



See end of chapter for dialog on SIC codes.

To determine whether a permit is needed, call DNREC's Surface Water Discharges Section at (302) 739-9946.

Stormwater Management

Environmental Concerns

Stormwater runoff is precipitation that has not been absorbed by the ground. Rather, it washes over the surface of the land picking up pollutants as it travels. Stormwater runoff may collect soil particles, petroleum products, residues from industrial activities, litter, and pet waste. All of these pollutants are carried with the runoff into surface waters where they adversely impact water quality.

The volume of stormwater runoff increases as natural forests and fields are replaced with hard surfaces such as buildings, parking lots, driveways, and roads. Also, without any plants to disrupt the flow, stormwater moves across the land more quickly than it did under predevelopment conditions. This greater, faster flow of stormwater can severely degrade receiving water bodies by accelerating erosion which leads to flooding, destruction of plant and animal life, and loss of habitat. Also, pollutants carried by stormwater impair water quality by increasing levels of nitrogen, phosphorous, suspended solids, biological oxygen demand, and chemical oxygen demand. Temperatures and levels of toxic metals and hydrocarbons tend to increase, dissolved oxygen decreases, and the acidity-alkalinity of the water typically changes. The result is that near shore areas are less able to support wildlife like young fish and crabs. Also, using the water for human recreation becomes less desirable.

Legal Setting

General Stormwater Permit for Discharges from Marinas

All marinas or other facilities that conduct boat repair, painting, or maintenance (including washing and fueling) activities are required to obtain General Storm Water Permit coverage for discharges of storm water to a local waterbody (stream, lake, river, tax ditch, etc.) or municipal separate storm sewer system. If a facility does not discharge storm water to a waterbody or a municipal separate storm sewer system, then the facility is not required to obtain permit coverage.

If the facility operator does not provide maintenance services, but allows contractors hired by his/her boating patrons to come into the marina to perform the work – sometimes on land (scraping/painting, etc.), sometimes in the water (engine work and repairs), the facility would still be required to obtain permit coverage since maintenance activities are performed on facility grounds. The facility operator would be required to ensure that contractors are conducting these activities in accordance with the facility's General Storm Water Permit (GSWP).

The General Stormwater Permit, addressed by the State of Delaware Regulations Governing Storm Water Discharges Associated with Industrial Activity Part 1, Baseline General Permit, covers storm water discharges associated with boat maintenance/repair activities and wastewater from pressure washing activities. It does not cover any other non-storm water discharges, such as wastewater discharges to surface or groundwater from boats or other sources.

The goal of the General Storm Water Permit is to establish accepted practices for protecting and improving water quality and minimizing adverse effects on waters of the State from storm water discharges associated with boat maintenance/repair activities. Rather than setting numerical water quality criteria, the General Stormwater Permit Program requires all facilities to obtain coverage under the General Storm Water Permit by implementing certain Best Management Practices (BMPs).

Facilities can obtain coverage under the General Storm Water Permit program by submitting a completed Notice of Intent (NOI) form to DNREC (see Guidebook Appendix IV for the Form and Instructions). DNREC will then issue a letter verifying permit coverage has been acquired.

General Storm Water Permit coverage requires a facility to:

1. Develop, implement and maintain a Storm Water Plan (SWP).
2. Conduct and document annual SWP training.
3. Analyze storm water discharges as specified in the regulations.
4. Implement an Inspection Program as detailed in the regulations.

THE STORM WATER PLAN

The SWP is a document that details the facility's potential pollutant sources, training, good housekeeping and other best management practices to prevent pollutants from getting into storm water runoff. A SWP:

- Must be submitted with the NOI form.
- Identify individuals responsible for implementing the SWP.
- Describe all potential sources of pollution which may reasonably be expected to affect storm water quality at the site or which may result in the discharge of pollutants to surface waters or a storm drain. Indicate practices implemented to reduce their exposure to storm water.
- Provide that qualified personnel shall conduct site compliance evaluations twice a year.
- Include the following:
 1. a site map outlining the drainage area
 2. an inventory of exposed materials and summary of potential pollutant sources.
 3. a list of spills or leaks
 4. a description of the monitoring plan and sampling data for storm water discharges at the site.
- Describe the storm water measures and controls appropriate for the facility with a schedule to implement the controls, including provisions which allow for:
 1. the maintenance of a clean, orderly facility;
 2. prohibition of washing of equipment or vehicles that allows wash water to enter storm drainage systems or receiving water,

The Delaware Marina Regulations define Best Management Practices (BMPs) as methods, measures, or practices that are determined by DNREC to be a reasonable and cost-effective means for a person to meet certain pollution control needs. Best management practices include, but are not limited to, structural and nonstructural controls and operation and maintenance procedures. Best Management Practices can be applied before, during, or after pollution-producing activities to reduce or eliminate the introduction of pollutants into receiving waters.

For guidance and help with any questions about Stormwater permits contact DNREC's Surface Water Discharges Section at (302) 739-9946.



3. identification of areas with potential for soil and that floor drains connecting to storm sewers have been sealed;
4. identification of areas with potential for soil erosion and measures to eliminate that potential;
5. practices implemented to minimize the exposure of all machinery, equipment, or vehicle maintenance activities to storm water.
6. preventative maintenance program;
7. spill prevention and response procedures;
8. employee training on the contents and procedures of the SWP.

SWP TRAINING

Facility employees and contractor personnel that work in areas where industrial materials are used or stored are required to be trained to meet the requirements of the SWP. Employee training shall be conducted and documented annually.

SWP MONITORING

Facilities must analyze their storm water discharges on a semi-annual basis for a specified list of parameters and maintain records of the results, as required by the General Storm Water Permit.

SWP INSPECTION PROGRAM

Facilities must implement a routine inspection program, a semi-annual comprehensive site evaluation program, and a secondary containment inspection program as required by the General Storm Water Permit.

Marinas and other facilities whose activities are entirely sheltered from storm water, or those facilities only conducting fueling activities, may obtain an exclusion from permit requirements by submitting a “No Exposure” Certification form (see Guidebook Appendix V for the Form and Instructions). A “No Exposure” Certification will be granted to such facilities, thus exempting the facility from the monitoring and SWP requirements of the General Storm Water Permit.

State Law: Sediment Control and Stormwater Management

Delaware Code Title 7, Chapter 40 requires that any land disturbing activity that disturbs 5,000 square feet or more, unless exempted, must have an approved sediment and stormwater management plan before land disturbance begins. The plans are reviewed and approved by the local agency that has the authority, as delegated by DNREC, to implement the Sediment and Stormwater Program in that area of the State. DNREC’s Sediment and Stormwater Program retains the review and approval responsibility for construction activities on state and federal lands. The owner/operator of the construction activity must also obtain coverage under the National Pollutant Discharge Elimination System (NPDES) General Permit for Construction Activities. Refer to the Sediment and Stormwater section of DNREC’s web site for the list of Delegated Agencies statewide and for detailed compliance assistance information.

Best Management Practices to Control Stormwater Runoff

Avoid Maintenance Area Runoff.

- ◆ Prevent or minimize contamination of stormwater runoff from all areas used for engine maintenance and repair.
- ◆ Develop spill prevention and response procedures for all areas where spills can contribute to stormwater discharge.

Cultivate Vegetated Areas. Healthy soil and vegetation capture, treat, and slowly release stormwater. The water is cleaned through a combination of microbial action in the soil, vegetative uptake, evaporation, and transpiration.

- ❖ Plant environmentally-sensitive landscapes at the edge of parking lots and within islands in parking lots.
- ❖ Plant vegetated buffers between your upland property and the water's edge.
- ❖ Position downspouts so that they drain to vegetated areas—avoid draining to concrete or asphalt.
- ❖ Construct wetlands to remove pollutants, protect the shore from storms, and provide habitat for aquatic species and birds.
- ❖ Use grassed swales to direct stormwater on your property. Grassed swales are channels or ditches planted with erosion-resistant vegetation. They improve water quality by filtering out particulates, taking up nutrients, and promoting infiltration. Also, water generally moves more slowly over a grassed swale than it would in a pipe. Grassed swales are not practical on very flat land, on steep slopes, or in wet or poorly drained soils.

Minimize the Amount of Paved Area. The less impervious area on site, the less runoff you will have to manage.

- ❖ Pave only those areas that are absolutely necessary.
- ❖ Minimize the length of new roadway required to serve new or expanding marinas.
- ❖ Plan roads so they do not cross sensitive areas such as tidal wetlands.
- ❖ Consider alternatives to asphalt for parking lots and vessel storage areas, e.g., gravel, seashells, or paving blocks that allow vegetation to grow. DNREC can provide a list of suppliers of these materials.

Adopt Integrated Pest Management Practices. Because of your proximity to the water, it is important to avoid toxic lawn and garden chemicals to the greatest extent possible. Instead, deter unwanted plants or animals with Integrated Pest Management practices. Integrated Pest Management employs preventive, cultural, biological, and chemical methods to control pests while minimizing impacts to non-target species, wildlife, and water quality.

- ❖ Select plants that are disease and insect resistant that will out-compete common weeds, and that can thrive on your property. Consider the degree of sun exposure, slope, drainage, amount of shade, wind, volume of foot traffic, soil type, temperature variations, and other environmental factors.
- ❖ Mow lawn areas properly to suppress weeds. Varieties of grass that grow better in cooler weather should be mowed to no less than 2.5 inches in

For more information, contact Joanne Whalen, Specialist for Integrated Pest Management, Agricultural Extension Service at jwhalen@udel.edu, <http://www.udel.edu/IPM>, or call (302) 831-1303.

The following USEPA website <http://www.epa.gov/owm/mtb/mtbfact.htm> has a series of technology fact sheets on various stormwater Best Management Practices, with good practical approaches.

Another good resource can be found at the Center for Watershed Protection website, <http://www.stormwatercenter.net>. For this site, select "Slideshows", then "A Review of Stormwater Treatment Practices" for graphics of the most current Best Management Practices. This presentation is a general review of the many types of practices used to manage and treat urban stormwater. The stormwater treatment practices presented in this presentation fall into five major categories: stormwater ponds, stormwater wetlands, infiltration practices, filtering practices, and open channels. Within each category, there are several design variations. For each practice, a general sequence of slides will be provided including: a schematic, applicability and performance summary, design notes, and one or two representative photographs.

For information on specific design criteria and Delaware construction standards, be sure to contact DNREC's Division of Soil and Water Conservation Sediment & Stormwater Program at (302) 739-9921, or email at randell.greer@state.de.us

height. Grasses that grow better in warm weather should be mowed to no less than 1.5 inches.

- ❖ Pull weeds by hand to reduce reliance on herbicides.
- ❖ Boost your own tolerance for weeds and other pests. If it is not actually harming anything, leave it alone.
- ❖ Foster natural predators such as spiders, praying mantis, dragonflies, lacewings, soldier beetles, birds, bats, frogs, lizards, and certain snakes and toads.
- ❖ Use natural agents such as milky spore disease for grubs and Japanese beetles, *Bacillus thuringiensis* (BT) to control mosquito and small moth larvae, and sabadilla for chinch bugs.
- ❖ Use pesticides only after all other options have been exhausted. Use organic alternatives to chemical pesticides. Also, rather than broadcasting pesticides, apply them directly to problem areas.
- ❖ Treat only serious or threatening intolerable pest infestations.
- ❖ Purchase the least toxic chemical in the smallest amount practical.
- ❖ Do not use pesticides just before a rainfall or on a windy day.
- ❖ Apply insecticides during the evening when honeybees and other beneficial insects are less active.
- ❖ Do not apply pesticides near water, e.g., shore, wells, streams, ponds, bird baths, swimming pools, etc.

Use Structural Controls as Necessary. Because of space limitations or other constraints, it may be necessary to adopt more traditional practices such as pond systems, wetland systems, infiltration systems, and filter systems.

- Stormwater pond systems capture and slowly release storm flows. Ponds are classified as wet ponds (ponds with a permanent pool of water), or dry ponds (ponds that are only wet as the result of rainfall). Dry ponds are effective for controlling flooding and erosion, but not for trapping pollutants and are no longer approved for water quality control.
- Stormwater wetland systems are designed to mimic the ability of natural wetlands to cleanse and absorb storm flows.
- Infiltration systems are designed to take advantage of soil's natural infiltration capacities and pollutant removal characteristics.
- Rain barrels are an example of an inexpensive way to store and release rooftop runoff from small buildings.
- Filter systems "strain" runoff to remove pollutants. The Delaware Sand Filter is one type of system that allows particles to settle into a wet chamber before flowing through a sand chamber for final treatment. The design for this BMP is available by contacting DNREC Sediment and Stormwater Program at (302) 739-9921.
- Structural Stormwater Systems – There are many new structural stormwater products designed to treat stormwater runoff, most of which are connected to storm drain systems and catch basins. They are designed to either filter runoff or separate pollutants from the cleaner water. These structural systems may be used for retrofit situations or new construction. DNREC maintains a list of these products and their suppliers.
- Catch Basin Inserts – There are also a variety of catch basin inserts that are used to filter stormwater runoff that are usually comprised of some type of geo-textile fabric and frame. The filters are inserted into existing catch basins and must be maintained frequently. Some of these filters have an absorbent material designed to capture oils and greases and would be good applications in marina situations. DNREC

can also provide information on these products.

- ❖ Establish a schedule for inspecting and cleaning stormwater systems. Remove paint chips, dust, sediment, and other debris.
- ❖ ALL stormwater management structures must be maintained in order to be effective.

Practice Low Impact Development. One goal of low impact development is to develop a site with a minimal amount of impact to the soil, groundwater, and surface water. This approach takes advantage of a site's natural features—including vegetation—to minimize the need to build expensive stormwater control devices. DNREC Sediment and Stormwater Program (302) 739-4411 [9921](tel:302-739-9921) has developed several "Green Technology Best Management Practices" that may be applicable in marina environments.

- ❖ Capture and treat stormwater on site.
- ❖ For example, direct the runoff from your parking lot to a bioretention area rather than toward a storm drain. A "rain garden" is an example of a bio-retention area. It is an area planted with native vegetation and sited such that it collects stormwater. Water, nutrients, and pollutants are taken up by soil and plants within 24 to 48 hours after a storm. Bioretention cells have the added advantage of being attractive areas that can provide shade and wildlife habitat. Other "Green Technology BMPs" include biofiltration swales, filter strips and riparian buffers.
- ❖ Contact DNREC's Sediment and Stormwater Program for information about low impact development and rain gardens.

Control Sediment from Construction Sites. Use BMPs as required on an approved Sediment and Stormwater Plan such as silt fences and sediment traps, to prevent sediment from leaving construction areas. Temporarily stabilizing bare soil areas, such as stockpiles, with vegetation is the best way to prevent erosion and sedimentation from occurring. If an area that will be disturbed is too small to require a plan, these BMPs should still be installed. Contact the local Soil and Water Conservation District for technical assistance.

Signs. The use of signs as a reminder that keeping pollutants out of the water is important can be very effective. These signs can inform about pet wastes, littering, or discarding used waste materials.

Storm Drains. Storm drains can be stenciled with messages about the waste that goes in them and their connection to the water. Painted storm drains grab people's attention at a marina and help control disposal of solid and liquid wastes in inappropriate places.

- ❖ Paint in colorful, large, and obvious letters and pictures. Contact DNREC's Pollution Prevention Program (302) 739-9909 ~~6400~~ for the availability of stencils to borrow.
- ❖ Indicate what surface water body receives the stormwater.
- ❖ Having children help will increase their environmental awareness.

Information Sources

Appendix I

Department of Natural Resources and Environmental Control (DNREC)

- Division of Water Resources
NPDES Program
(302) 739-9946
- Division of Soil and Water Conservation
Sediment and Stormwater Program
(302) 739-9921

U.S. Environmental Protection Agency (USEPA)
(800) 438-2474

Standard Industrial Classification (SIC) Codes.

The 11 categories of industrial activities for which stormwater discharge permits are required are defined in the U.S. Code of Federal Register at 40 CFR 122.26(b)(14). A permit is required for Standard Industrial Classification (SIC) codes 4493 (marinas) and 3732 (boatyards and boat builders that repair, clean, and/or fuel boats). Note that the North American Industry Classification System (NAICS) is replacing the U.S. SIC system. NAICS was developed jointly by the United States, Canada, and Mexico to provide new comparability in statistics about business activity across North America. The following table provides conversion information for the two systems:

SIC	NAICS
3732 Boat Building and Repairing	
Boat Repair	81149 Other Personal and Household Goods Repair and Maintenance (part)
Boat Building	336612 Boat Building
4493 Marinas	71394 Marinas