is distributed to the public at an appropriate level to understand the same.

Program Manager Quality Assurance Officer – Albany

The Quality Assurance Officer provides expertise regarding analytical and QA/QC Issues and reviews the QAPP to verify that those elements outlined in the *EPA Requirements for QA Project Plans (QA/R-5)* are successfully discussed.

Environmental Engineers – DEC Regions 4, 7 & 8 (Schenectady, Syracuse & Bath)

These Environmental Engineers conduct inspections and compliance follow-up activities for SPDES-permitted activities including: wastewater discharges, Concentrated Animal Feeding Operations, municipal separate storm sewer systems and construction sites. Other duties

include reviewing and approving engineering plans and developing and issuing SPDES permit modifications as necessitated by New York's Watershed Implementation Plan.

Environmental Program Specialist – DEC Region 7 (Syracuse)

This Environmental Program Specialist conducts inspections and compliance follow-up activities for SPDES-permitted facilities including: wastewater treatment plants, Concentrated Animal Feeding Operations, municipal separate storm sewer systems and construction sites. Other duties include developing and conducting training and outreach to permittees as described by New York's Watershed Implementation Plan.

Regional Development Planners – Southern Tier 8 and Southern Tier Central Regional Planning & Development Boards

The Regional Development Planners from Southern Tier 8 (representing Broome, Chenango, Cortland, Delaware, Otsego, Schoharie, Tioga, and Tompkins Counties) and Southern Tier Central (representing Chemung, Schuyler and Steuben Counties) assist DEC with BMP implementation and verification data collection with funding awarded through the NYSDEC 604(b) Program. The planners also provide education and outreach to raise awareness of local action programs available that encourage the implementation of BMPs and hold County Water Quality Coordinating Committees.

A5. Problem Definition and Background

New York State is a recipient of Chesapeake Bay Regulatory and Accountability Program (CBRAP) and Chesapeake Bay Implementation Grant (CBIG) funds from the U.S. Environmental Protection Agency (EPA) under Section 117 of the Clean Water Act. In 2010, EPA established a Total Maximum Daily Load (TMDL) for the Chesapeake Bay due to excessive nutrients (nitrogen and phosphorus) causing low dissolved oxygen conditions in deep channels of the Bay. The main sources contributing to excessive nutrients are sewage, agricultural manure, inorganic fertilizer, and atmospheric nitrogen deposition. Because nutrients and sediment in the Bay come from all over the watershed, all seven jurisdictions (New York, Pennsylvania, Maryland, Delaware, Washington, D.C., and Virginia and West Virginia) are required to meet the goals outlined in the TMDL. All the landside best management practices (BMPs) and reductions from wastewater needed to achieve the TMDL targets must be in place by 2025. Jurisdictions are required to track and report nutrient and sediment reduction progress annually to EPA. The data is incorporated into EPA's Chesapeake Bay Watershed Model to track jurisdictions progress to achieving the TMDL targets.

All organizations conducting environmental programs funded by EPA are required to establish and implement a quality assurance system. EPA also requires that all environmental data used in decision-making be supported by an approved QAPP. Activities supported by New York's CBRAP and CBIG

funding that require quality assurance include the compilation, management and reporting of discharge data from wastewater treatment plants, and best management practice data from construction sites, stream corridor restoration, wetland restoration and construction, and farms. This document describes the quality assurance procedures established by New York for wastewater and developed sector data. Quality assurance procedures for other nonpoint source data are described in a separate document entitled, Upper Susquehanna Coalition Quality Assurance Project Plan Procedures for Collecting, Reporting, and Verifying Agricultural, Stream, and Wetland Data in the Chesapeake Bay Watershed.

In New York, the Department of Environmental Conservation (DEC) is the state agency responsible for water quality compliance and enforcement, permit development and issuance, and TMDL development and implementation planning.

Responsibilities rest with both regional field offices and the central office in Albany. DEC focuses its work on the entities and activities it regulates, including wastewater treatment plants, concentrated animal feeding operations (CAFO), municipal separate storm sewer systems (MS4), and land disturbance activities.

A full description of the objectives, tasks and outputs associated with New York's CBRAP and CBIG grants is included in the workplans for those grants. All work supported by CBRAP and CBIG funding occurs in the Susquehanna and Chemung river watersheds in New York and emphasizes nutrient and sediment reductions.

A6. Project Description

A6.1 Project Overview

EPA's Chesapeake Bay Total Maximum Daily Load (TMDL) requires New York to reduce nutrient and sediment pollutant loads to the Chesapeake Bay. Progress towards the reduction nutrient and sediment load targets are estimated using a complex watershed model. Wastewater discharge monitoring reporting (DMR) data and Best Management Practices (BMP) implementation and verification data are reported to DEC monthly. DEC reviews and reports the DMR and BMP data to EPA's Chesapeake Bay Program Office (CBPO) to be incorporated into the Chesapeake Bay Watershed Model and progress towards meeting reduction targets are evaluated by CBPO. The following sections detail how data from each sector is reported to CBPO.

A6.2 Project Schedule

The Chesapeake Bay Program uses a July 1st to June 30th timeline for reporting annual progress. DEC is required to submit data to CBPO for the progress year by December 1st as outlined in the Chesapeake Bay Grant Guidance Attachment 6: Chesapeake Bay Program Wastewater Facility and BMP Implementation Data Submission Specifications and Requirements.

A6.3 Significant Wastewater Treatment Plants Data Collection

There are 32 wastewater treatment plants in New York's portion of the Chesapeake Bay Watershed classified as "Significant." as defined in section *4.4.1 Significant and Nonsignificant Municipal and*

Industrial Facilities[1] of the Chesapeake Bay TMDL. Twenty-six are municipal wastewater treatment plants with individual SPDES-permitted discharge volumes of more than 400,000 gallons per day and six are industrial wastewater treatment plants with a nutrient load equivalent to over 3,800 total phosphorus (lbs./year) or 27,000 total nitrogen (lbs./year)[2].

New York's Significant wastewater treatment plants are listed below in Table 3. All are permitted through New York's State Pollutant Discharge Elimination System (SPDES) program, which is approved by EPA for control of surface wastewater and stormwater discharges in accordance with the Clean Water Act.

Table 3. New York's Chesapeake Bay Significant Wastewater Treatment Plants

SPDES Permit Number	Facility Name	DEC Region	County
NY0020320	Addison (V)	8	Steuben
NY0022357	Alfred (V)	9	Allegany
NY0003824	Amphenol Corporation	4	Delaware
NY0021431	Bath (V)	8	Steuben
NY0024414	Binghamton-Johnson City	7	Broome
NY0023248	Canisteo (V)	8	Steuben
NY0036986	Chemung Co. Elmira SD #1	8	Chemung
NY0035742	Chemung Co. Elmira SD #2	8	Chemung
NY0213781	Chenango (T) Northgate	7	Broome
NY0004189	Chobani	7	Chenango
NY0023591	Cooperstown (V)	4	Otsego
NY0025721	Corning (C)	8	Steuben
NY0027561	Cortland (C)	7	Cortland
NY0027669	Endicott (V)	7	Broome
NY0023906	Erwin (T)	8	Steuben
NY0021407	Greene (V)	7	Chenango
NY0020672	Hamilton (V)	7	Madison
NY0023647	Hornell (C)	8	Steuben
NY0004308	Upstate Farms Cheese	8	Steuben
NY0157295	Leprino Foods	7	Tioga
NY0021423	Norwich (C)	7	Chenango

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[1] As defined by EPA's Chesapeake Bay TMDL for Nitrogen, Phosphorus and Sediment (https://www.epa.gov/sites/default/files/2014-12/documents/cbay_final_tmdl_section_4_final_0.pdf)
[2] As defined by EPA's 2019 Grant and Cooperative Agreement Guidance (https://www.epa.gov/sites/production/files/2016-01/documents/2016cbpograntguidance.pdf)

NY0031151	Oneonta (C)	4	Otsego
NY0022730	Owego (T) #1	7	Tioga
NY0025798	Owego (T) #2	7	Tioga
NY0029262	Owego (V)	7	Tioga
NY0025712	Painted Post (V)	8	Steuben
NY0031411	Richfield Springs (V)	4	Otsego
NY0021466	Sherburne (V)	7	Chenango
NY0029271	Sidney (V)	4	Otsego
NY0031089	Waverly (V)	7	Tioga
NY0004243	Kerry Bio-Science	7	Chenango
NY0003808	Endicott Interconnect technologies Inc	7	Broome

A6.3.1 Collecting Wastewater Data from Significant Facilities

Discharge information from New York's Significant wastewater plants is submitted to DEC by each significant wastewater treatment plant via monthly Discharge Monitoring Reports (DMR). Each DMR contains sampling results from the plant's wastewater discharge as required by permit monitoring conditions, including flow and nitrogen and phosphorus loads for that month. Permittees prepare, certify, and submit DMRs as instructed by DEC's *DMR Manual for Completing the Discharge Monitoring Report for the State Pollutant Discharge Elimination System (SPDES)*.[3] Permit limits for each facility are entered into EPA's online database, the Integrated Compliance Information System (ICIS-NPDES). The DMR provides NYS DEC with sampling data that used to determine the compliance status of a permitted facility by comparing actual effluent discharge quality to the SPDES permit limit. NetDMR is a web-based tool that allows SPDES permittees to electronically sign and submit DMRs directly to EPA and DEC and into the ICIS-NDPES system. All Significant wastewater plants currently submit DMRs to ICIS-NDPES through NetDMR.

A workflow diagram describing the DEC process for handling DMRs is in Appendix A: Discharge Monitoring Report Submittal Processing.

Regional staff provide guidance documents to the operators of individual treatment plants and work with the operators to ensure DMR values are calculated and reported accurately.

A6.3.2 Reporting Significant Wastewater Data

DEC submits data for the Significant wastewater treatment plants to the Chesapeake Bay Program for annual progress runs according to the schedule outlined in EPA's *Chesapeake Bay Program Office Grant and Cooperative Agreement Guidance* (Grant Guidance). The Chesapeake Bay Program developed an online tool, CBPO Point Source data submission tool[4], to submit annual wastewater data. DEC creates a yearly input deck of facilities within the watershed; new or off-lined facilities can be added or removed. The tool retrieves DMR data for the reporting period from ICIS-NPDES for each of the facilities and compiles the data into an annual data set record. For each outfall, ICIS-NPDES

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[3] The *DMR Manual* is on DEC's website at http://www.dec.ny.gov/chemical/8461.html.
[4] CBP's Point Source Data Submission Application: https://pointsource.chesapeakebay.net/

provides average monthly flow and concentration data (mg/L) for the following parameters: NH3, NO3, NO2, TON, TKN, TN, PO4, TOP, TP, CBOD/BOD, DO, and TSS. Within the tool, DEC reviews the annual data set for accuracy using the QA/QC iterative process (Appendix B). The finalized data set is submitted for use in the model.

A6.4 Non-Significant Wastewater Treatment Plants Data Collection

Wastewater facilities that do not meet the definition of a "Significant" facility are classified as "Non-Significant". New York has approximately 200 Non-Significant wastewater treatment plants in the Chesapeake Bay watershed. Annual DMR data that is available for a small number of non-significant facilities is collected, reported, and verified using the methods described above for Significant wastewater treatment plants. For facilities without annual DMR data, state state-specific default values will be reported during the annual progress run data submission as described in Attachment 6 of the Grant Guidance.

A6.5 Combined Sewer Overflows

Three Combined Sewer Overflow (CSO) facilities are permitted in New York's portion of the Chesapeake Bay watershed: Binghamton Combined Sewer Overflows (NY0024406), Village of Johnson City Overflows (NY0023981), and Chemung County Elmira Sewer District (NY0035742). All three facilities have approved Long Term Control Plans (LTCP) that include requirements for verification of construction, post-construction monitoring and inspection, compliance and enforcement procedures, and tracking and reporting requirements.

A6.5.1 Compliance and Enforcement of Combined Sewer Overflows

In addition to the general compliance and enforcement procedures described in Section 10: Compliance and Enforcement of Point Sources, DEC uses the following strategies to ensure compliance with EPA's CSO Control Policy:

1. **Permit requirements and compliance monitoring:** DEC issues SPDES permits to communities with CSO outfalls. The following requirements are included in SPDES permits or Orders on Consent to manage and reduce overflows:

    a. All CSO outfall locations must be listed in the SPDES permit.

    b. Relevant BMPs appropriate to the specific conditions of the CSS are included in the permit.

    c. Most CSO communities are required to develop a LTCP, which is implemented through the SPDES permit or a consent order. If the implementation is governed under a consent order, the compliance schedules are incorporated by reference into the SPDES permit.

    d. In addition to the LTCP requirements, CSO permittees must continue implementation of the applicable 15 CSO BMPs listed in their SPDES permits.

    In addition, DEC uses the following tools to track compliance monitoring of CSO permittees and abatement activities:

    e. DEC developed an annual report template in 2013 to assist communities in reporting

      and to ensure that DEC receives information necessary to complete its annual reporting requirement to EPA.

    f. A CSO inspection form to assist DEC staff with annual compliance inspections. DEC staff use this form to assess compliance with CSO permit requirements and to get a complete picture of how the control facilities perform and are maintained.

    g. The LTCP compliance schedules are tracked using EPA's ICIS data system and any significant noncompliance is addressed through the SNAP process.

2. **CSO Mapping:** DEC developed a CSO Google Map[5] showing the location of all CSOs and a CSO Wet Weather Advisory[6] webpage to keep the public informed on the CSO program and abatement progress and to help the public make decisions about recreating on waterbodies with CSOs.

A6.7 Onsite Wastewater Treatment Systems Data Collection

As described in New York's Phase III Watershed Implementation Plan[7], DEC does not expect significant nitrogen reductions from onsite wastewater treatment systems (OWTS), also referred to as septic systems. In 2020, New York created a mechanism to track, report or verify OWTS BMPs in the Chesapeake Bay watershed. Septic pumping is reported annually by soil and water conservation districts. Septic connections are reported as municipal wastewater treatment plants expand their sewer service area.

A6.8 Land Application Data Collection

DEC regulates and permits land application of sewage sludge, non-sewage sludge, septage, food processing, and other solid wastes under *6 NYCRR Subpart 360-4: Land Application Facilities* (https://www.dec.ny.gov/regulations/regulations.html). Each permitted land application facility is required to submit an annual report to DEC that includes the following information: sites used during the year, sites to be used the following year, sludge analysis, current and next year's quantities and application rates, soil analysis, problems, and complaints.

As of June 2018, 24 facilities are permitted by DEC for land application. Five facilities are in the Chesapeake Bay watershed: American Rendering Company (Broome County), Sheesley Sewer Service (Chemung County), City of Hornell (Steuben County), Town of Owego (Tioga County) and Village of Owego (Tioga County). One is a food processing plant, one is a sewer and septic service company and three are wastewater treatment plants.

A6.8.1 Biosolids

DEC collects data about land application of biosolids through the annual report required of land application facilities permitted by DEC. This permit program and data are managed by DEC's Division of Materials Management, Bureau of Waste Reduction and Recycling, Organic Recycling and Beneficial Use Section (http://internal/dmm/dmm76.html).

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[5] Map of CSO locations: http://www.dec.ny.gov/pubs/103459.html. The CSO map is in the "Chemical and Pollution Control Maps" table.

[6] CSO Wet Weather Advisory webpage: http://www.dec.ny.gov/chemical/88736.html.

[7] Phase II WIP, Section 8.1: Septic Systems, p. 175.

Each year, the Division of Water requests the most recent annual reports for permitted land application facilities from the Division of Materials Management, summarizes it using the template provided by EPA-CBPO and submits according to the schedule outlined in the Grant Guidance.

A6.8.2 Spray Irrigation

DEC does not have data about spray irrigation of wastewater in New York. Default data provided by EPA-CBPO is used in place of actual data.

A6.9 Developed Sector Data Collection

In New York, DEC is responsible for collecting, reporting, and verifying developed stormwater BMP data to the Chesapeake Bay Program. Currently, DEC's construction stormwater general permit (*State Pollutant Discharge Elimination System (SPDES) General Permit for Stormwater Discharges from Construction Activity*[8]) is the only source of erosion and sediment control data that is currently reported to the Chesapeake Bay Program. The construction stormwater general permit notice of intent reports the stormwater performance BMPs used to treat stormwater and the amount of impervious surface reduced during construction. These BMPs are referred to as semi-regulated when installed outside of a municipal stormwater sewer system (MS4). The permit applicant must sign an agreement that they will maintain the BMP; the locality is not required to have an inspection program to enforce maintenance.

MS4s that are located within the boundaries of a Census Bureau defined "urbanized area" are regulated under EPA's Phase II Stormwater Rule. Discharges from MS4s in urbanized or additionally designated areas must be authorized in accordance with a permit for stormwater discharges from MS4s[9].This permit requires MS4s to develop a stormwater management program that will reduce the amount of pollutants carried by stormwater during storm events to waterbodies to the "maximum extent practicable". The goal of the program is to improve water quality and recreational use of waterways. Within the Chesapeake Bay watershed, communities surrounding Binghamton and Elmira are covered under the MS4 program (Figures 2 and 3). The Chesapeake Bay Program refers to these BMPs as regulated because they are subject to inspection and maintenance under the MS4 general permit.

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[8] The construction activity permit and Notice of Intent is available on DEC's website at: www.dec.ny.gov/chemical/43133.html.
[9] The MS4 permit and Notice of Intent is available on DEC's website at: http://www.dec.ny.gov/chemical/43150.html
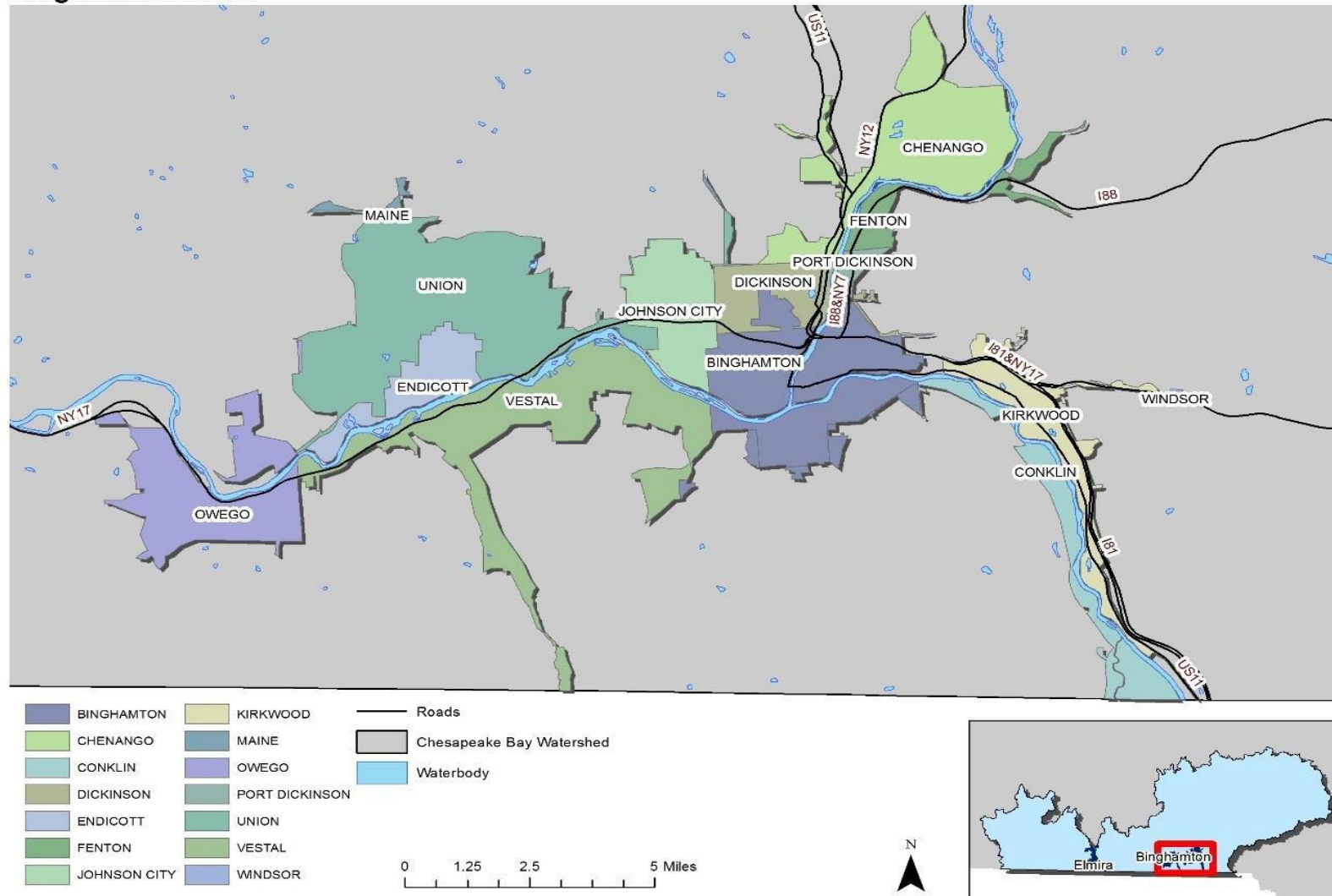
Binghamton MS4s

Figure 2 Binghamton MS4 Communities

Elmira MS4s
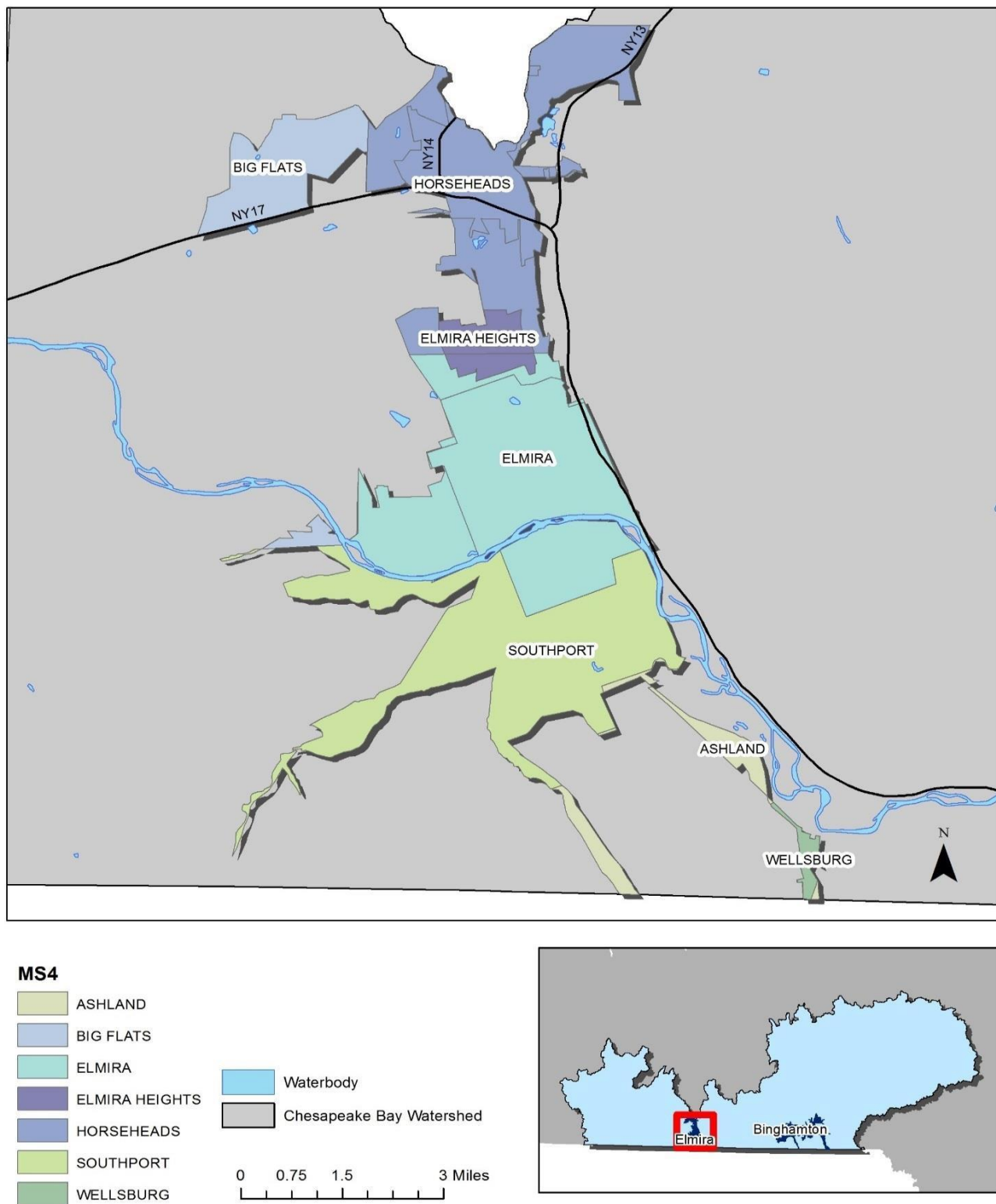
Figure 3 Elmira MS4 Communities

A6.9.1 Collecting and Reporting Regulated (Within MS4) Developed BMP Data

The MS4 Program requires post-construction BMPs to be implemented by regulated municipalities as part of the fulfillment of Minimum Control Measure 5 (MCM5) in their permits. Procedures to track and inventory post-construction stormwater practices are required.

In New York, the owner or operator of a construction project that will involve soil disturbance of one or more acres must obtain coverage under the construction stormwater general permit.

Coverage must be obtained before construction begins and is requested by submitting a *Notice of Intent* (NOI) to DEC. The NOI identifies all erosion and sediment control best management practices to be used during construction and any post-construction stormwater best management practices that will be installed and remain at the site after construction is completed. The information submitted on the NOI is currently tracked by the Division of Water's Stormwater Section in the Water Information System (WIS). The NOI information from WIS is exported into an excel document, clipped to the watershed, and submitted to NEIEN as an XML file.

The inventory is required to include location, type of practice, receiving waterbody name, maintenance needed per NYS Stormwater Management Design Manual, Storm Water Pollution Prevention Plan (SWPPP), dates and type of maintenance performed, and ensures adequate long-term operation and maintenance of management practices by trained staff, including inspection to ensure the practices are performing properly.

A6.9.2 Collecting and Reporting Post-Construction BMP Data

Using the Notice of Intent, DEC collects information about post-construction stormwater best management practices implemented at the construction site. Post-construction BMPs collected on the NOI will be matched to Chesapeake Bay Program BMPs according to Table 4.

Table 4 Post Construction BMP Practices

DEC Post Construction Practices	Runoff Reduction Technique/Stormwater Management Practice Code	Chesapeake Bay Program BMP Full Name
Sheetflow to riparian buffers/filter strips	Area Reduction (RR-2)	Forest Buffer; Grass Buffers
Tree planting/tree pit	Area Reduction (RR-3)	Forest planting; Tree Planting - Canopy
Disconnection of rooftop runoff	Area Reduction (RR-4)	Impervious Disconnection to amended soils
Vegetated swale	Volume Reduction (RR-5)	Vegetated open channel
Rain garden	Volume Reduction (RR-6)	Bioretention/raingardens
Porous pavement	Volume Reduction (RR-9)	Permeable Pavement
Infiltration trench	Standard SMPs with RRv Capacity (I-1)	Urban infiltration practices
Infiltration basin	Standard SMPs with RRv Capacity (I-2)	Urban infiltration practices

Dry well	Standard SMPs with RRv Capacity (I-3)	Infiltration Practices
Underground filtration system	Standard SMPs with RRv Capacity (I-4)	Infiltration Practices
Bioretention	Standard SMPs with RRv Capacity (F-5)	Bioretention/raingardens
Dry swale	Standard SMPs with RRv Capacity (O-1)	Bioswale
Micropool extended detention	Standard SMPs (P-1)	Wet ponds and wetlands
Wet pond	Standard SMPs (P-2)	Wet ponds and wetlands
Wet extended detention	Standard SMPs (P-3)	Wet ponds and wetlands
Multiple pond system	Standard SMPs (P-4)	Wet ponds and wetlands
Pocket pond	Standard SMPs (P-5)	Wet ponds and wetlands
Surface sand filter	Standard SMPs (F-1)	Filtering practices
Underground sand filter	Standard SMPs (F-2)	Infiltration Practices
Perimeter sand filter	Standard SMPs (F-3)	Filtering practices
Organic filter	Standard SMPs (F-4)	Filtering practices
Shallow wetland	Standard SMPs (W-1)	Wet ponds and wetlands
Extended detention wetland	Standard SMPs (W-2)	Wet ponds and wetlands
Pond/wetland system	Standard SMPs (W-3)	Wet ponds and wetlands
Pocket wetland	Standard SMPs (W-4)	Wet ponds and wetlands
Wet swale	Standard SMPs (O-2)	Bioswale
Runoff Reduction		Runoff Reduction
Stormwater Treatment		Stormwater Treatment

Construction stormwater best management practice data is extracted from the Water Information System (WIS) database as an excel file and reviewed in ArcGIS for location accuracy. Locations within 200 feet of one another are checked to prevent duplicate records. The Excel file is imported into the NPS Database. The database exports an XML that is uploaded to NEIEN by Division of Water Bureau of Watershed Management Resource Management according to the schedule outlined in EPA's Grant Guidance.

A6.9.3 Collecting and Reporting Erosion and Sediment Control BMP Data

Permittees covered by the construction stormwater general permit must develop and implement a Stormwater Pollution Prevention Plan (SWPPP) that is prepared by a "qualified professional" (e.g. a Professional Engineer, Soil and Water Conservation District, Registered Landscape Architect, or a Certified Professional in Erosion and Sediment Control). The SWPPP must include an erosion and sediment control plan that addresses the potential for pollutants to be discharged during soil disturbance through practices consistent with the *New York State Standards and Specifications for*

Erosion and Sediment Control (Blue Book).[10] The Blue Book provides minimum standards and specifications for meeting DEC's criteria for stormwater discharges associated with construction activity, including minimizing erosion and sediment impacts from construction activity involving soil disturbance. SWPPPs are reviewed by MS4 municipalities only when the project is located within an MS4 area.

Using the Notice of Intent, DEC collects information on the type of erosion and sediment control practices used during construction. Because the Chesapeake Bay Program does not differentiate between types of erosion and sediment control practices for purposes of the Chesapeake Bay Watershed Model, New York only reports the total acreage treated by erosion and sediment control practices.

A6.9.4 Collecting and Reporting Semi-regulated Developed BMP Data

Semi-regulated BMPs include practices installed locally under a state construction general permit outside of MS4 areas. The locality is not required to have an inspection program to enforce maintenance of the BMPs. The collection and reporting of these BMPs is the same as outlined in section 7.1.1.1 and 7.1.1.2 for regulated BMPs. Locations within 200 feet of one another are checked to prevent duplicate records.

A6.10 Non-permitted Stormwater BMP Data Collection

With the development of the NPS database, DEC is now able to track BMPs implemented outside of MS4 areas and not requiring a Construction Stormwater Permit. Stormwater BMPs implemented that do not meet the requirements of needing a construction stormwater permit, due to size of project or BMP types implemented, are able to be tracked and verified in the database.

BMPs are reported through nonpoint source BMP implementation grant programs through DEC Division of Water and Division of Lands and Forest and through surveys conducted by the regional planning and development boards (RPDB). Southern Tier 8 RPDB and Southern Tier Central RPDB cover the majority of counties in the watershed. The planning boards survey municipalities outside of MS4 areas and report the annual BMP implementation occurring to DEC using a designated template. The template is imported into the NPS database where the implementation, verification, and credit duration can be tracked and reported.

A6.11 Septic BMP Data Collection

Septic BMPs reported by NY include septic connections and septic pump outs. Septic connections are reported as they occur in the watershed. Regional staff assist wastewater facilities with technical assistance and reviewing design plans and engineering reports. Septic pump outs are reported annually through the RPDB survey or through grant program progress reports.

A6.12 Forestry BMP Data Collection

In 2020, New York began reporting forest harvesting that follows required erosion and sediment control. Acres of harvested forests are reported through a survey distributed by the Regional Planning and

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[10] This document is available on DEC's website at: http://www.dec.ny.gov/chemical/29066.html.

Development Boards, Southern Tier 8 and Southern Tier Central for State Forest lands and private lands receiving technical assistance from a Regional Forester.

NY is developing a mechanism to report acres harvested under New York's 480a Forest Tax Law program. Pursuant to Section 9-0505 of New York's Environmental Conservation Law, DEC sells stands of timber from State Forests. State Forests in New York are managed according to sustainability standards set by the Forest Stewardship Council and the Sustainable Forestry Initiative, which includes protecting water quality by following guidelines that address erosion control and minimize forest damage during tree harvesting, road construction, and any other disturbances that may affect water quality. Timber sale contracts include provisions requiring the buyer to implement BMPs to protect environmental resources. These BMPs include the use of temporary bridges or culverts to protect streams, installation of erosion control devices during and at completion of the harvest, seasonal harvesting restrictions to avoid wet soil conditions, and equipment restrictions to protect sensitive areas, among others. Reporting the acres of harvested 480a Forest Tax Law Program and the forest harvesting occurring on state lands can provide an annual estimate of the amount of known harvested forest occurring in the watershed.

Private lands eligible under the 480A program must include forest tracks of at least 50 contiguous acres and be harvested in accordance with a sound forest management program. Applications under the 480A program must include a management plan prepared by a professional forester and documentation of erosion and sediment control measures. All applications under the program are approved by DEC's Division of Lands and Forests staff.

A7. Quality Objectives and Criteria

The information collected under this project will be used to evaluate the progress of DEC's developed BMP implementation and wastewater progress. Quality objectives include: Timely annual reporting, increase data reporting and data completeness, and improve verification of BMP installation and maintenance information.

Most of the data used in this project is reported by third parties and as such, DEC cannot apply standard rigors of QA/QC to individual data points. Data is examined for anomalies and outliers before use in any reporting.

A8. Special Training/Certifications

The Project Manager will ensure that all individuals involved with the project receive and are familiar with this document to ensure proper adherence to the procedures outlined within.

A9. Documentation and Records

A9.1 Wastewater Documentation and Records

Wastewater DMR data is uploaded by facilities to EPA's Integrated Compliance Information System (ICIS) using NetDMR as described in section A6.3. DEC uses the Chesapeake Bay Point Source Tool to review and submit data to CBPO. For facilities who report DMR data, the data is able to be accessed directly from ICIS using the Chesapeake Bay Point Source tool. The annual submission data is stored on DEC's internal file directory as well as the online Chesapeake Bay Point Source Tool.

A9.2 BMP Implementation Documentation and Recors

Data on BMP implementation is submitted to DEC using excel templates that are compatible with DEC's Nonpoint Source Database. The project and BMP information are imported and stored in the database. The database is located on DEC's Water Information System database-driven system that contains data, reports and program management tools for the Division of Water. The exported XML is stored on DEC's internal file directory and through the online Chesapeake Assessment Scenario Tool.

B. Data Generation and Acquisition

The elements in this group address all aspects of project design and implementation. Implementation of these elements ensures that appropriate methods for sampling, measurement and analysis, data collection or generation, data handling, and QC activities are employed and are properly documented. Sections B1 through B9 of an EPA-required QAPP are not directly applicable to wastewater and NPS BMP data tracking, verification, and reporting.

B10. Data Management

The Division of Water uses EPA's Integrated Compliance Information System-National Pollutant Discharge Elimination System (ICIS-NPDES) as its primary data management tool. However, the ICIS-NPDES system alone is not sufficient to support all of the Division of Water's information needs and additional state systems have been developed to fill gaps in the functionality provided by the EPA systems. Examples of these information systems include:

- **Water Information System (WIS):** DEC's WIS is an internal database-driven system that contains data, reports and program management tools for the Division of Water. It includes the construction stormwater database, NPS database, and SPDES permit database.

  NPS Database: The Nonpoint Source Best Management Practice (BMP) database is located on DEC's Water Information System (WIS) internal website and tracks new and existing pollution reducing practices implemented throughout New York State. The database contains project description, location, amount of BMPs installed, funding, and nutrient reduction on BMP projects that occur under regulated construction stormwater and MS4 programs or through voluntary grant-funded projects. The BMP information can be queried into reports and exported through excel and XML documents. Appendix E shows the attribute fields reported to the database and exported as an XML for EPA reporting. The database contains more attribute fields than what is shown in Appendix E for additional internal and EPA nonpoint source grant tracking and reporting.

  Construction Stormwater: WIS includes construction stormwater permit information that is reported to the NPS Database to track new implementation of runoff reduction and stormwater treatment BMPs. Annually, all data from the construction stormwater database is exported and queried to the progress reporting period. The data is mapped in ArcGIS by geographic coordinates when available or an address locator is used when only the address of the permitted construction stormwater site is available. The point data is cross referenced with hydrologic unit codes (HUC) 12 subwatersheds and municipality if the information is not available in the permit. This is used to determine if the construction site is within the Chesapeake Bay Watershed. The data is imported into the NPS database using an excel spreadsheet template.

Non-permitted Stormwater, Septic, and Forestry BMPs: BMPs implemented in projects that do not require a permit or are not reported through construction stormwater permitting process are reported by surveying municipalities annually and using DEC grant project reporting such as the Water Quality Improvement Projects program. The BMPs and projects are reported using an excel spreadsheet template that is imported into the database.

C. Assessment and Oversight

C1. Assessments and Response Actions

C1.1 Compliance and Enforcement of Point Sources

DEC adheres to the following compliance and enforcement procedures for all point source discharges in New York.

C1.1.1 SPDES Permits

Article 17 of the New York State Environmental Conservation Law authorizes DEC to regulate discharges to the state's water resources through the State Pollutant Discharge Elimination System (SPDES) program.[11] SPDES permits incorporate water quality standards and establish stringent performance standards, effluent limitations and operating conditions designed to protect the state's water resources. These permits require effective implementation of best management practices and timely sampling, analysis and reporting to DEC on the quality of wastewater discharged under a SPDES permit. In addition to issuing permits, DEC ensures compliance by conducting facility inspections, reviewing facility discharge monitoring reports and operating reports, responding to complaints, and requiring certification of wastewater treatment plant operators.

All SPDES permits comply with the following Division of Water Technical and Operational Guidance Series:[12]

- **TOGS 1.2.1 Industrial Permit Writing:** Provides guidance to DEC staff responsible for writing SPDES permits for discharges of wastewater from industrial facilities and for writing requirements equivalent to SPDES permits for discharges from remediation sites. In writing SPDES permits for industrial dischargers, DEC permit writers must determine three basic aspects of each permit: parameters to be regulated, allowable discharge limits, and monitoring requirements to demonstrate compliance with discharge limits. As well as these basic aspects of discharge permits, there are additional considerations such as anti-degradation review.

- **TOGS 1.2.2 Administrative Procedures and Environmental Benefit Permit Strategy for Individual SPDES Permits:** Provides the procedures for implementing the requirements for discharges authorized under the SPDES program, developing new SPDES permits, and renewing, modifying, priority ranking, and tracking existing SPDES permits.

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[11] http://www.dec.ny.gov/permits/6054.html.
[12] All Division of Water TOGS are on DEC's website: http://www.dec.ny.gov/regulations/2652.html.

- **TOGS 1.3.3 SPDES Permit Development for POTWs:** Provides technical guidance for permit writers in drafting SPDES permits for Publicly Owned Treatment Works (POTW). This document provides the guidance necessary to draft a SPDES permit for a POTW of any size or classification.

C1.1.2 Compliance Inspections

DEC staff located in regional field offices ensure compliance with the terms and conditions of SPDES permits with a focus on significant sources of nutrients and sediment and implementation of the 1987 USEPA/NYSDEC Enforcement Agreement. The 1987 Enforcement Agreement outlines the elements necessary to ensure compliance of facilities permitted through the SPDES program and is an essential component of EPA's authorization of New York's SPDES program.

In the Chesapeake Bay watershed, DEC staff conduct compliance inspections and follow-up activities at Chesapeake Bay Significant wastewater treatment plants, Chesapeake Bay Non- Significant wastewater treatment plants, Concentrated Animal Feeding Operations (CAFO), Municipal Separate Storm Sewer Systems (MS4), construction sites, and facilities covered by the Multi-Sector General Permit (MSGP) with the potential to discharge nutrients or sediment.

Note: EPA Region 2 also conducts inspections at these types of facilities in the Chesapeake Bay watershed as part of its oversight responsibilities.

C1.1.3 Frequency of Compliance Inspections

In the Chesapeake Bay watershed, DEC typically inspects 100% of Significant wastewater treatment plants and CSOs each year; 30-50% of Non-Significant wastewater treatment plants each year; 25-50% of MS4s each year; and 50% of CAFOs each year. Inspection numbers fluctuate from year to year based on changing priorities and staffing levels, but DEC has generally maintained these inspection rates since the start of CBRAP funding in 2011.

C1.1.4 Guidance for Compliance Inspections

The DEC *SPDES Inspector Guidance Manual* guides inspectors in conducting consistent and effective municipal and industrial wastewater treatment plant SPDES inspections. The Inspector Guidance Manual is available internally to DEC staff as part of a broader "Compliance Toolbox" developed to guide Division of Water inspectors during all types of inspections (WWTP, CAFO, MS4 and Construction Stormwater).[13]

Topics covered include inspection preparation, inspection forms, types of inspections, inspection procedures, sampling protocol, inspection reporting, and compliance follow-up procedures for the SPDES program. The guidance manual provides guidelines for conducting SPDES inspections including documentation of inspection findings that may be used for compliance and enforcement response to violations of permit requirements and violations of water quality standards.

Inspectors gather all available information prior to an inspection to determine facility compliance for the period and to identify trends based on the compliance history. The inspector may review

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[13] The Division of Water's Compliance Toolbox is available on DEC's internal website at http://internal/dow/dow177.html.

Discharge Monitoring Reports, complaints against a facility, prior inspection reports, and the conditions of the facility's permit.

After reviewing preparatory information, the inspector conducts the inspection and rates the facility based on the categories found on the inspection form and any other information that is included in the applicable inspection checklist.

Inspection reports may be delivered while the inspector is at the facility and inspection results may be communicated to the facility owner/operator while on-site. Often however, the inspection report is developed after the inspector returns to the office and is later provided to the operator of the inspected facility. If serious violations are found, the inspector will discuss the issues with the facility operator and may pursue an enforcement action (either formal or informal).

After each inspection, the Division of Water follows the procedures below in preparing, transmitting and storing inspection reports, and entering data into DEC's inspection tracking database, called the *Water Compliance System* (WCS), and EPA's compliance tracking database, called the *Integrated Compliance Information System – National Pollution Discharge Elimination System* (ICIS-NPDES).

> **Inspection report preparation, transmittal, and storage:** DEC inspectors prepare and transmit a final report to the permittee. An electronic copy of the report is stored in the Division of Water's Centralized Electronic Document Repository (CEDR).[14]

> **Inspection report data entry:** Inspection data is typically entered in the WCS database by the inspector. In some instances, the inspector may pass the paper inspection form to an administrative staff person to record the core inspection data in the database. Inspection data is transferred from WCS to ICIS-NPDES by the Division of Water's SPDES Compliance Information Section (located in DEC's Central Office in Albany) in accordance with EPA's *ICIS-NPDES User's Guide* after the regional staff enters the inspection into WCS.

The WCS database stores all of DEC's compliance inspection data. The data can be queried and reports generated. The mandatory fields entered for each inspection are: Facility, Inspector, Date, Time, Summary Rating, and if the inspection is complete. This data is entered into WCS within thirty days of the inspection.

To effectively represent DEC, inspectors must have a working knowledge of legal responsibilities and authorities. Reference sources for SPDES legal authorities are maintained in regional offices and periodically reviewed by regional inspectors, particularly in preparation for comprehensive facility inspections. The Division of Water internal website has links to the legal reference sources mentioned above. All Division of Water employees have access to the internal website.

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[14] CEDR is an access-controlled group of folders in the Division of Water's shared network drive that is designated for the storage of final electronic documents. Use of CEDR to store final documents helps prevent duplicate document storage and confusion about which is the final version of a document. All Division of Water employees at minimum have "read" access to these folders. Higher access levels are granted where appropriate, generally on a facility-specific basis.

C1.1.5 Compliance Assurance

The Division of Water's Bureau of Water Compliance tracks SPDES inspections and reports and pursues enforcement actions if necessary.

The data collected by SPDES permittees is a combination of analyzed onsite parameters and data acquired through samples analyzed by Environmental Laboratory Accreditation Program (ELAP)-certified labs. This data is maintained in the ICIS-NPDES database. Performance of compliance and follow up activities is accomplished through analysis of data acquired directly from the ICIS-NPDES database.

Reported DMR data is compared with the effluent limitations established in the permit to determine if violations have occurred (there may also be influent limits). Late or un-submitted DMRs are tracked as violations. DEC produces Notices of Violation (NOV) for late or missing DMRs. Regional offices are responsible for evaluating the DMR against effluent limits to determine if violations have occurred. Regional offices are also responsible for pursuing enforcement actions relating to effluent exceedances

DEC identifies priority violations in accordance with the Division of Water Technical and Operational Guidance Series (TOGS) 1.4.1 – *Water Integrated Compliance Strategy System* (WICSS).[15] Significant Non-Compliance (SNC) is discussed as part of the Significant Non- Compliance Action Program (SNAP) process. Response to priority violations will be made in accordance with the Division of Water TOGS 1.4.2 – *Compliance and Enforcement of SPDES Permits*.

Violations identified by a DEC inspection in the Chesapeake Bay watershed must be addressed in accordance with the appropriate wet weather strategy. For example, with regard to stormwater, to "address" means to take timely and appropriate formal or informal enforcement action designed to return the noncompliant MS4, construction site or industrial facility to compliance. Appropriate actions for an entity designated to be a "Significant Non-Complier" are generally formal enforcement actions such as administrative compliance orders or judicial referrals. Formal actions should establish enforceable schedules for complying with permit requirements. Informal actions may be appropriate in particular circumstances and include administrative penalty orders and notices of violation. In addition, a noncompliant entity is considered "addressed" if it returns to compliance in a timely manner without an enforcement action. With regard to CAFOs, the DEC *Regional Priority Action Implementation Plan* (PAIP) outlines procedures followed by DEC regional offices for addressing facilities. A facility is considered addressed by one of three ways: 1) no further action is needed; 2) the facility is in compliance; or 3) the facility is in violation and an appropriate enforcement action was taken to require compliance. When an enforcement action is required to return a CAFO to compliance, EPA and/or DEC will use EPA's *Interim Wet Weather Significant Non-Compliance Policy[16]*, when deciding what action is most appropriate to address CWA violations at CAFOs.

C2. Reports to Management

Key project staff of DEC (see section A4.2) will be kept informed of project oversight, assessment activities, and findings by the communication infrastructure. In addition to the QAPP, BMP implementation and wastewater data is reported annually to the CBPO. Six-month progress reporting is completed

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[15] All Division of Water TOGS are on DEC's website at http://www.dec.ny.gov/regulations/2652.html.
[16] EPA's Interim Wet Weather Significant Noncompliance Policy is on the EPA website at http://cfpub.epa.gov/compliance/resources/policies/civil/cwa/.

through CBIG and CBRAP grants to CBPO. Bi-annual progress is also reported through the Chesapeake Bay two-year milestones to the CBPO (Table 5).

Table 5. Project QA Status Reports

Type of Report	Frequency	Preparer	Recipients
QAPP	Annual	NYS DEC Project Manager	EPA CBPO
Milestones	Once every two years	NYS DEC Project Manager	EPA CBPO
CBRAP Progress Report	Twice per year	NYS DEC Project Manager	EPA CBPO
CBIG Progress Report	Twice per year	NYS DEC Project Manager	EPA CBPO

D. Data Validation and Usability

D1. Data Review, Verification, and Validation

D1.1 Verifying Developed Sector BMP

D1.1.1 Regulated BMPs Verifications

Construction stormwater BMPs are initially inspected and verified by a qualified inspector. Construction projects that occur in MS4 areas have SWPPPs reviewed by the MS4 municipality. The inspector completes a final stabilization and post-construction stormwater management practices certification as part of the *Notice of Termination* (NOT).[17] A summary of verification procedures for regulated BMPs is provided in Table 6.

Table 6. Jurisdiction Verification Protocol Design Table: MS4 Construction Stormwater

Verification Element	Description
BMP or Group	Regulated Stormwater Management
Geographic Scope	MS4 localities
A. WIP Priority	High
B. Data Grouping	Individual MS4 or MS4 Coalitions
C. BMP Type	Structural Stormwater Management Practices
D. Initial Inspection	
Method	Field Visit
Frequency	Once
Who Inspects	Qualified Inspector - a person that is knowledgeable in the principles and practices of erosion and sediment control, such as a licensed Professional Engineer, Certified Professional in Erosion and Sediment Control (CPESC), Registered Landscape Architect, or other Department endorsed individual(s).

[17] The construction activity permit and Notice of Intent is available on DEC's website at:
https://www.dec.ny.gov/docs/water_pdf/gp015002cnot.pdf

Documentation	Construction Stormwater Notice of Intent and Notice of Termination
E. Follow-up Check	
Follow-up Inspection	Routine inspection as part of permit requirements
Who Inspects	MS4 Municipality – Trained Person
Documentation	Inventory of post-construction stormwater management practices within the covered entities jurisdiction maintained by MS4 as part of permit requirements
F. Lifespan/Sunset	10 years
G. Data QA, Recording & Reporting	Construction Stormwater projects are mapped in ArcGIS for location accuracy and to prevent duplication of record. The NPS database records the lifespan of each practice. Section D2 details the site selection tool.

D1.1.2 Semi-Regulated BMPs Verifications

The construction stormwater general permit requires the owner or operator of a construction project to hire a qualified inspector to perform weekly inspections of the best management practices during the construction period to ensure that they are constructed in accordance with the SWPPP and New York State's technical standards. A "qualified inspector" is defined as a person that is knowledgeable in the principles and practices of erosion and sediment control, such as a licensed Professional Engineer, Certified Professional in Erosion and Sediment Control (CPESC), Registered Landscape Architect, or other DEC-endorsed individual.

During construction, DEC conducts compliance inspections at some construction sites following the procedures described in Section 10: Compliance and Enforcement of Point Sources.

Once the construction project is complete, the qualified inspector is required to perform a final inspection and then certify in the *Notice of Termination* that the best management practices have been constructed in conformance with the SWPPP. The Notice of Termination is then submitted to the Division of Water's Stormwater Section. A summary of verification procedures for construction stormwater BMPs and erosion and sediment control are provided in Tables 7 and 8. The locality is not required to have an inspection program to enforce maintenance of the BMPs. BMPs that are not verified will receive a gradual downgrade in BMP performance over time, such that the BMP credit expires after ten years. Full performance credit is given for the first five years of the BMP lifespan, followed by a 20% downgrade each year over the next five years, as outlined in Part 5: Guidance for Verification of Semi-Regulated BMPs in the 2014 Basinwide Framework for BMP Verification[18].

Section D2 details the statistical subsampling protocol for verification of developed sector BMPs. Non-MS4 communities may elect to reduce the scope of their visual inspections by sub- sampling a representative fraction of their local BMPs and applying the results to their entire population of BMPs that are credited in the model. The sub-sampling method is designed to have at least an 80% confidence level that the BMPs are reported accurately.

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[18] CBP's Strengthening Verification of Best Management Practices Implemented un the Chesapeake Bay Watershed: A Basinwide Framework

Table 7. Jurisdiction Verification Protocol Design Table: Construction Stormwater

Verification Element	Description
BMP or Group	Construction Stormwater
Geographic Scope	Outside of MS4 localities
A. WIP Priority	Medium
B. Data Grouping	Project
C. BMP Type	Post Construction BMPs
D. Initial Inspection	
Method	Field Visit
Frequency	Once
Who Inspects	Qualified Inspector - a person that is knowledgeable in the principles and practices of erosion and sediment control, such as a licensed Professional Engineer, Certified Professional in Erosion and Sediment Control (CPESC), Registered Landscape Architect, or other Department endorsed individual(s).
Documentation	Construction Stormwater Notice of Intent and Notice of Termination
E. Follow-up Check	
Follow-up	Field inspection of statistical sub-sample as outlined in Section D2.
Who Inspects	TBD
Documentation	Verification/Inspection Form
F. Lifespan/Sunset	10-year credit
G. Data QA, Recording & Reporting	Construction Stormwater projects are mapped in ArcGIS for location accuracy and to prevent duplication of record. The NPS database records the lifespan of each practice. Section D2 details the site selection tool.

Table 8 Jurisdiction Verification Protocol Design Table: Erosion & Sediment Control

Verification Element	Description
BMP or Group	Construction Stormwater
Geographic Scope	Outside of MS4 localities
A. WIP Priority	Medium
B. Data Grouping	Project
C. BMP Type	Erosion & Sediment Control
D. Initial Inspection	Upon completion of NOT
Method	Field Visit
Frequency	Once
Who Inspects	Qualified Inspector - a person that is knowledgeable in the principles and practices of erosion and sediment control, such as a licensed Professional Engineer, Certified Professional in Erosion and Sediment Control (CPESC), Registered Landscape Architect, or other Department endorsed individual(s).
Documentation	Construction Stormwater Notice of Intent and Notice of Termination
E. Follow-up Check	Annual BMP
F. Lifespan/Sunset	1 year
G. Data QA, Recording & Reporting	Construction Stormwater projects are mapped in ArcGIS for location accuracy and to prevent duplication of record

D1.1.3 Non-permitted Stormwater BMPs Verification

Stormwater BMPs implemented that do not meet the requirements of needing a construction stormwater permit, due to size of project or BMP types implemented, are able to be tracked and verified in the database. A summary of verification procedures for non-permitted stormwater BMPs are provided in Tables 9. Section D2 details the statistical subsampling protocol for verification of developed sector BMPs.

Table 9. Jurisdiction Verification Protocol Design Table: Non-permitted Urban Stormwater

Verification Element	Description
BMP or Group	Non-Permitted Urban Stormwater
Geographic Scope	Watershed, outside of MS4 localities
A. WIP Priority	Medium
B. Data Grouping	Project based
C. BMP Type	Cumulative/Structural BMPs
D. Initial Inspection	
Method	Field Inspection/Paperwork
Frequency	Once
Who Inspects	Locality or facility
Documentation	RPDB surveys and grant progress reports
E. Follow-up Check	Field Visit
F. Lifespan/Sunset	10 year
G. Data QA, Recording & Reporting	Regional Planning Board BMP Survey is submitted to NYS DEC annually. Implementation from DEC nonpoint source BMP implementation grant programs are submitted to the database annually. The project and BMP data is imported to the NPS database and reported to NEIEN.

D1.2 Verifying Septic and Forestry Sector BMP

A summary of verification procedures for septic pumping and connections BMPs and forestry harvest practices are provided in Tables 10 and 11. Section D2 details the statistical subsampling protocol for verification of developed sector BMPs.

Table 10. Jurisdiction Verification Protocol Design Table: Septic BMPs

Verification Element	Description
BMP or Group	Septic BMPs
Geographic Scope	Watershed
A. WIP Priority	Low
B. Data Grouping	Project
C. BMP Type	Septic BMPs
D. Initial Inspection	Field Visit
Method	Report of annual pump outs and sewer service connections to WWTP
Frequency	Once
Who Inspects	Certified entity conducts septic pump out. Septic connections are reported by DEC staff working directly with WWTP facilities.

Documentation	Survey sent by RPDB. Engineering reports will document septic connections to WWTP.
E. Follow-up Check	Annual BMP
F. Lifespan/Sunset	1 year (Pump out) & 100 years (Connections)
G. Data QA, Recording & Reporting	Regional Planning Board BMP Survey is submitted to NYS DEC annually. The project and BMP data is imported to the NPS database and reported to NEIEN. For septic connections, regional DEC staff work directly with WWTP.

Table 11. Jurisdiction Verification Protocol Design Table: Forest Harvesting Practices

Verification Element	Description
BMP or Group	Forestry
Geographic Scope	Entire watershed
H. WIP Priority	Low
I. Data Grouping	Project
J. BMP Type	Forest Harvesting Practice
K. Initial Inspection	NYS DEC Regional Forester
Method	Field Visit
Frequency	Once
Who Inspects	Qualified Inspector - a person that is knowledgeable in the principles and practices of erosion and sediment control for forest harvesting practices
Documentation	Regional Planning Board BMP Survey
L. Follow-up Check	Annual BMP
M. Lifespan/Sunset	1 year
N. Data QA, Recording & Reporting	Regional Planning Board BMP Survey is submitted to NYS DEC annually. The project and BMP data is imported to the NPS database and reported to NEIEN.

D2. Verification and Validation Methods

This section outlines an adaptive management approach for selecting sites to inspect for verification that developed sector best management practices (BMPs) are on the ground and performing as expected. The approach is a statistical sampling approach that refines New York's existing developed sector BMP verification protocols for the Chesapeake Bay watershed by selecting a statistically random subsample to validate the existence and performance of BMPs where large implementation numbers do not allow for the verification of each individual BMP.

D2.1 Types of BMPs to Inspect for Follow-up Verification

This statistical subsampling approach applies to semi-regulated and non-regulated developed sector BMPs located outside of multiple separate storm sewer system (MS4) areas. See Sections 7.2.2 and 8.0 of New York's Quality Assurance Project Plan Procedures for Collecting, Reporting and Verifying Wastewater and Developed Sector Data in the Chesapeake Bay Watershed for descriptions of semi-regulated and non-regulated developed sector BMPs.

Until 2020, New York has historically only submitted BMPs associated with construction stormwater general permits to the Environmental Protection Agency's (EPA's) Chesapeake Bay Program (CBP) for annual progress but this statistical subsampling approach applies to almost all developed sector BMPs implemented outside of MS4 areas and on federal facilities.

DEC has completed the development of the NPS database to track all BMPs implemented in the watershed. The database is set up to input developed sector BMPs into five different templates (construction stormwater, harvested forest, urban stormwater, septic, and federal facilities). The statistical sampling approach presented in this appendix applies to the BMPs associated with two of the five template types (see Table 12).

Table 12. Developed sector BMPs to be verified through the statistical subsampling approach

BMP template/site type	BMP name
Construction stormwater	Impervious surface reduction
	Stormwater Performance Standard (Runoff Reduction) • Bioretention/raingardens • Infiltration practices • Permeable pavement • Urban filter strips • Vegetated open channels
	Stormwater Performance Standard (Stormwater Treatment) • Filtering practices • Wet ponds and wetlands
Urban Stormwater (non-permitted)	Stormwater management BMPs not covered under the construction stormwater permit
	Urban stream restoration
	Urban nutrient management
	Forest buffer
	Forest & Tree planting

This BMP verification sampling approach does not apply to erosion and sediment control practices, septic system pumping, harvested forest, and BMPs associated with MS4 permits or federal facilities. Erosion and sediment control practices, harvested forest, and septic system pumping are annual BMPs that will not need verification after one year.

Erosion and sediment control practices are not included because all construction sites that disturb greater than one acre in New York require a construction stormwater general permit, which requires Level 2 erosion and sediment control on 100% of construction areas. New York reports its annual acres of construction and there is no further need for verification based on 100% implementation and inspection of erosion and sediment control. BMPs associated with the MS4 permits are not included because there is an existing tracking and reporting requirement through the MS4 permit. BMPs at federal facilities have their own verification procedures.

D2.2 Follow-up Verification Requirements

The statistical subsample design for the verification procedures is based on the numeric verification goals outlined in the CBP's *Urban Stormwater Verification Guidance*[19], the types of BMPs DEC is planning to report, and the number of BMPs to be reported. New York's developed sector QAPP and CBP's verification guidance indicate that verification should be performed on a sample of the BMP inventory at least once during the credit duration/lifespan of the BMP. CBP's verification guidance also states:

> "Non-MS4 communities may elect to reduce the scope of their visual inspections by subsampling a representative fraction of their local BMPs and applying the results to their entire population of BMPs that are credited in the model. The sub-sampling method will be designed to have at least an 80% confidence level that the BMPs are reported accurately. There are several well accepted approaches to determining the sample size. These include using a census for a small population of BMPs, imitating a sample size of similar studies, using published tables, and/or applying formulas to calculate a sample size".

The CBP recommends that the 80% confidence level be used in conjunction with achieving a ±10 percent confidence interval (e.g., stormwater runoff reduction BMPs were successfully implemented with a 75% ±10% [65%-85%]).[20]

The type and number of developed sector BMPs will eventually be reported in New York's BMP database for the Chesapeake Bay watershed; however, the actual numbers of each BMP type were unknown at the time of this publication, therefore, the statistical survey design was developed based on estimated numbers. It was assumed that there are approximately 300 – 400 construction stormwater BMPs, while the number of non-permitted urban stormwater BMPs is considerably less. Because of these differences, it was determined that two separate random selection processes be created for two groups of sites: 1) construction stormwater sites and 2) other developed sector sites.

Table 13 provides a summary of the two random selection processes for the verification requirements described above. New York is in the process of the initial verification of all developed sector BMPs on the ground. This document focuses on how the follow-up checks or re-verification will occur.

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[19] CBP (Chesapeake Bay Program). 2014. Urban Stormwater Verification Guidance. Chesapeake Bay Program Water Quality Goal Implementation Team's BMP Verification Committee. Annapolis, MD.
[20] Tetra Tech. 2020. Technical Memorandum: CBP Technical Support TD #13: Code Documentation for Randomly Selecting Sites for Developed Sector BMP Verification. Fairfax, VA.

Table 13. Verification requirements for each of the developed sector BMP types

Program type	Practice type	Initial verification (via desktop inventory)	Follow up or re verification (via visual inspection)
Construction stormwater	Multi-year	100% (DEC will confirm the number of existing practices on the ground)	Statistical subsample of a percentage of randomly selected practices in the watershed (see Table 14 for guidance), distributed across all counties. Sampling percentage may change based on an adaptive management approach (see Section 0).
Urban stormwater (non-permitted)	Multi-year	100% (DEC will confirm the number of existing practices on the ground)	Statistical subsample of a percentage (see Table 14 for guidance) of these BMPs as a group across program type rather than county **OR** inspect 100% of these BMPs at the end (after 5th year) of their lifespan. Sampling percentage and procedure may change based on an adaptive management approach (see Section 0).

D2.3 Sites to Inspect for Follow-up Verification

Follow-up BMP inspections are performed to verify the existence and performance of all BMPs submitted to the CBP for annual progress reporting. Any BMPs not meeting performance criteria will be improved according to permit compliance policy or removed from reported BMPs.

The sampling method is based on a whole site approach, rather than a per-BMP approach, to achieve the required sampling rates for all BMPs reported for annual progress. The method is designed to avoid artificial and confusing aspects of visiting sites to capture data on a single BMP when other BMPs are likely present (as well as repeat visits to verify independent BMPs). An adaptive management approach (see Section D2.7) will allow adjustments to the sampling method over time to ensure that the expectations summarized in Table 13 are met.

D2.4 Construction Stormwater Sites

The statistical survey procedures presented apply to the semi-regulated construction stormwater BMPs outside of MS4 areas. See Section A6.7 for a description of semi-regulated construction stormwater BMPs. These BMPs fall under the construction stormwater general permit. Construction stormwater BMPs are currently given full performance credit for the first five years of the BMP's lifespan and then receive a 20% downgrade for each year over the next five years. The sampling survey procedures outlined in this document replace this existing process by performing visual inspections on a statistical subsample of all construction stormwater BMPs after the fifth year of their lifespan.

Random selection of construction stormwater sites will be performed based on the steps below because of the expected larger number (300-400) of construction stormwater sites in comparison to the number of sites for the other developed sector site types. This approach involves the following steps:

- Create an inventory of known sites and county location.
- Create an inventory of BMPs implemented at each site.
- Randomly select one site from each county.
- Randomly select additional sites, one at a time, until the targeted number of BMPs have been selected for verification.
  - Sites are targeted based on the county-level stratification. Counties with more BMPs will have more sites identified for verification.
- All BMPs at a given site are inspected.
  - Inspecting all BMPs at a site will usually result in over sampling for some BMP types.

D2.5 Other Developed Sector Sites

The process for selecting other developed sector sites is similar to the process for construction stormwater sites, except sites will be stratified by site type instead of county. These "other" urban BMPs in New York's nonpoint source database are fewer in number than the construction stormwater BMPs and can likely be combined by type across the different programs and BMP templates rather than county unless there are larger amounts of the BMPs than previously thought. For these other BMPs, "county" will be swapped out for "site type" as presented in table 13. Staff associated with each of the particular programs will verify the BMPs (e.g., DEC and regional planning staff).

The statistical subsampling methodology presented in Section D2.1 can be applied to these other developed sector BMPs as well. However, it should be noted that statistical subsampling may not be necessary for these BMPs. If large numbers of these types of BMPs do not exist as they do for construction stormwater, a better option may be to inspect 100% of these BMPs at the end of their lifespan rather than as a percentage of the total number of BMPs. For example, all BMPs with a 5-year lifespan will be inspected after year 5. Section 0 below describes the adaptive management that will guide the sampling and verification process as new information becomes available.

D2.6 Steps for Selecting Sites and Practices to Inspect for Follow-up Verification

This section presents the steps for DEC staff to take to randomly select sites and practices for follow-up inspection of their developed sector BMPs.

Step 1: Determine Sample Size

The first step in selecting sites for verification is to determine how to inspect the BMPs. New York State will perform re-verification on a whole site basis rather than on a BMP-by-BMP basis, so the protocol is designed to ensure that site selection on a site basis will yield satisfactory verification rates on a BMP basis. This might result in oversampling of some BMPs relative to the minimum requirements in Table 13.

For verification of BMPs on construction stormwater and other developed sector sites, the sampling method is designed to estimate the proportion of properly implemented BMPs to within a ± 10 percent confidence interval at the 80% confidence level.

USEPA[21] presents a method for computing the confidence intervals for distributions that follow a binomial distribution, such as BMP inspections with a pass/fall outcome and have a finite population from which samples are drawn. The benefit of this method is that smaller samples can be drawn, thereby reducing stakeholder cost and burden in comparison to the "large-population" approach. In addition, evidence that

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[21] USEPA (United States Environmental Protection Agency). 2001. Techniques for Tracking, Evaluating, and Reporting the Implementation of Nonpoint Source Control Measures: Urban. U.S. Environmental Protection Agency, Office of Water. EPA-841-B-00-007. January. https://www.epa.gov/sites/production/files/2015-10/documents/urban_0.pdf

can inform the likely proportion of BMPs passing (e.g., data from a previous survey) can also be used to inform the sample size needed to meet the above objective. If no information is available, the sample size calculation should be based on a proportion of 50 percent.

Table 14 presents the half-width confidence interval for a variety of population sizes (20, 50, 100, 200, 300, 400), sampling efforts (10%, 15%, 20%, 25%, 30%, 40%, 50%, 60%, 70%), and proportion of BMPs passing (perc. meet. = 0.5, 0.55, 0.6, 0.65, 0.7, 0.75, 0.8, 0.85, 0.9) for an 80 percent confidence level. As stated in the previous paragraph, if no information is available to inform the likely proportion of BMPs passing, then the user should select the column, "80% Conf. Level (w/ perc. meet. = 0.5)". DEC's stormwater permitting section does not currently know the percentage of BMPs expected to pass inspection, therefore, it is assumed that 50% of the practices will pass. This value may change with more knowledge gained in future years.

Using the total number of sites from New York's BMP database, an assumed passing inspection rate of 50%, and 80% confidence level ± 10% confidence interval, table 14 can be used to determine an appropriate sample size. Using this information and the half-width confidence interval information presented in Table 14, an example of the determination of the sample size for construction stormwater BMPs is presented here.

Example: If DEC inspected 40 (10%) of 400 construction stormwater sites and found that 20 sites passed inspection (i.e., p=0.50), it can be stated with 80% confidence that the percentage of sites correctly implementing runoff reduction is 50 ± 10%. This sample size is acceptable, with 10% sampling of the population of 400 and a percent meeting of 0.5 (50%). This sample size meets the 80% confidence level ± 10% (Table 14). Based on the information presented in Table 14, an acceptable sampling scenario for New York's expected 300 construction stormwater sites, assuming a percent meeting of 50%, falls between a 10% and 15% sample.

The example above is based on construction stormwater sites but this same methodology can also be applied to the non-permitted urban stormwater BMPs.

Table 14. Binomial confidence interval for varying sampling efforts

Sample Lev.	Number of Entities Implementing Practice	Minimum Selection Target	Half-width Confidence Interval (+/-d, %)								
			80% Conf. Level (w/ perc. meet. = 0.5)	80% Conf. Level (w/ perc. meet. = 0.55)	80% Conf. Level (w/ perc. meet. = 0.6)	80% Conf. Level (w/ perc. meet. = 0.65)	80% Conf. Level (w/ perc. meet. = 0.7)	80% Conf. Level (w/ perc. meet. = 0.75)	80% Conf. Level (w/ perc. meet. = 0.8)	80% Conf. Level (w/ perc. meet. = 0.85)	80% Conf. Level (w/ perc. meet. = 0.9)
10% Sample	20	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	50	5	27%	27%	27%	26%	25%	24%	22%	19%	16%
	100	10	19%	19%	19%	18%	18%	17%	15%	14%	12%
	200	20	14%	14%	13%	13%	12%	12%	11%	10%	8%
	300	30	11%	11%	11%	11%	10%	10%	9%	8%	7%
	400	40	10%	10%	9%	9%	9%	8%	8%	7%	6%
15% Sample	20	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	50	8	21%	21%	20%	20%	19%	18%	17%	15%	12%
	100	15	15%	15%	15%	15%	14%	13%	12%	11%	9%
	200	30	11%	11%	11%	10%	10%	9%	9%	8%	6%
	300	45	9%	9%	9%	8%	8%	8%	7%	6%	5%
	400	60	8%	8%	7%	7%	7%	7%	6%	5%	5%
20% Sample	20	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	50	10	18%	18%	18%	17%	17%	16%	14%	13%	11%
	100	20	13%	13%	13%	12%	12%	11%	10%	9%	8%
	200	40	9%	9%	9%	9%	8%	8%	7%	6%	5%
	300	60	7%	7%	7%	7%	7%	6%	6%	5%	4%
	400	80	6%	6%	6%	6%	6%	6%	5%	5%	4%
25% Sample	20	5	25%	25%	24%	24%	23%	21%	20%	18%	15%
	50	13	15%	15%	15%	15%	14%	13%	12%	11%	9%
	100	25	11%	11%	11%	11%	10%	10%	9%	8%	7%
	200	50	8%	8%	8%	7%	7%	7%	6%	6%	5%
	300	75	6%	6%	6%	6%	6%	6%	5%	5%	4%
	400	100	6%	6%	5%	5%	5%	5%	4%	4%	3%
30% Sample	20	6	22%	22%	21%	21%	20%	19%	18%	16%	13%
	50	15	14%	14%	14%	13%	13%	12%	11%	10%	8%
	100	30	10%	10%	10%	9%	9%	8%	8%	7%	6%
	200	60	7%	7%	7%	7%	6%	6%	6%	5%	4%
	300	90	6%	6%	6%	5%	5%	5%	5%	4%	3%
	400	120	5%	5%	5%	5%	4%	4%	4%	3%	3%
40% Sample	20	8	18%	17%	17%	17%	16%	15%	14%	13%	11%
	50	20	11%	11%	11%	11%	10%	10%	9%	8%	7%
	100	40	8%	8%	8%	7%	7%	7%	6%	6%	5%
	200	80	6%	6%	5%	5%	5%	5%	4%	4%	3%
	300	120	5%	5%	4%	4%	4%	4%	4%	3%	3%
	400	160	4%	4%	4%	4%	4%	3%	3%	3%	2%
50% Sample	20	10	14%	14%	14%	14%	13%	12%	11%	10%	9%
	50	25	9%	9%	9%	9%	8%	8%	7%	6%	5%
	100	50	6%	6%	6%	6%	6%	6%	5%	5%	4%
	200	100	5%	5%	4%	4%	4%	4%	4%	3%	3%
	300	150	4%	4%	4%	4%	3%	3%	3%	3%	2%
	400	200	3%	3%	3%	3%	3%	3%	3%	2%	2%
60% Sample	20	12	12%	12%	11%	11%	11%	10%	9%	8%	7%
	50	30	7%	7%	7%	7%	7%	6%	6%	5%	4%
	100	60	5%	5%	5%	5%	5%	5%	4%	4%	3%
	200	120	4%	4%	4%	4%	3%	3%	3%	3%	2%
	300	180	3%	3%	3%	3%	3%	3%	2%	2%	2%
	400	240	3%	3%	3%	2%	2%	2%	2%	2%	2%
70% Sample	20	14	9%	9%	9%	9%	9%	8%	8%	7%	6%
	50	35	6%	6%	6%	6%	5%	5%	5%	4%	4%
	100	70	4%	4%	4%	4%	4%	4%	3%	3%	3%
	200	140	3%	3%	3%	3%	3%	3%	2%	2%	2%
	300	210	2%	2%	2%	2%	2%	2%	2%	2%	1%
	400	280	2%	2%	2%	2%	2%	2%	2%	1%	1%

Step 2: Input data to the *Site Selection Tool*

An R script was developed to implement a random selection of sites for BMP verification using an Excel-based *Site Selection Tool*. See *Technical Memo: CBP Technical Support TD #13: Code Documentation for Randomly Selecting Sites for Developed Sector BMP Verification*, hereafter referred to as *the Technical Memo* for details on how the R script works. Once the sample size is determined in Step 1, the existing developed sector BMP data from New York's BMP database and the sampling percent target can be used as input for the *Site Selection Tool* to select a random group of sites to sample for verification purposes. The developed sector data sets for construction stormwater and urban stormwater from New York's BMP database should be applied to this sampling protocol.

The *Site Selection Tool* has two input spreadsheets for developed sector sites and their associated BMPs – nySiteSelectionInputConstSW.xlsx for construction stormwater sites and nySiteSelectionInputOtherDevel.xlsx for non-construction stormwater sites. The input data necessary for the analysis are briefly described here; however, Section 1.0 of the *Technical Memo* describes the input data requirements in greater detail.

The 'nySiteSelectionInput' spreadsheets contain three sheets that require user input: 1) 'bmpCrosswalk', 2) 'sites' and 3) 'allBMPs'. The '_readme' sheet provides instruction on the types of data needed in each sheet. The 'bmpCrosswalk' sheet includes a table with databaseBMPs and reportedBMPs. This table translates practice names from those in the New York BMP database (databaseBMPs) to those tracked in the CBP model (reportedBMPs). The values in these two columns will likely be the same since New York's BMP database uses the same BMP names as the CBP. The percTarget column is the verification level (fraction to verify) for each reportedBMP that is determined in Step 1 (Determine the Sample Size) above. See Section 1.1 of the *Technical Memo* for more information. For example, Figure 4 shows the 'bmpCrosswalk' input sheet using past New York construction stormwater BMP data as an example. For this particular example, there was a total of 240 construction stormwater sites with 211 runoff reduction BMPs, 123 stormwater treatment BMPs and 22 impervious reduction BMPs across all sites. Using Table 14 to determine the sample size, these numbers of BMPs result in a percTarget of 20% for runoff reduction, 30% for stormwater treatment, and 70% for impervious surface reduction. These three BMP types and sampling percentages are entered into the 'bmpCrosswalk' sheet by the user (see figure 5).

	A	B	C	D
1	databaseBMPs	reportedBMPs	percTarget	
2	Runoff Reduction	Runoff Reduction	0.2	
3	Stormwater Treatment	Stormwater Treatment	0.3	
4	Imper. Surface Reduc.	Imper. Surface Reduc.	0.7	
5				
6				
7				
8				
9				
10				
11				
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_readme **bmpCrosswalk** sites allBMPs ⊕

Figure 4. Example of 'bmpCrosswalk' input sheet for construction stormwater sites

Next, the user will input information about all BMP sites on the 'sites' sheet. This sheet includes a list of all BMP sites in the watershed (either construction stormwater or other developed sector sites) including unique CBP_IDs (the selected unique CBP_ID should match the unique IDs provided in New York's BMP database), the counties they are located in, and whether or not the sites were included in the last verification effort. Figure 4 shows an example of the 'sites' input sheet for construction stormwater.

	A	B	C	D	E
1	CBP_ID	locationID	County	Selected_Last	Selected_2020_11_16
2	NYR10X135	MARSH HILL WIND FARM	STEUBEN	FALSE	FALSE
3	NYR10X314	RAYMOND CORPORATION PARKING LOT	CHENANGO	FALSE	FALSE
4	NYR10X341	BEREAN BIBLE CHURCH EXPANSION	CHENANGO	FALSE	FALSE
5	NYR10X391	BINGHAMTON RITE AID	BROOME	FALSE	FALSE
6	NYR10X486	PROPOSED RETAIL DEVELOPMENT	OTSEGO	FALSE	FALSE
7	NYR10X506	CANISTEO-GREENWOOD ELEMENTARY & HIGH SCH	STEUBEN	FALSE	FALSE
8	NYR10X513	MARSH HILL WIND FARM SUBSTATION	STEUBEN	FALSE	FALSE
9	NYR10X534	PRIMAX PROPERTIES SITE PLAN	OTSEGO	FALSE	FALSE
10	NYR10X559	CONIFER REALTY BILTMORE CROSSING	CHEMUNG	FALSE	FALSE
11	NYR10X560	SOCCER FACILITY	MADISON	FALSE	FALSE
12	NYR10X605	09312 PHYSICAL SCIENCE BLDG REHAB	OTSEGO	FALSE	FALSE
13	NYR10X612	ELM STREET STADIUM (TURF FIELD)	TIOGA	FALSE	FALSE
14	NYR10X631	PROPOSED RETAIL DEVELOPMENT	ONEIDA	FALSE	FALSE
15	NYR10X636	PROPOSED RETAIL CONSUMER SQUARE	CHEMUNG	FALSE	FALSE
16	NYR10X645	FRONT STREET RECONSTRUCTION	BROOME	FALSE	FALSE
17	NYR10X650	PROPOSED TRANSFER STATION	TIOGA	FALSE	FALSE
18	NYR10X723	STATE ARMORY REHABILITATE PARKING AREA	BROOME	FALSE	FALSE
19	NYR10X731	CALVARY BAPTIST CHURCH	CORTLAND	FALSE	FALSE
20	NYR10X734	FEDEX FACILITY EXPANSION	BROOME	FALSE	FALSE
21	NYR10X754	CENTER FOR CERAMIC EDUCATION	ALLEGANY	FALSE	FALSE
22	NYR10X838	2013 CAPITAL IMPROVEMENTS	STEUBEN	FALSE	FALSE
23	NYR10X868	HARFORD MILLS BRINE POND LINER REPLACEMT	CORTLAND	FALSE	FALSE
24	NYR10X910	STEUBEN ALLEGANY GST BOCES	STEUBEN	FALSE	FALSE
25	NYR10X930	CHOBANI EXPANSION PROJECT	CHENANGO	FALSE	FALSE
26	NYR10Y013	PROPOSED KINNEY DRUGS	OTSEGO	FALSE	FALSE
27	NYR10Y060	BANTA SOUTHSIDE DEVELOPMENT	OTSEGO	FALSE	FALSE
28	NYR10Y089	HIGH SCHOOL/MIDDLE SCHOOL PROJECT	OTSEGO	FALSE	FALSE
29	NYR10Y122	HORSEHEADS HOTEL	CHEMUNG	FALSE	FALSE
30	NYR10Y185	CORNING COMMUNITY COLLEGE	STEUBEN	FALSE	FALSE
31	NYR10Y215	DIAMOND DREAMS SOFTBALL PARK	HERKIMER	FALSE	FALSE

_readme | bmpCrosswalk | **sites** | allBMPs | (+)

Figure 5. Example of 'sites' input sheet for construction stormwater sites

The last sheet in the 'nySiteSelectionInput' spreadsheet is the 'allBMPs' sheet. The construction stormwater sites listed in the 'sites' sheet likely contain multiple BMPs (runoff reduction, stormwater treatment and impervious surface reduction). On this sheet the user enters all of the BMPs located at each site in the New York BMP database. The CBP_ID field is tied to the CBP_ID on the sites sheet and the databaseBMPs field is tied to the databaseBMPs on the 'bmpCrosswalk' sheet. Figure 5 shows an example of the 'allBMPs' sheet for construction stormwater sites.

	A	B	C	D
1	CBP_ID	databaseBMPs		
2	NYR10X135	Runoff Reduction		
3	NYR10X314	Runoff Reduction		
4	NYR10X314	Stormwater Treatment		
5	NYR10X341	Runoff Reduction		
6	NYR10X391	Runoff Reduction		
7	NYR10X486	Runoff Reduction		
8	NYR10X486	Stormwater Treatment		
9	NYR10X506	Stormwater Treatment		
10	NYR10X513	Runoff Reduction		
11	NYR10X513	Stormwater Treatment		
12	NYR10X534	Runoff Reduction		
13	NYR10X534	Stormwater Treatment		
14	NYR10X559	Runoff Reduction		
15	NYR10X560	Runoff Reduction		
16	NYR10X605	Runoff Reduction		
17	NYR10X605	Stormwater Treatment		
18	NYR10X612	Runoff Reduction		
19	NYR10X612	Stormwater Treatment		
20	NYR10X631	Runoff Reduction		
21	NYR10X636	Imper. Surface Reduc.		
22	NYR10X636	Stormwater Treatment		
23	NYR10X645	Runoff Reduction		
24	NYR10X645	Stormwater Treatment		
25	NYR10X650	Runoff Reduction		
26	NYR10X650	Stormwater Treatment		
27	NYR10X723	Stormwater Treatment		

_readme | bmpCrosswalk | sites | **allBMPs**

Figure 6. Example of 'allBMPs' input sheet for construction stormwater sites

Step 3: Run the R script for the *Site Selection Tool*

The next step is to run the R script for the *Site Selection Tool*. The R script targets random selection of construction stormwater or other developed sector sites in the input spreadsheets organized by county and site type, respectively. There are two R scripts available, one for construction stormwater sites [selectNYsites(ConstSW_01).R], which randomly selects construction stormwater sites by county and one for other developed sector sites [selectNYsites(OtherDevel_01).R], which randomly selects other sites organized by site type (i.e., harvested forest, regional planning, urban forestry, and WQIP). The tool reads the data input to the nySiteSelectionInput spreadsheet in Step 2 above and outputs the results to the output spreadsheet (siteSelectionResults.xlsx).

Step 4: Review *Site Selection Tool* Output Results

The output from the *Site Selection Tool* provides DEC with the randomly selected sites and BMPs to include in the on-the-ground verification effort. The output spreadsheet includes a '_readme' sheet that documents the sheet names and descriptions along with other metadata. The first three sheets – 'import-bmpCrosswalk', 'import-allBMPs' and 'import-sites' are the same as the input sheets in Step 2 and are imported from the nySiteSelectionInput.xlxs spreadsheet.

The 'Selected sites' sheet is a listing of all sites that were randomly selected. Figure 6 shows that 50 of the 240 construction stormwater sites were selected for inspection based on the percent target (percTarget) determined by the user in Step 1. The CBP_ID, locationID and County information is listed for each site. Column D ('Selected_Last') indicates that the sites were not selected for verification in the last round, column E ('Num_Prac') indicates the number of BMP types found at each particular site,

column F ('Count') indicates the number of sites, and column G ('selected') indicates that the sites have been selected for inclusion in the current verification process. DEC can use this information to crosswalk these sites back to the New York BMP database to get a list of sites by name.

	A	B	C	D	E	F	G	H	I	J
1	**Detailed site selection table**									
2										
3	CBP_ID	locationID	County	Selected_Last	Num_Prac	Count	selected			
28	NYR11A358	CANDOR CENTRAL ʃ	TIOGA	FALSE	2	1	TRUE			
29	NYR11A366	PORT DICKINSON El	BROOME	FALSE	2	1	TRUE			
30	NYR11A564	07A84-00 CONSTRU	BROOME	FALSE	2	1	TRUE			
31	NYR11B003	Retail Developmen	BROOME	FALSE	2	1	TRUE			
32	NYR11B028	STATE ROUTE 12	CHENANGO	FALSE	2	1	TRUE			
33	NYR11B037	Veteran Affairs Medi	BROOME	FALSE	2	1	TRUE			
34	NYR11B873	BATH CSD BUS GAR	STEUBEN	FALSE	1	1	TRUE			
35	NYR11B969	BENTON HALL	MADISON	FALSE	2	1	TRUE			
36	NYR11B981	ALDI - CORTLANDVI	CORTLAND	FALSE	1	1	TRUE			
37	NYR11C074	APALACHIN FIRE DIʃ	TIOGA	FALSE	3	1	TRUE			
38	NYR11C328	SOUTHERN TIER STC	STEUBEN	FALSE	1	1	TRUE			
39	NYR11C408	Whitney Point 2017	BROOME	FALSE	2	1	TRUE			
40	NYR11C601	Binghamton (East Ma	BROOME	FALSE	2	1	TRUE			
41	NYR11C603	434 Sportsplex	BROOME	FALSE	2	1	TRUE			
42	NYR11C771	East Meredith DNYF	DELAWARE	FALSE	1	1	TRUE			
43	NYR11D350	Corning Hospital Re	STEUBEN	FALSE	2	1	TRUE			
44	NYR11D387	Bath McDonald's Re	STEUBEN	FALSE	3	1	TRUE			
45	NYR11D490	Arnot Mall Redevel	CHEMUNG	FALSE	2	1	TRUE			
46	NYR11D495	Alfred State College	ALLEGANY	FALSE	2	1	TRUE			
47	NYR11D661	ELMIRA PSYCHIATRIC	CHEMUNG	FALSE	2	1	TRUE			
48	NYR11D700	UE CSD 2017 CAP. IN	BROOME	FALSE	3	1	TRUE			
49	NYR11D767	2018 CAP. IMPR. PH	BROOME	FALSE	2	1	TRUE			
50	NYR11D930	Gardner Road Elem	CHEMUNG	FALSE	2	1	TRUE			
51	NYR11D940	ANSCO Site Redeve	BROOME	FALSE	3	1	TRUE			
52	NYR11E284	ST. MARY'S PARKIN(	STEUBEN	FALSE	2	1	TRUE			
53	NYR11E353	Kanona Truck Stop I	STEUBEN	FALSE	2	1	TRUE			
54										
55										

_readme | import-bmpCrosswalk | import-allBMPs | import-sites | **Selected sites** | Practice summ… …

Figure 7. Example of 'Selected sites' output

The *Site Selection Tool* tracks sites and BMPs as they are randomly selected and creates summary tallies that are updated at the practice. The 'Practice summary' sheet (see example in Figure 7) presents the results of these practice tallies. DEC can use the results to verify the operSelected (number of operations selected) is greater than or equal to the target (see Figure 7). Note that impervious surface reduction and stormwater treatment BMPs are oversampled relative to their target in this particular example. This is because additional sites were needed to meet the runoff reduction target.

The num_Oper, percTarget, and target show the number of sites implementing each BMP, the target fraction of BMPs, and the target number of BMPs to be selected, respectively. For example, there are 211 sites implementing runoff reduction with a target fraction of 20%. So, 211 x 0.20 is equal to 42.2, which is then rounded up to 43.

	A	B	C	D	E	F	G	H	I	J	K	L
1	Summary of operations selected by practice											
2												
3	BMP	num_Oper	percTarget	target	operSelected							
4	Imper. Surface Reduc	22	0.7	16	17							
5	Runoff Reduction	211	0.2	43	43							
6	Stormwater Treatm	123	0.3	37	39							

... import-bmpCrosswalk | import-allBMPs | import-sites | Selected sites | **Practice summary** | Cour ...

Figure 8. Example of 'Practice summary' output

The 'County summary' sheet (figure 8) presents the results of the county tallies. The num_Oper indicates the total number of sites in a particular county with at least one reported BMP. The next two fields, num_Oper_notSel and num_Oper_Sel provides a break-out of num_Oper by the number of sites not selected and selected in the previous random selection process, respectively. DEC can verify that the operSelected (number of operations selected) is less than or equal to the county ceiling (expCeil) in figure 8.

For example, there are 75 sites in Broome County. Of these 75 sites, 0 sites were selected in the last random selection process, leaving 75 sites for potential selection in this analysis. The value of expCeil is equal to the maximum number of sites that may be selected in a given county, which is 25% (see Section 2.1 of the Tech Memo). This results in an operSelected for Broome County of 19 (i.e., 25% of 75) (see figure 8).

County	num_Oper	num_Oper_notS	num_Oper_Sel	expCeil	operSelected
Summary of operations selected by county					
ALLEGANY	3	3	0	1	1
BROOME	75	75	0	19	19
CHEMUNG	27	27	0	7	3
CHENANGO	12	12	0	3	2
CORTLAND	15	15	0	4	4
DELAWARE	2	2	0	1	1
HERKIMER	5	5	0	2	1
MADISON	10	10	0	3	2
ONEIDA	1	1	0	1	1
OTSEGO	24	24	0	6	3
STEUBEN	43	43	0	11	10
TIOGA	23	23	0	6	3

Sheet tabs: ... | import-allBMPs | import-sites | Selected sites | Practice summary | **County summary** | Practice by ...

Figure 9. Example of 'County summary' output

Finally, Figure 11 displays the results in the 'Practice by County' sheet, which presents the number of practices by county and BMP type. Using Broome County as an example, Figure 9 shows that there are 19 sites selected in Broom County and figure 11 shows that at those 19 sites, there are 9 impervious reduction, 15 runoff reduction, and 16 stormwater treatment practices available for inspection. Another way to look at figure 11 is that it breaks out the selected practices to be verified across all counties. For example, figure 9 shows that 17 impervious surface reduction practices were selected for verification and these 17 practices are spread out across all counties in the watershed (figure 9).

The statistical subsampling approach addresses workload balance across counties and site types. The selection process randomly selects sites that meet the minimum selection targets identified in Step 1 and do not exceed the maximum number of operations per county. The selection process is initiated by randomly selecting one operation from each county unless no practices were implemented there. After the one-county, one-operation selection is complete, tallies (including all practices at the selected sites) are updated to indicate progress toward achieving the minimum selection targets (see figure 3) while not exceeding the maximum number of operations per county. This procedure for selecting sites for follow-up verification ensures that the appropriate percentage (or more) of each developed sector BMP is verified annually.

Figure 10. Example of 'Practice by County' output

Step 5: How to Use the *Site Selection Tool* Results for Verification

The output in the 'Selected sites' and 'Practice by County' sheets can be used to determine the types and locations of specific BMPs to include in the developed sector verification process. The user should use the 'Selected sites' sheet to match the CBP_ID to the identical Project Title or other unique ID for the developed sector sites in the original BMP data in New York's BMP database. Once the selected sites have been matched and identified, inspectors can go to these sites and verify the appropriate BMPs at each site.

For instance, using the *Site Selection Tool* example presented in Steps 2 through 4 above, 19 sites were selected for Broome County (see figure 10). The user can go back to New York's BMP database and find those 19 unique site IDs (matching the CBP_ID) and determine their locations. Using the results in the 'Practice by County' sheet, the user can also see that at those 19 sites there are 16 stormwater treatment BMPs, 15 runoff reduction BMPs and 9 impervious surface reduction BMPs. By inspecting all three of these BMP types on the 19 sites, the required number of practices identified in the 'Practice by County' sheet will be verified for existence and performance.

D2.7 Adaptive Management Approach

Because of the lack of knowledge regarding the current number of developed sector BMPs on the ground and uncertainty regarding the expected percentage of BMPs to pass inspection, the statistical subsampling design was based on a statistically conservative assumption that 50% of the BMPs will pass inspection. In reality, these numbers will change as New York's verification program progresses and more local knowledge is gained. Regardless of the initial sampling method used, an adaptive management approach will be applied to the verification program to ensure that sampling rates remain within range of the target of 80% confidence level ± 10%.

DEC staff can use table 14 to guide future sample size selections using the correct sampling values based on the 80% confidence level ± 10%. DEC can use this table to apply appropriate sampling scenarios once there is a better understanding of the percentage of BMPs expected to pass inspection. The current percentage of BMPs expected to pass inspection is assumed to be 50% because there is no information available, but the actual percentage is likely different than 50% and can be adjusted as necessary with future verification efforts.

As implementation and verification of developed sector BMPs progresses, the percent meeting and other information will be used to help assess the need to alter the sampling approach. As New York's verification program becomes more robust, the actual percent meeting (perc. meet. in Table 14) will become known and can replace the 50% assumption. The 80% confidence level ± 10% will still be required but the perc. meet. will be adjusted to the columns to the right to reflect the actual percent meeting (e.g., 55 – 90%). Adjustments will be made as necessary to ensure that verification goals are met. The sample size can and likely will change over time. Subsampling will start on the left of Table 14 (using 50% perc. meet.) and likely move to the right with a larger perc meet. DEC can adaptively manage the sample size over time as the increasing perc. meet. will reduce the necessary sample size to meet the 80% confidence level ± 10%. The percentage of BMPs sampled will vary depending on the number of practices (e.g., a larger number of BMPs will have a smaller sampling percentage; a smaller number of BMPs will have a larger sampling percentage).

Appendices

Appendix A: Discharge Monitoring Report Submittal Processing

The following workflow diagram illustrates the process for DMR data submissions.
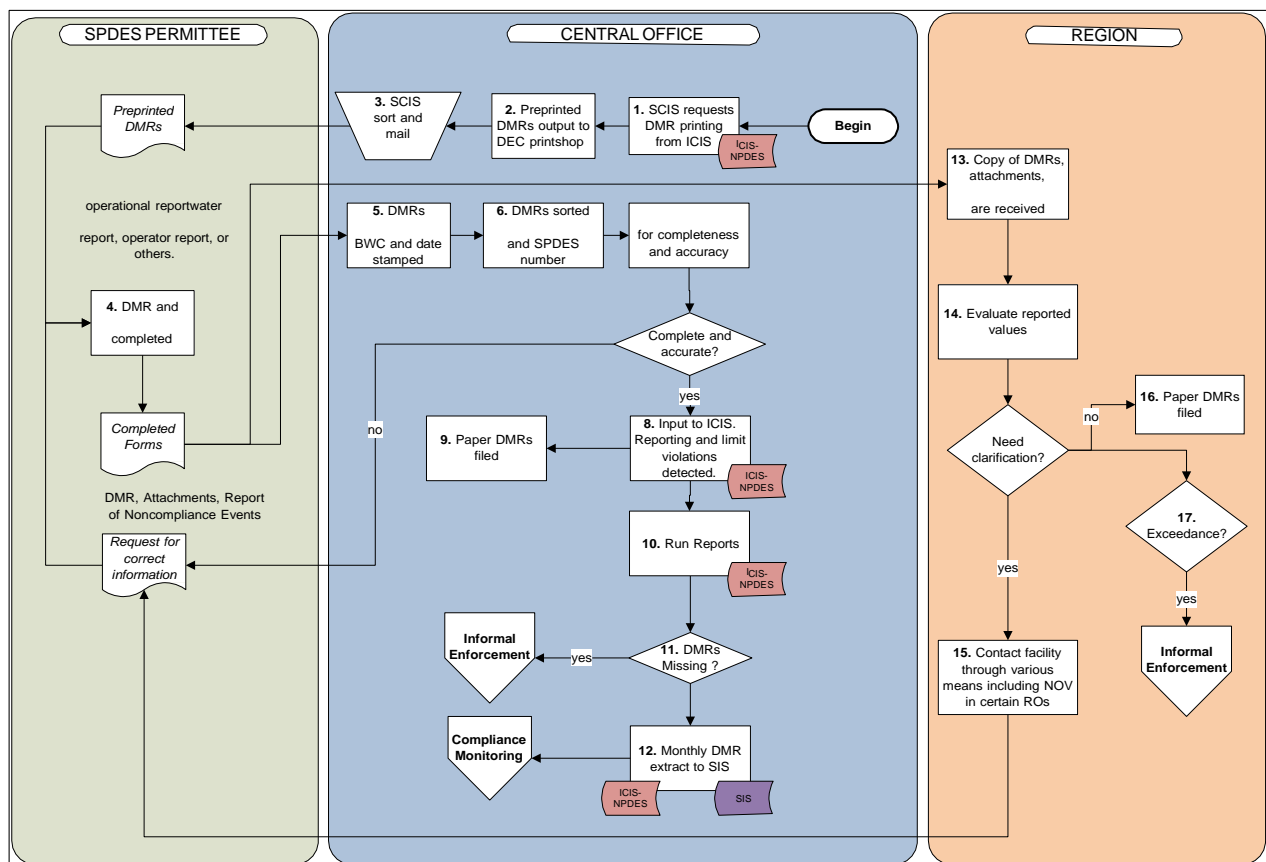

Figure 11 Workflow Diagram -DMR Processing for Each DMR process step is explained in detail in the numbered section

DMR preprint and facility DMR preparation

1. When a permit is issued, information about the permit is entered into ICIS-NPDES. The information may include the permitted outfalls, discharge monitoring requirements, reporting frequencies, and specific effluent limits. After the permit information is input, SCIS runs a "DMR Preprint" report from ICIS-NPDES.

2. The preprinted DMRs are output to the DEC printer or stored on a secure portion of the DEC website.

3. SCIS staff sorts the DMRs by SPDES number and mail the preprinted forms to the permittees. Some facilities retrieve their DMR from the DEC website using their facility-specific password.

4. When a reporting period ends, the permittee completes the DMR form, listing summarized sampling results for the period. Any required supplemental information is collected and attached to the DMR. Some examples of supplemental information might include lab reports, copies of log books, copies of non-compliance reports, Monthly Operating Reports (MORs), or Whole Effluent Toxicity (WET) reports.

   Permittees may use their own DMR reporting forms, but they must be approved by DEC and match the exact layout and content of the DEC-provided forms. The original DMR is sent to the CO, and a copy is sent to the applicable RO.

Central Office DMR processing

5. SPDES Compliance and Information Section (SCIS) staff receives and date stamps DMRs and attachments.

6. Complete DMRs are sorted into stacks, separated by RO and SPDES permit number.

7. DMRs are reviewed to ensure that all pages are present, all values are reported, and required signatures are present. If information is missing, the facility DMR contact is informed via email, mail or telephone of the deficiency and the correct information is requested. Some attachments are removed from the DMR packet to be reviewed and input into ICIS-NPDES, to fulfill compliance or permit schedules.

8. DMR data is coded into ICIS-NPDES.

9. Paper DMRs are filed in Central Office.

10. SCIS staff runs reports from ICIS-NPDES, identifying all missing DMRs for the period.

11. If DMRs are missing, SCIS creates and issues an NOV for each missing DMR, and mails them to the permittees. No enforcement discretion is applied during this process.

    SCIS has noted that many manual steps are required to generate NOVs. These include extracting a list of facilities that are missing DMRs from ICIS-NPDES, preparing extracted data in Excel, and using MS Word to perform a mail merge into the NOV template.

12. On a monthly basis, EPA extracts a flat-file from ICIS-NPDES containing all DMR data for the most recent period. The data is provided to DEC. DEC imports the DMR data into SIS, making a searchable version of DMR data available to staff.

Because of this process, DMR data is not very timely. Usually, a month passes after a DMR is received before it is imported into SIS.

Regional office DMR processing

13. The RO receives DMRs from each permittee. The RO receives additional information with the copy of the DMR, such as Monthly Operating Reports (MORs), or any requested report of non-compliance. Some ROs maintain local tracking spreadsheets to track the receipt of DMRs. Some ROs also input DMR data into spreadsheets for analysis.

14. DMRs are routed to the appropriate staff person for review. The manual process by which DMRs are sorted and distributed varies by RO, but most do undertake this effort. In some cases, only DMRs with violations are forwarded to the DOW facility manager.

15. If any clarification is needed, such as a missing, illegible, or improbable value on a DMR, RO staff contacts the facility for clarification. In some ROs, NOVs are immediately issued, in an effort to resolve reporting errors.

16. The paper DMR is filed by the RO.

17. If reported values exceed the effluent limits set forth in the permit, RO staff may issue an enforcement action, such as an NOV. The action taken is based on the enforcement discretion of RO staff.

Appendix B: Wastewater Facility Nutrient Data Processing Flow Diagram

```
                    ┌─────────────────────────────────────────┐
                    │            Data Collection              │
                    └─────────────────────────────────────────┘
                                      │
                                      ▼
┌──────────────┐   ┌──────────────────────────────────────────────┐   ┌──────────────┐
│ Data search  │◄──│ Facility Check: Compare with previous year's  │──►│ Report on new│
│ for missing  │   │ facility list to:                             │   │ facilities or│
│ facilities.  │   │  1. Identify New Facilities: Provide the new  │   │ changes in   │
└──────────────┘   │     facility information to CBPO. Facilities  │   │ flow or      │
                   │     not in the Bay watershed should be        │   │ process      │
                   │     excluded.                                 │   └──────────────┘
                   │  2. Look for Missing Facilities: Off-lined or │
                   │     missing data?                             │
                   └──────────────────────────────────────────────┘
```

Facility Check: Compare with previous year's facility list to:

1. Identify New Facilities: Provide the new facility information to CBPO. Facilities not in the Bay watershed should be excluded.
2. Look for Missing Facilities: Off-lined or missing data?

Data Check for Each Facility:

1. Missing Data Check: No discharge, off lined or missing data?
2. Data Range Check: any data out of normal variation range within the year?
3. Data Trend Check: is the annual average of TN, TP and FLOW out of normal variation range compared with previous several years' data?

Report on facilities off-lined during the year.

Data Updating:
Update the data set with corrected and/or verified data
Set the data to zero for the months of no discharge or off-lined.
Use annual average, previous year's data or default values for verified missing data

Data Compiling For Missing Nutrient Species:
Calculating nitrogen and phosphorous species concentration data from TN, TP or other available species with previous years' species relationships or different assumptions based on discharge type, NH_3 level, de-nitrification and etc. The default nutrient species relationship suggested is described in the following exhibit.

Further review if necessary

Compiled Data Check

1. $TKN > NH_3$; $TN = TKN + NO_{23}$ and $TP > PO_4$
2. No negative value
3. No missing data: monthly flow and concentrations for each outfall

Final Wastewater Facility Data Set

Chesapeake Bay Program Office

Appendix C: Dataflow for Nonpoint Source BMPs

| Source | Data Type/BMPs | Driver | Data Inspection for Submitting Practice | | | | Submitting to NEIEN |
			Method	Freq.	Who Inspects?	Documentation	Processing/ Reporting
Federal Facilities	Urban BMPs	Voluntary	Field Visual	100%	Federal Facilities	Annual excel template populated by Federal Facilities submitted to DEC	DEC Division of Water staff upload the XML to NEIEN Chesapeake Bay Program
Construction Stormwater	Erosion & Sediment Control, Stormwater Treatment, Runoff Reduction, & Impervious Surface Reduction	Regulations, Permit Requirement	Field Visual	100%	Locality or DEC	Excel populated by DEC Division of Water using the Water Information System (WIS)	
Regional Planning Boards	Urban BMPs & Forestry Harvesting Practice & Septic Connections/Pumping	Voluntary	Field Visual/ Excel Template	100%	Locality or DEC	Annual excel template populated by Regional Planning Boards submitted to DEC	
DEC NPS Grant Programs	Urban BMPs & Forestry Harvesting Practice & Septic Connections/Pumping	Voluntary	Field Visual/ Excel Template	100%	Locality or DEC	Annual excel template populated by DEC Divisions.	

Appendix D: Dataflow for Nonpoint Source BMPs

Source	Data Type/BMPs	Data Inspection for Verifying Practice after Initial Inspection			BMP Lifespan (Years)
		Follow up inspection	Statistical Sub sample	Response if Problem	
Federal Facilities	Urban BMPs	Federal Facilities	100% Inspected	Inspection updates provided by federal facilities will be used to update data records and extend credit life. If no updates are received, credit durations will require removal of the record from the reporting system.	5-15
Construction Stormwater	Erosion & Sediment Control	Locality or DEC	100% Inspected	N/A	Annual Practice
Construction Stormwater	Post Construction BMPs	Locality or DEC	Appendix E	Removal of the record from the reporting system.	10
Regional Planning Boards Survey / DEC Division Staff	Forest Harvesting Practices	Regional Forester	100% Inspected	Removal of the record from the reporting system.	Annual Practice
Regional Planning Boards Survey / DEC Nonpoint Source BMP Implementation Grant Programs	Construction Stormwater Practices under 1 acre without a SPDES permit	Locality or DEC	Appendix E	Removal of the record from the reporting system.	5-15

Appendix E: NPS Database Import and Output Attribute Fields used for NEIEN Reporting

Excel Spreadsheet Import Attribute Fields	NEIEN XML Output Attribute Fields
Project ID	State Unique Identifier
BMPID	BMP Name
Agency Name	Agency Name
County	County Name
HUC 12	HUC Twelve Digit Code
Latitude	Latitude Measure
Longitude	Longitude Measure
Land Use Selection	BMP Land Use Class Code Description
Date Installed	BMP Event Status Code Date
BMP Unit	Measure Unit Name
BMP Value	Measure Value
Verification Date	BMP Event Status Code Date
Verification Status	BMP Event Status Code Result Description