

NPDES REQUIREMENTS FOR STORM WATER DISCHARGES IN THE CONSTRUCTION INDUSTRY

This report discusses new Federal Government procedures that will increase the water quality of our nation's bodies of water by controlling the quantity of material that is picked up by storm water that washes over construction sites. The report is divided into six parts: Introduction; General Discussion of Storm Water Quality; SWD Requirements of the Clean Water Act; NPDES/SWD Permit Requirements For Covered Municipalities in Regard to Controlling SWD at Construction Sites; NPDES/SWD Permit Requirements for Construction Sites including three sections entitled Individual Permitting Strategy for Construction Sites, Group Permitting Strategy for Construction Sites, and General Permitting Strategy for Construction Sites; and a Table of Acronyms and Terms. For further information on this report, please contact Eric Axelrod, Environmental Specialist, with HUD's Columbus Field Office, at (614) 469-2144.

General Discussion of Storm Water Quality

Pollution of bodies of water may be divided into two general sources of origin: point source and nonpoint source. Point source pollution is generated at specific facilities where waste products usually are purposely discharged into pipes and then into water bodies. However, nonpoint source pollution is generated over a broad area and may not enter water bodies at specific points.

When storm water (storm water runoff, snow melt runoff, and surface runoff and drainage) washes over land, it may pick up several pollutants including but not limited to soil sediment. If the storm water eventually enters a body of water, such as a river or lake, it becomes a form of nonpoint source pollution known as **storm water discharge (SWD)**.

One of the most common causes of SWD is "intensive construction activities [which] may result in severe localized impacts on water quality because of high unit loads of pollutants, primarily sediments. Construction sites can also generate other pollutants such as phosphorous and nitrogen from fertilizer, pesticides, petroleum products, construction chemicals, and solid wastes. These materials can be toxic to aquatic organisms and degrade water for drinking and water-contact recreation. Sediment runoff rates from construction sites are typically 10 to 20 times that of agricultural lands, with runoff rates as high as 100 times that of agricultural lands, and typically 1,000 to 2,000 times that of forest lands. Even a small amount of construction may have a significant negative impact on water quality in localized areas. Over a short period of time, construction sites can contribute more sediment to streams than was deposited previously over several decades" (56 FR 40965).

SWD Requirements of the Clean Water Act

Treatment technology has been available for many years to reduce the levels of SWD pollutants. However, except in very limited circumstances, SWD has not been regulated by the Federal government, that is until now.

Unlike SWD's, point source pollution of "Waters of the United States" from publicly owned treatment works (POTW) and from industrial effluent has been regulated for many years at the Federal level by the U.S. EPA. This has been done pursuant to the National Pollutant Discharge Elimination System (NPDES) provisions of the Clean Water Act (CWA), whereby operators of a facility (such as a municipality or an industry) cannot so discharge legally without first obtaining a NPDES Permit. To obtain a NPDES Permit, the operator must demonstrate that it will provide or has provided treatment technology to pollutants in the discharge so that the pollutants will be or have been reduced to acceptable levels.

However, as a result of recent court decisions, and the Water Quality Act of 1987 and Section 1068 of the Intermodal Surface transportation efficiency Act of 1991 which amend the Clean Water Act, the U.S. EPA will now be regulating SWD's. Specifically, the U.S. EPA has issued a final SWD regulation at 40 CFR Parts 122, 123, and 124 (55 FR 47989, November 16, 1990) with an effective date of December 16, 1990, as amended (56 FR 56547, November 5, 1991, with an effective date of November 18, 1991; and 57 FR 11393, April 2, 1992, with an effective date of May 4, 1992). These issuances amend the NPDES program by requiring NPDES permits for SWD's (NPDES/SWD Permits) for municipalities and for industries.

The SWD regulation applies to (1) discharge from separate storm sewer systems owned or operated by incorporated places with populations of at least 100,000 and counties with unincorporated populations of at least 100,000 (as listed in Appendixes F, G, H, and I to Part 122 (including, in HUD Region V: Akron, Ann Arbor, Chicago, Cincinnati, Cleveland, Columbus, Dayton, Evansville, Detroit, Flint, Fort Wayne, Gary, Grand Rapids, Indianapolis, Lansing, Livonia, Madison, Milwaukee, Minneapolis, Peoria, Rockford, St. Paul, South Bend, Sterling Heights, Toledo, Warren, Youngstown) and to be referred to as "covered municipalities" in this report), and (2) SWD from most industries – including the construction industry (referred to as "covered industries" in this report). However, SWD's either to basins which do not eventually discharge to Waters of the U.S. or to combined sewers are not covered by the regulation. (Note that certain wetlands are also considered Waters of the U.S.)

The CWA allows for delegations of authority to the States. Therefore, the NPDES/SWD Permit issuing authority would be (1) U.S EPA – in any State for which the NPDES responsibility has not been delegated to the State by the U.S. EPA (non-NPDES State) or (2) the applicable State agency – in any State for which the NPDES responsibility has been delegated to the State by the U.S. EPA (NPDES State). As of July 27, 1992, the following 12 States and the following State equivalents do not have authorized State NPDES programs: Alaska, Arizona, Florida, Idaho, Louisiana, Maine, Massachusetts, New Hampshire, New Mexico, Oklahoma, South Dakota, Texas, District of Columbia, Commonwealth of Puerto Rico, Guam, American Samoa, the Commonwealth of Northern Mariana Islands, and the Trust Territory of the Pacific Islands.

The regulation applies to SWD's from the construction industry in two ways. First, applications for NPDES/SWD Permits from a covered municipality must include a SWD management program for construction sites within the covered municipality. Second, NPDES/SWD Permits are required for construction sites themselves (whether or not in a covered municipality). Both of these interactions with the construction industry are discussed in more detail below.

NPDES/SWD Permit Requirements For Covered Municipalities in Regard to Controlling SWD at Construction Sites

Applications for NPDES/SWD Permits from a covered municipality must include a "description of a proposed management program to control pollutants in construction site runoff that discharges to municipal systems." Under this provision, municipal applicants will be required to submit a description of a program for implementing and maintaining structural and nonstructural best management practices (BMP) for controlling storm water discharge at construction sites. The program will address procedures for:

1. Site planning [requirements].
2. Enforceable requirements for nonstructural and structural best management practices.
3. Procedures for [identifying priorities for] inspecting sites and enforcing control measures.
4. Educational and training measures [for construction site operators].

The U.S. EPA cautions covered municipalities to put teeth behind their construction site ordinances as they only "are effective when they are implemented. However, in many areas, even though ordinances exist, they have limited effectiveness because they are not adequately implemented. Maintaining best management practices also presents problems. [For example] retention and infiltration basins fill up and silt fences may break or be overtopped. Weak inspection and enforcement point to the need for more emphasis on training and education to complement regulatory programs" (55 FR 48058).

NPDES/SWD Permit Requirements for Construction Sites

The U.S. EPA has developed and/or is developing three types of NPDES/SWD permitting strategies to control SWD's for covered industries: individual, group, and general. Individual refers to a single discharger; group refers to several, listed dischargers; and general refers to a class or category of dischargers. The various strategies are described in detail in the aforementioned regulation, as amended and in the Draft General Permit (for non-NPDES States), published at 57 FR 11393, April 2, 1992. U. S. EPA expects to imminently issue the Final General Permit for non-NPDES States.

For construction sites NPDES/SWD Permits are required for "clearing, grading and excavation activities except: operations that result in the disturbance of

less than five acres of total land area which are not part of a larger common plan of development or sale" (122.26[b][14][x]). No regulated construction can legally occur after September 30, 1992, without a NPDES/SWD Permit. The remainder of this part will be divided into separate sections discussing the three permitting strategies.

Individual Permitting Strategy for Construction Sites

An Individual NPDES/SWD Permit for a construction site would be issued to a particular developer, builder, general contractor or other party defined as the facility "operator."

An Individual NPDES/SWD Permit application for construction would have to be submitted by the operator at least 90 days prior to the start of construction. Therefore, a developer who intends to proceed with regulated construction on October 1, 1992, would have to file an Individual (or Group) NPDES/SWD Permit application by July 2, 1992. (NPDES/SWD permit applications associated with an industrial activity owned or operated by a non-covered municipality do not have to be filed before October 1, 1992.)

The contents of an application for an Individual NPDES/SWD Permit for a construction site would include a storm water pollution prevention plan (SWPPP) which will consist of:

1. "A map indicating the site's location and the name of the receiving water."
2. A narrative description of "the nature of the construction activity."
3. A narrative description of "the total area of the site and the area of the site that is expected to undergo excavation during the life of the permit."
4. A narrative description of "an estimate of the runoff coefficient (fraction of total rainfall that will appear as runoff) of the site and the increase in impervious area after the construction addressed in the permit application is completed."
5. A narrative "description of the nature of fill material and existing data describing the soil or the quality of the discharge."
6. A narrative description of "proposed measures, including best management practices (BMP), to control pollutants in storm water discharges during construction, including a description of applicable

Federal requirements and State or local erosion and sediment control requirements."

7. A narrative description of "proposed measures to control pollutants in storm water discharges that will occur after construction operations have been completed, including a description of applicable state or local requirements" (55 FR 48034).

Items 1 through 5 of the SWPPP are known as source identification and items 6 and 7 are known as controls to reduce pollution. Detailed controls although not discussed in the regulation, are discussed in detail in the 1991 Draft General Permit (see General Permits Section below).

Individual permit applications must be submitted to the appropriate NPDES agency. Also, if the construction site is located in a covered municipality, the operator must notify the covered municipality of the proposed discharge.

Group Permitting Strategy for Construction Sites

The U.S. EPA has developed one group permit application procedure for all covered industries with no special reference to construction sites.

A group permit application may be filed by entities as diverse as a trade association or a single operator of several facilities, as long as the facilities covered in the application "involve the same or similar types of operations, discharge the same types of wastes, have the same effluent limitation and the same or similar monitoring requirements" (55 FR 48025).

A group permit application will have to (1) identify all members of the group, (2) give the location of all of the facilities, (3) summarize the types of activities undertaken by the group, (4) list significant materials that are stored at the sites and exposed to precipitation and the measures taken by the operators to decrease their potential to become SWD, and (5) provide quantitative data on 10 percent of the facilities (with a maximum of 100 facilities).

All group permit applications must be submitted to U.S. EPA Headquarters, "which will use the information (provided) to establish draft permit terms and conditions for models for individual and general permits" 55 FR 48027. There will be no issuances of group permits as such, but U.S. EPA, Headquarters will send the model permits to its regional offices and to NPDES States, which may adapt them for local conditions and use them to serve as the bases for issuing individual and/or general permits.

General Permitting Strategy for Construction Sites

In order to reduce the administrative burden of managing the approximately 100,000 facilities nationwide (that) discharge storm water associated with covered industrial activity, the U.S. EPA has authorized the issuance of general permits to groups of industrial dischargers.

General NPDES/SWD Permits can be issued by (1) the U.S. EPA in non-NPDES States or (2) the NPDES State agency – in any NPDES State that has opted for and received general NPDES Permit authority. General NPDES/SWD Permits cannot be issued in any NPDES States that have not received General NPDES Permit authority. As of May, 1, 1992, out of the 39 NPDES States (38 states and the Virgin Islands), the following 28 States have opted for and received General NPDES Permit authority: Alabama, Arkansas, California, Colorado, Georgia, Hawaii, Illinois, Indiana, Kentucky, Maryland, Minnesota, Mississippi, Missouri, Montana, Nebraska, New Jersey, North Carolina, North Dakota, Oregon, Pennsylvania, Rhode Island, Tennessee, Utah, Virginia, Washington, West Virginia, Wisconsin, and Wyoming, and the following 10 NPDES States and the Virgin Islands have not received General NPDES Permit authority: Connecticut, Delaware, Iowa, Kansas, Michigan, Nevada, New York, Ohio, South Carolina, and Vermont.

The criteria for a general permit can be developed from the U.S. EPA's Draft General Permit, or from model permits developed from individual permit applications and/or group permit applications.

A General NPDES/SWD Permit for construction could be issued to the entire construction industry, or to segments thereof and/or for designated geographic areas. If a construction site falls within the jurisdiction of a General NPDES/SWD Permit, an Individual NPDES/SWD Permit would not be required, but a notice of intent (NOI) would have to be submitted to the appropriate NPDES within a time period specified in the permit. Also, if the construction site is located in a covered municipality, the covered municipality must receive a copy of the NOI.

The U.S. EPA's Draft General Permit as it pertains to construction sites requires the submission of a SWPPP which consists of source identification (see Individual Permits Section above) and BMP controls to reduce pollution. Controls, which may be either vegetative or structural and which must include applicable State and local requirements, are divided into three types; specifically erosion and sediment controls, storm water management controls, and housekeeping controls. (Note that a detailed discussion of the specific control measures that are cited below, such as vegetative buffer strips or silt fences, is beyond the scope of this report.)

Erosion and sediment controls "address pollutants in storm water generated from the site during the time when construction activities are occurring (56 FR 40969). "Erosion controls provide the first line of defense in preventing off-site sediment movement and are designed to prevent erosion by protecting soils. Sediment controls [provide the second line of defense and] are designed to remove sediment from runoff before the runoff is discharged from the site" (56 FR 40969). Erosion and sediment controls are further divided as follows:

1. Vegetative practices, which are primarily erosion controls, are "designed to preserve existing vegetation where attainable and revegetate open areas as soon as practicable after grading or construction" (56 FR 40998). Vegetative practices "are often the most important measures taken to prevent off-site sediment movement and can provide a six fold reduction in discharge suspended sediment levels. [Furthermore], temporary seeding practices have been found to be up to 95% effective in reducing erosion" (56 FR 40970).

Minimum vegetative practice requirements under the Draft General Permit include "temporary seeding, permanent seeding, mulching, sod stabilization, vegetative buffer strips, and protection of trees. [Furthermore], the operator shall initiate appropriate vegetative practices on all disturbed areas within 7 calendar days of the last activity at that area" (56 FR 40998).

2. Structural practices, which are primarily sediment controls, are designed to "divert flows from exposed soils, store flows or otherwise limit runoff from exposed areas of the site. [Minimum structural practice requirements under the Draft General Permit include] straw bale dikes, silt fences, earth dikes, brush barriers, drainage swales, check dams, subsurface drain, pipe slope drain, level spreaders, storm drain inlet protection, rock outlet protection, sediment traps, and temporary sediment basins. [Furthermore] for sites with more than 10 disturbed acres at one time which are served by a common drainage location, a detention basin providing storage or equivalent controls for runoff from disturbed areas, from a 10 year, 24-hour storm shall be provided where attainable, [or where not attainable,] silt fences, straw bale dikes, or equivalent sediment controls ... for all sideslope and downslope boundaries of the construction area [shall be provided]. [However] For drainage locations serving 10 or less acres, silt fences, straw bale dikes, or equivalent sediment controls [shall be provided] for all sideslope and downslope boundaries of the construction area or a detention basin providing storage for a 10 year, 24 hour storm shall be provided" (56 FR 40998).

Storm water management controls are those practices "that will be installed during construction but that will continue to control pollutants in storm water discharges after the construction operations have been completed" (56 FR 40970). Minimum storm water management control requirements under the Draft General Permit include "infiltration of runoff on site, flow attenuation by use of open vegetated swales and natural depressions, storm water retention structures, and storm water detention structures. Where such controls are needed to prevent or minimize erosion, velocity dissipation devices shall be placed at the outfall of all detention or retention structures and along the length of any outfall channel as necessary to provide a non-erosive velocity flow from the structure to a water course" (56 FR 40998).

Housekeeping controls are those practices that prevent pollution from "oils; grease; paints; gasoline; concrete truck washdown; concrete raw materials used in the manufacture of concrete, including sand aggregate, and cement; solvents; litter; debris; and sanitary wastes" (56 FR 40971). Minimum housekeeping control requirements under the Draft General Permit are "no solid waste, including building materials, shall be discharged; off-site vehicle tracking of sediments shall be minimized; ... compliance with applicable State or local waste disposal, sanitary sewer or septic system regulations; [and development of a procedure] to maintain in good and effective operating condition, vegetation, erosion, and sediment control measures, and other protective measures identified in the SWPPP [including inspection of] all erosion control measures ... at least once every seven calendar days" (56 FR 40999).

Table of Acronyms and Terms

BMP ...	Best management practices
CFR ...	Code of Federal Regulations
Covered industry ...	An industry subject to NPDES/SWD requirements
Covered Municipalities ...	Incorporated places and counties with unincorporated populations of at least 100,000
CWA ...	Clean Water Act
FR ...	Federal Register
NOI ...	Notice of intent
Non-NPDES State ...	State for which the NPDES responsibility has not been delegated to the State by the U.S. EPA
NPDES ...	National Pollutant Discharge Elimination System
NPDES Permit ...	Permit to discharge under NPDES
NPDES State ...	State for which the NPDES responsibility has been delegated to the State by U.S. EPA
NPDES/SWD Permit ...	NPDES permits for SWD's
Runoff coefficient ...	Fraction of total rainfall that will appear as runoff
Storm water ...	Storm water runoff, snow melt runoff, and surface runoff and drainage
SWD ...	Storm water discharge
SWPPP ...	Storm water pollution prevention plan
U.S. EPA ...	U.S. Environmental Protection Agency