

WQIP Category(s)	BMP Name	Technical Reference Catalogue	Reporting Unit	Link to Technical Reference	BMP Definition
Green Infrastructure	Disconnection of Rooftop Runoff	NYS Stormwater Management Design Manual	Volume of Water Diverted/ Treated	<a href="https://www.dec.ny.gov/docs/water_pdf/swdm2015chptr05.pdf">https://www.dec.ny.gov/docs/water_pdf/swdm2015chptr05.pdf</a>	Direct runoff from residential rooftop areas to designated pervious areas to reduce runoff volume and rates.
Green Infrastructure	Green Roof	NYS Stormwater Management Design Manual	Sq. Feet	<a href="https://www.dec.ny.gov/docs/water_pdf/swdm2015chptr05.pdf">https://www.dec.ny.gov/docs/water_pdf/swdm2015chptr05.pdf</a>	Green roofs consist of a layer of vegetation and soil installed on top of a conventional flat or sloped roof. The rooftop vegetation captures rainwater allowing evaporation and evapotranspiration processes to reduce the amount of runoff entering downstream systems.
Green Infrastructure	Rain Barrels/Cisterns	NYS Stormwater Management Design Manual	Volume of Water Captured	<a href="https://www.dec.ny.gov/docs/water_pdf/swdm2015chptr05.pdf">https://www.dec.ny.gov/docs/water_pdf/swdm2015chptr05.pdf</a>	Rain barrels and cisterns capture and store stormwater runoff to be used for lawn or landscaping irrigation or filtered and used for nonpotable water activities, such as car washing.
Green Infrastructure	Stream Daylighting	NYS Stormwater Management Design Manual	Acre	<a href="https://www.dec.ny.gov/docs/water_pdf/swdm2015chptr05.pdf">https://www.dec.ny.gov/docs/water_pdf/swdm2015chptr05.pdf</a>	Stream daylighting involves uncovering a stream or a section of a stream that has been artificially enclosed in the past to accommodate development. Stream daylighting previously culverted/piped streams can restore natural habitats, better attenuate runoff by increasing storage size, promoting infiltrations and help to reduce pollutant loads.
Green Infrastructure	Vegetated Filter Strip	NYS Stormwater Management Design Manual	Acre or Sq. Feet	<a href="https://www.dec.ny.gov/docs/water_pdf/swdm2015chptr05.pdf">https://www.dec.ny.gov/docs/water_pdf/swdm2015chptr05.pdf</a>	Vegetated filter strips (a.k.a. grassed filter strips) are vegetated surfaces that are designed to treat sheet flow from adjacent surfaces and remove pollutants through filtration and infiltration.
Green Infrastructure	Vegetated Swale	NYS Stormwater Management Design Manual	Acre or Sq. Feet	<a href="https://www.dec.ny.gov/docs/water_pdf/swdm2015chptr05.pdf">https://www.dec.ny.gov/docs/water_pdf/swdm2015chptr05.pdf</a>	A vegetated swale is a maintained, turf-lined swale designed to convey stormwater at a low velocity, promoting natural treatment and infiltration.
Stormwater Retrofits	BMPs identified in Chapter 5 and 6 of the 2015 NYS Stormwater Design Manual	NYS Stormwater Management Design Manual	Volume of Water Diverted/ Treated	<a href="https://www.dec.ny.gov/chemical/29072.html">https://www.dec.ny.gov/chemical/29072.html</a>	BMPs to capture and remove pollutants causing a water quality impairment.
Beach Restoration, Green Infrastructure	Tree Planting/Tree Pit	NYS Stormwater Management Design Manual	Sq. Feet	<a href="https://www.dec.ny.gov/docs/water_pdf/swdm2015entire.pdf">https://www.dec.ny.gov/docs/water_pdf/swdm2015entire.pdf</a>	Tree planting generally refers to concentrated groupings of trees planted in landscaped areas while tree pits, also called tree boxes, generally refer to individually planted trees in contained areas such as sidewalk cutouts or curbed islands. Tree planting can be used for applications such as landscaping, stormwater management practice areas, conservation areas and erosion and sediment control.
Beach Restoration, Green Infrastructure	Porous Pavement	Beach Restoration Practices Factsheet	Acre or Sq. Feet	<a href="https://www.dec.ny.gov/docs/water_pdf/beacheswgip.pdf">https://www.dec.ny.gov/docs/water_pdf/beacheswgip.pdf</a>	Permeable paving is a broadly defined group of pervious types of pavements used for roads, parking, sidewalks, and plaza surfaces. Permeable paving provides an alternative to conventional asphalt and concrete surfaces and are designed to convey rainfall through the surface into an underlying reservoir where it can infiltrate, thereby reducing stormwater runoff from a site. In addition, permeable paving reduces impacts of impervious cover by augmenting the recharge of groundwater through infiltration, and providing some pollutant uptake in the underlying soils. Due to the potential high risk of clogging the pavement voids and the underlying soils, permeable paving should be limited in its use and should require strict adherence to manufacturer's specifications for installation and maintenance.

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Beach Restoration, Green Infrastructure	Rain Gardens	Beach Restoration Practices Factsheet	Acre or Sq. Feet	<a href="https://www.dec.ny.gov/docs/water_pdf/beacheswqip.pdf">https://www.dec.ny.gov/docs/water_pdf/beacheswqip.pdf</a>	A rain garden is a stormwater management practice intended to manage and treat small volumes of stormwater runoff from impervious surfaces using a conditioned planting soil bed and planting materials to filter runoff stored within a shallow depression.
Beach Restoration, Green Infrastructure	Stormwater Planters	Beach Restoration Practices Factsheet	Sq. Feet	<a href="https://www.dec.ny.gov/docs/water_pdf/swdm2015entire.pdf">https://www.dec.ny.gov/docs/water_pdf/swdm2015entire.pdf</a>	Stormwater planters are small landscaped stormwater treatment devices that can be placed above or below ground and can be designed as infiltration or filtering practices. Stormwater planters use soil infiltration and biogeochemical processes to decrease stormwater quantity and improve water quality, similar to rain gardens and green roofs. Three versions of stormwater planters include contained planters, infiltration planters, and flow-through planters.
Beach Restoration, Great Lakes Nature-Based Shoreline	Dune Restoration	Standards and Specifications for Vegetating Sand Dunes and Tidal Banks	Acre or Sq. Feet	<a href="https://www.dec.ny.gov/docs/water_pdf/sec3part4.pdf">https://www.dec.ny.gov/docs/water_pdf/sec3part4.pdf</a>	Establishing and maintaining vegetative cover for coastal shoreline protection
Beach Restoration	Beach Mats/Walkways	Beach Restoration Practices Factsheet	Sq. feet	<a href="https://www.dec.ny.gov/docs/water_pdf/beacheswqip.pdf">https://www.dec.ny.gov/docs/water_pdf/beacheswqip.pdf</a>	Beach mats are used in areas of high pedestrian traffic to reduce erosion by keeping sand in place. Beach mats can be used as an alternative to boardwalks and can increase accessibility.
Beach Restoration	Beach Sand Enrichment/Nourishment	Beach Restoration Practices Factsheet	Cubic Feet or Cubic Yards	<a href="https://www.dec.ny.gov/docs/water_pdf/beacheswqip.pdf">https://www.dec.ny.gov/docs/water_pdf/beacheswqip.pdf</a>	Beach sand nourishment or enrichment is the practice of adding or replacing large quantities of sand or sediment to beaches to combat erosion, restore sand dunes, and remove pathogen laden sand. Replacement sand should be an appropriate grain size and quality to reduce future erosion.
Beach Restoration	Beach Sand Rakes	Beach Restoration Practices Factsheet	Number of machines	<a href="https://www.dec.ny.gov/docs/water_pdf/beacheswqip.pdf">https://www.dec.ny.gov/docs/water_pdf/beacheswqip.pdf</a>	Surf rakes or beach cleaning machines are used to manually or mechanically remove beach pollution such as seaweed, dead fish, glass, plastic, cans, cigarettes, and natural debris.
Beach Restoration	Pet Waste Stations/Signage	Beach Restoration Practices Factsheet	Number of stations	<a href="https://www.dec.ny.gov/docs/water_pdf/beacheswqip.pdf">https://www.dec.ny.gov/docs/water_pdf/beacheswqip.pdf</a>	Stations or receptacles for disposal of pet waste. Pet waste stations can also include signs to education the public on removal of pet waste from beaches.
Beach Restoration	Waterfowl Management	Beach Restoration Practices Factsheet	Number of decoys, bins, etc.	<a href="https://www.dec.ny.gov/docs/water_pdf/beacheswqip.pdf">https://www.dec.ny.gov/docs/water_pdf/beacheswqip.pdf</a>	Use of wildlife decoys (trumpeter swans, coyotes), pyrotechnics, covered trash bins, etc. to reduce impacts of nuisance waterfowl on the beach. Waterfowl feces can contain harmful bacteria that can lead to poor beach water quality.
Beach Restoration, Green Infrastructure, Great Lakes Nature-Based Shoreline, Stormwater Retrofits	Constructed Wetlands	Beach Restoration Practices Factsheet	Acre	<a href="https://www.dec.ny.gov/docs/water_pdf/beacheswqip.pdf">https://www.dec.ny.gov/docs/water_pdf/beacheswqip.pdf</a>	A constructed, shallow water area dominated by cattail, bulrush, rushes or reeds designed to simulate the water quality improvement function of natural wetlands.
Great Lakes Nature-Based Shoreline, Streambank Restoration and Riparian Buffers, Stormwater Retrofits	Riparian Buffer	Hydrologic and Habitat Modification Management Practices Catalogue	Acre or Sq. Feet	<a href="https://www.dec.ny.gov/docs/water_pdf/hhmbmp.pdf">https://www.dec.ny.gov/docs/water_pdf/hhmbmp.pdf</a>	A corridor of trees, shrubs, and grasses of varying width located adjacent to and up gradient from waterbodies for the purpose of intercepting and filtering stormwater runoff, subsurface flow and groundwater flow from upland sources.

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Great Lakes Nature-Based Shoreline, Streambank Restoration and Riparian Buffers	Vegetated Cribbing (Live Cribbing)	Shoreline Stabilization Techniques	Acre or Sq. Feet	<a href="http://www.dec.ny.gov/permits/50534.html">http://www.dec.ny.gov/permits/50534.html</a>	Interlocking palnts of wood act as a live retaining wall with vegetation planted between the planks. This technique works best in areas with low wave action.
Great Lakes Nature-Based Shoreline, Streambank Restoration and Riparian Buffers	Geotextiles/ Vegetated Geogrids	Hydrologic and Habitat Modification Management Practices Catalogue, Shoreline Stabilization Techniques	Acre or Sq. Feet	<a href="https://www.dec.ny.gov/docs/water_pdf/hhmbmp.pdf">https://www.dec.ny.gov/docs/water_pdf/hhmbmp.pdf</a> , <a href="http://www.dec.ny.gov/permits/50534.html">http://www.dec.ny.gov/permits/50534.html</a>	Synthetic and natural materials usually in the shape of nets, mats or blankets used to assist the establishment of vegetation or placement of riprap.
Great Lakes Nature-Based Shoreline, Streambank Restoration and Riparian Buffers	Live Staking or Root Wads	Hydrologic and Habitat Modification Management Practices Catalogue, Shoreline Stabilization Techniques	Acre or Sq. Feet	<a href="https://www.dec.ny.gov/docs/water_pdf/hhmbmp.pdf">https://www.dec.ny.gov/docs/water_pdf/hhmbmp.pdf</a> , <a href="http://www.dec.ny.gov/permits/50534.html">http://www.dec.ny.gov/permits/50534.html</a>	The use of live dormant stem cuttings or tree root wads in combination with geotextiles or structural devices for erosion control along streambanks.
Streambank Restoration and Riparian Buffers	Stream Grade Stabilization Structures	Hydrologic and Habitat Modification Management Practices Catalogue	Acre or Sq. Feet	<a href="https://www.dec.ny.gov/docs/water_pdf/hhmbmp.pdf">https://www.dec.ny.gov/docs/water_pdf/hhmbmp.pdf</a>	Selective use of instream flow control structures (such as check dams, current deflectors, habitat-improving dams, cribs) to control scouring and sedimentation in the stream channel.
Streambank Restoration and Riparian Buffers	Structural Slope Protection	Hydrologic and Habitat Modification Management Practices Catalogue	Acre or Sq. Feet	<a href="https://www.dec.ny.gov/docs/water_pdf/hhmbmp.pdf">https://www.dec.ny.gov/docs/water_pdf/hhmbmp.pdf</a>	The stabilization of steep or erosive slopes with rip-rap, retaining walls or other non-vegetative materials either on the streambank or upslope of the stream channel.
In-Waterbody BMPs	Destratification Systems for Polymictic Lakes	Priority In-Waterbody Best Management Practices	Acre or Sq. Feet	<a href="https://www.dec.ny.gov/docs/water_pdf/inlakewqip.pdf">https://www.dec.ny.gov/docs/water_pdf/inlakewqip.pdf</a>	Destratification systems create artificial circulation that completely mixes a stratified lake's waters. Systems include air injection diffusers placed near the botton of the lake or mechanical flow pumps placed at the lake surface that push surface water downward to create circulation.
In-Waterbody BMPs	Dredging	Priority In-Waterbody Best Management Practices	Cubic Feet	<a href="https://www.dec.ny.gov/docs/water_pdf/inlakewqip.pdf">https://www.dec.ny.gov/docs/water_pdf/inlakewqip.pdf</a>	Dredging removes the top layer of sediments that hold biologically available nutrients involved in exchanges and interactions with the water column. Sediment removal may improve the overall water quality in lakes where nutrient loading from sediments is a major factor affecting nuisance weed and algae growth.
In-Waterbody BMPs	Hypolimnetic Aeration	Priority In-Waterbody Best Management Practices	Acre	<a href="https://www.dec.ny.gov/docs/water_pdf/inlakewqip.pdf">https://www.dec.ny.gov/docs/water_pdf/inlakewqip.pdf</a>	Hypolimnion aeration is used to increase oxygen circulation within a lake and increase oxygen content of the deep waters without causing enough turbulence to disrupt the stratified layers. Aeration of the lake bottom waters uses an air-lift device to pump or lift the deep, stagnant water layer for exposure to the atmosphere. This results in aeration and the loss of some gases such as carbon dioxide and methane. Then the water sinks back to the hypolimnion. Hypolimnetic aeration may also be accomplished by injecting pure oxygen or air into the bottom waters or by using an air-lift device along with injection. When the hypolimnion has sufficient oxygen, release of phosphorus from oxygen-

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					depleted bottom sediments will be minimized, and this may result in decreased algae levels.
In-Waterbody BMPs	Hypolimnetic Withdrawal	Priority In-Waterbody Best Management Practices	Cubic Feet	<a href="https://www.dec.ny.gov/docs/water_pdf/inlakewqip.pdf">https://www.dec.ny.gov/docs/water_pdf/inlakewqip.pdf</a>	Hypolimnetic withdrawal is most often accomplished through the installation of a pipe or siphon along the bottom of the lake, usually at the outlet. Water flows out of the hypolimnion by gravity, past the outlet to the receiving waters. If there is insufficient elevation for gravity flow, an auxiliary pump can be installed. Summertime hypolimnetic withdrawal serves to remove the high-nutrient waters, thus reducing the potential for algal blooms when the epilimnion and hypolimnion mix during fall turnover.
Permeable Reactive Barriers	Permeable Reactive Barriers	EPA Permeable Reactive Barrier Technologies for Contaminant Remediation	Unit	<a href="https://clu-in.org/download/rtdf/prb/reactbar.pdf">https://clu-in.org/download/rtdf/prb/reactbar.pdf</a>	Projects to reduce nitrogen in groundwater through the installation of permeable reactive barrier systems.
Culvert repair/replacement (Projects) or Nonpoint Source Program	Culvert repair/replacement	Stream Crossings: Guidelines and Best Management Practices	Unit	<a href="https://www.dec.ny.gov/docs/permits_ej_operations_pdf/streamcrossbmp.pdf">https://www.dec.ny.gov/docs/permits_ej_operations_pdf/streamcrossbmp.pdf</a>	Replacement or repair of culverts that are undersized or failing and leading to erosion of nearby soils. Replacement stream crossings should restore stream continuity.
Nonpoint Source Program	Septic tank pump-out	On-Site Wastewater Treatment Systems	Number of systems pumped	<a href="https://www.dec.ny.gov/docs/water_pdf/onsitewastewater.pdf">https://www.dec.ny.gov/docs/water_pdf/onsitewastewater.pdf</a>	Periodic septic system inspections and routine pumping of the septic tank to prevent overflow of solids into distribution network and consequential failure of downstream treatment facilities.
Nonpoint Source Program	Catch Basin Cleaning (Vac-trucks in MS4 areas)	Roadway and Right-of-Way Maintenance	Number of basins cleaned	<a href="https://www.dec.ny.gov/docs/water_pdf/roadwayrowbmp.pdf">https://www.dec.ny.gov/docs/water_pdf/roadwayrowbmp.pdf</a>	The use of specialized equipment to manually or mechanically remove debris and sediment from catch basins in order to maintain their sediment trapping ability.
Nonpoint Source Program	Hydroseeding/Maintenance of Vegetative Cover	Roadway and Right-of-Way Maintenance	Acre or Sq. Feet	<a href="https://www.dec.ny.gov/docs/water_pdf/roadwayrowbmp.pdf">https://www.dec.ny.gov/docs/water_pdf/roadwayrowbmp.pdf</a>	Maintenance and inspection of vegetative cover in critical areas and re-establishment of vegetation in exposes soils to prevent erosion. Planting techniques may include drilling, tracking, hydroseeding, broadcasting, sprigging, and sodding.
Nonpoint Source Program	Road Ditch Stabilization	NYS Standards and Specifications for Erosion and Sediment Control (Blue Book) or Roadway and Right-of-Way Maintenance	Acre or Sq. Feet	<a href="https://www.dec.ny.gov/chemical/29066.html">https://www.dec.ny.gov/chemical/29066.html</a> or <a href="https://www.dec.ny.gov/docs/water_pdf/roadwayrowbmp.pdf">https://www.dec.ny.gov/docs/water_pdf/roadwayrowbmp.pdf</a>	Techniques for providing stable conditions on roadside ditches (vegetative management practices, structural BMPs, etc.). Stable conditions should be maintained during routine sediment removal, clean-up, and ditch re-shaping operations.
Nonpoint Source Program	Street Sweeping/Vacuuming	Roadway and Right-of-way Maintenance	Acres	<a href="https://www.dec.ny.gov/docs/water_pdf/roadwayrowbmp.pdf">https://www.dec.ny.gov/docs/water_pdf/roadwayrowbmp.pdf</a>	Use of mechanical broom sweeper, motorized vacuum sweeper, loaders or hand tools to clean impervious surfaces and remove pollutants (debris, organic matter, nutrients, sediments, etc.) before they are washed into stormwater conveyance systems.