



How Will You Meet the New Storm Water Discharge Rules?

New storm water requirements are approaching and early awareness and careful planning will protect petroleum industry planners from being blind sided. David Woelkers will look at the background of storm water regulations, explain the elements of the new NPDES Phase II rule and examine the impacts that it will likely have on various aspects of the petroleum industry.

New EPA regulations to affect fueling sites

As pointed out in this article, owners and operators of gasoline stations, parking lots and other commercial facilities will be affected by new federal regulations for controlling water pollution from storm water runoff. In this regard, an American Petroleum Institute (API) official has advised PE&T that API will soon publish the results of a study showing that storm water runoff from retail gasoline facilities is no worse than runoff from any other commercial facility. Nonetheless, PE&T encourages anyone who may be affected by the new regulations to get familiar with the requirements and take the necessary steps to ensure compliance with them when they take effect.

Over the past 30 years, no industry has been more environmentally regulated than the petroleum industry. From the flow of oil from the ground, through the delivery of petroleum-based products in the retail sector, the industry has been under the magnifying glass of environmental regulators.

Now, the effective date of a new regulation from the US Environmental Protection Agency (EPA) is approaching. Phase II of the National Pollutant Discharge Elimination System (NPDES) will go into effect on March 10, 2003. While this date is some 28 months away, affected owners and operators need to start compliance planning now to ensure that they are not caught short when the date rolls around.

This new federal regulation will result in a flood of new state and local rules governing the flow of wet-weather runoff from industrial and commercial retail sites. The wheels of Phase II are already turning and, as industry observers might expect, fueling facilities and other petroleum industry sites are again in the forefront of targeted industries.



Storm sewer systems feed into streams and lakes, depositing whatever pollutants are picked up along the way from service stations, parking lots and innumerable other commercial and residential sites served by the system. Such pollution is the target of NPDES Phase II

Laws and regulations

Beginning in 1972 with the Clean Water Act (CWA), Congress passed a series of laws regulating discharges into the waters of the United States.

In 1987, Congress amended the CWA to direct EPA to establish NPDES requirements for storm water runoff, which includes rain water, snow melt and surface runoff and drainage. Under the NPDES, affected parties cannot discharge water into the storm water runoff system without a permit. Such permits generally are conditioned on the water meeting specified pollutant-level requirements before being released.

NPDES Phase I

In 1990, EPA implemented Phase I of the NPDES, which regulates storm water runoff discharges from certain industrial activities, construction sites of five acres or more and cities within municipal “separate storm sewer systems” that serve populations of 100,000 or more. Up until that time, storm water runoff had been defined as a “non-point-source” of pollution and had not been regulated under the CWA. With the 1990 act, such discharges are identified as point-source discharges, which brings them under the Clean Water Act’s requirements. The retail petroleum market (e. g., fueling stations) was not included in Phase I, but will be one of the prime targets of Phase II of the NPDES.

The NPDES Phase I rule’s impact on the petroleum industry was primarily related to industrial operations. Regulated industrial facilities are identified within eleven major categories and then broken down into standard industrial classification (SIC) codes. Petroleum-related categories included petroleum refining and related industries, oil and gas extraction, petroleum bulk storage and terminals (wholesale) and construction activities. Those facilities were required to obtain NPDES storm water permits.

The Phase I storm water permits must be obtained from EPA or EPA-authorized state agencies. Regulated industries can obtain individual permits or coverage under a general permit. Individual permits (covering only one facility) are usually required when site conditions warrant more stringent controls to prevent violations of water quality standards. Most facilities use the general permit approach, which requires the filing of a notice of intent for coverage. The notice of intent requires a storm water pollution prevention plan that identifies specific pollutant risks and plans for preventing their exposure to wet weather runoff.

In addition to the industrial activities discussed above, the Phase I rule covers medium and large “municipal separate storm sewer systems” serving populations of over 100,000. Operators of construction activities over five acres are also required to obtain permit coverage under Phase I.

Implementation of the NPDES Phase I rules focused on runoff characterization and effluent monitoring. This resulted in applying immense resources to analyzing and characterizing pollutant loads in surface runoff. As discussed in the next section, a different approach is taken in the new Phase II rules.



Storm water moving beneath our streets carries contaminants to lakes and streams

NPDES Phase II

NPDES Phase II rule's focus is on implementing controls to reduce contaminants in surface runoff, without specific quantitative effluent monitoring.

On December 10, 1999 EPA published the storm water Phase II final rule in the Federal Register. This started a clock that has municipalities, industry and storm water professionals working quickly to understand and evaluate the rule's implications for their operations. Although Phase II permit coverage will not be mandatory until March 10, 2003, the amount of preliminary work needed to be done in order to get permit coverage will be extensive. Municipalities and other regulated entities are already determining what they will need to do in order to be in compliance when the Phase II rule takes effect.

Phase II extends storm water permit requirements to small municipal separate storm sewer systems and construction activities of over one acre. Rather than prescribing quantitative limits on contaminants in the water (as is the case in Phase I), Phase II focuses on implementing storm water discharge management practices to control runoff. Such practices are referred to as best management practices (BMPs). Following such practices will meet the compliance requirements of Phase II.

Understanding and operating under the BMP approach will be critical to petroleum retail marketers and other fueling facilities located in Phase II areas. Compliance will be complicated in some areas because the regulators will include not only federal and state environmental agencies, but also local agencies that will have their own regulations. This will create a new layer of rule-making and enforcement that does not exist under the Phase I rule for industrial storm water control.

It is at the local level that concerns about petroleum fueling sites will likely cause such sites to be primary targets for requiring storm water runoff controls. Thus, it is critical that the petroleum industry have a firm understanding of Phase II requirements. The following information should contribute to a better understanding of Phase II requirements and their scope.

Who will be affected?

The Phase II rule will automatically cover operators of municipal separate storm sewer systems that are located within an urban area that has a total population of 50,000 or more and a density of 1,000 persons per square mile. These areas usually include several different jurisdictions and are based on US census counts. (Current municipalities that will automatically be covered are listed as appendix 6 to the Phase II final rule.) In addition, more municipalities will be added when the 2000 census is completed.

A municipality is defined by the rule to include not only what is traditionally thought of as a municipality, such as cities, towns and villages, but also federal installations and military bases, Indian lands, states and counties. The definition also includes state-operated departments of

transportation, universities, hospitals and even local drainage, sewer or water conservation districts that may operate separate storm sewer systems.

In addition, the definition of what constitutes a separate storm sewer system includes any method of conveying surface water, including streets, gutters, ditches, swales or any other man-made structure that alters or directs wet weather flows. Thus, the impact of the Phase II rule will be far-reaching.

Plume created by the inflow of storm water into this lake contains sediment, hydrocarbon, metal and other contaminants. Unchecked, such pollution can spoil our lakes and streams for fishing, swimming and other recreation



Along with the automatically designated municipalities, the Phase II rule also requires the NPDES permitting authority to establish criteria to include, at a minimum, those municipal separate storm sewer systems located in population areas of at least 10,000 persons, if the authority determines that storm water discharges could adversely affect the quality of receiving waters. Permitting authorities may also include, in the scope of the requirement, municipalities with populations as low as 1,000. In most cases, these designations must occur on or before December 9, 2002. Municipalities operating these separate storm sewer systems will have 180 days from designation to obtain permit coverage.

Finally, municipal separate storm sewer systems with populations of less than 1,000 that are not in automatic and designated areas may also need storm water discharge permits if it is determined that the system is contributing substantially to polluting an interconnected system that is being regulated.

Because the Phase II rule greatly expands coverage to include smaller municipalities and changes the method of enforcement, the impact on the petroleum retail market will be widespread and significant. Municipalities will be able to meet certain permit requirements by instituting regulatory ordinances and other regulations limiting storm water discharges from retail outlets which generate hydrocarbon "sheen" from vehicles. Higher scrutiny of retail outlet runoff will likely be a primary target. A thorough understanding of the requirements that municipalities will be facing will aid planners and equipment providers in those areas.

Permit requirements

A municipality's individual permit application, or its notice of intent for coverage under a general permit, must include descriptions of the BMPs that will be used to meet the following six minimum measures.

Public education and outreach

This measure must include a program designed to educate the public about the impacts of storm water discharges and what individuals can do to prevent storm water pollution.

Public participation and involvement

This measure must include a procedure for giving the public an opportunity for participating in both the development and implementation of a storm water program.

Illicit discharge detection and elimination

Regulated municipalities must develop a plan with mechanisms for locating and eliminating discharges into storm sewers from sources other than storm water. The plan must include a complete map of all out-fall and identification of locations and sources of any water entering a system.

Construction site runoff control

Regulated municipalities must have a regulatory mechanism in place for erosion and sediment control as well as BMPs for preventing or reducing other pollutants associated with construction activity. This measure does not eliminate the requirements for a construction site operator to obtain an independent NPDES permit for sites larger than one acre. However, the permitting authority can specifically reference qualifying local programs in the NPDES general permit requirements, so the construction operator doesn't need to follow two different sets of requirements.

Post-construction runoff controls

Regulated municipalities must have a program requiring new and re-development projects to implement controls on sites that will reduce pollutant loads in storm water runoff.

Pollution prevention and good housekeeping

Regulated municipalities must have an operation and maintenance program to prevent or reduce pollutant runoff from municipal operations.

While the above six measures are the minimum required by the EPA, the rule allows for states with NPDES permitting authority to develop permits that may require more stringent measures to meet water quality requirements. In addition, municipalities may also develop storm water regulations that go beyond the federal and state requirements of Phase II.

One example of state action that goes beyond federal Phase II requirements is Wisconsin's proposed new runoff management rules. Wisconsin's rules will be implemented state-wide regardless of population densities. Among its many proposed requirements, one section requires that no petroleum sheen can be allowed to leave a gas station or vehicle maintenance area. Moreover, this rule will most likely take effect by late 2001, rather than the federal deadline of March 2003. Other states and municipalities around the country are likely to have similar restrictions.

The Phase II rule is designed to encourage development of a storm water control plan that fits local conditions and allows flexibility by local authorities to meet their individual needs. However, those municipalities that wait until the last minute are likely to face prescriptive requirements that will not take into account local conditions. Thus, officials, planners and storm water professionals need to start planning now

Impacts on industrial sites

Phase II will also affect the industrial facilities that are already regulated under Phase I—in a couple of ways. Under Phase I, "Category 11" industrial sites (light industry) with no exposure did not need to

obtain permits and did not need to obtain waivers. Phase II requires that such sites either obtain permits or waivers.

Also, under the Intermodal Surface Transportation Efficiency Act of 1991, municipalities did not need permits for their industrial activities, such as maintenance yards. This moratorium will end on March 10, 2003. All municipalities will then need an NPDES permit for regulated industrial activities. These activities will include fuel dispensing operations in municipal facilities.



NPDES Phase II is designed to reduce the pollutants in storm sewers such as this

Best management practices

Because Phase II compliance will be achieved by implementing BMPs, the municipality's selection of the proper mix of BMPs will be critical. Best management practices will be a mix of both structural and non-structural practices designed to control storm water pollution. Any BMPs selected by a municipality can affect the operations of petroleum marketing sites in the area.

Non-structural BMPs will include:

- Educational materials to help citizens identify potential high-risk activities
- School programs
- Public meetings and citizen groups
- Volunteer cleanups, monitoring programs and adopt-a-storm drain programs
- Illicit discharge detection programs
- Ordinances and other mechanisms to:

- (1) Prohibit non-storm discharges into storm sewers
- (2) Control erosion, sediment and other pollutants at construction sites
- (3) Control storm water after construction
- (4) Control likely pollutant sources
- (5) Establish and enforce BMPs for the private sector
- (6) Inspect and monitor structural BMPs
- (7) Sweep streets, clean catch basins and control yard waste
- (8) Train personnel and maintain municipal facilities
- (9) Recycle waste and prevent pollution

Structural BMPs consist of physical devices and equipment to control and treat storm water before releasing it into the receiving water. Such structures can include:

- "Vegetative" structures, such as man-made wetlands, swales, filter strips and rain gardens

- Infiltration devices (with pretreatment where necessary for groundwater and wellhead protection) such as basins, trenches, drywells, sand filters and porous pavement
- Detention and retention devices that control both the volume and quality of water flowing into sewers and receiving waters
- Treatment devices, such as separators, filtration devices, catch basin inserts and skimmers
- Out-fall and drain grates

All of the above are just examples of BMPs that could be used to meet Phase II requirements. The rule does not prescribe which BMPs can be used. Regulated municipalities can develop their own list to meet their needs. John Kosco, director of the Phase II BMP menu at EPA's Office of Water, points out that the information that will be set forth on the menu will not be intended to limit what can be done, but will be for guidance.

With many proprietary technologies entering the market for controlling storm water, there may be concern as to what practices will be acceptable as BMPs. Petroleum industry planners and storm water professionals need to do research to ensure that various claims regarding BMP capabilities are accurate.

To that end, EPA, through its Environmental Technology Verification Program, is partnering with private research institutions such as NSF International and others to develop protocols and verification procedures for proprietary technologies. These will help guide decision-makers as to what reliable controls are available. In addition, various BMP databases are available through the Internet.

Special issues for petroleum sites

Planners will need to consider some special water runoff issues at fueling sites and vehicle repair sites. This will be particularly true at retail sites where minor releases by consumers dispensing their own fuel and adding petroleum products to their engines create risks of runoff contaminants. Also, traditional techniques such as power washing hydrocarbon accumulations off parking lots will be highly scrutinized by local officials.

As a result, local municipalities and citizen groups are likely to target petroleum-related facilities and gas stations as potential sites for contaminated runoff. This will likely lead to calls for strict controls on surface water flows from the facilities into the separate storm sewer systems and waterways.

Planning ahead for these changes will result in substantial savings down the road when the Phase II rules take effect. Site operators should review their facilities to determine what steps can be taken to reduce exposure of hydrocarbon contaminants to wet weather flows. Such controls as larger canopies are just one method that might be considered. Also, looking at various lower cost technologies that are designed to treat storm water runoff before it leaves a site, such as a catch basin filtration system, is another option. Finally, getting involved in local watershed planning initiatives will go a long way towards eliminating misconceptions by citizens about the petroleum industry.

Be prepared

With the NPDES Phase II storm water rule now final, it is imperative that the petroleum industry, and particularly the retail market, involve itself in the process of state and local compliance program developments. While the March 10, 2003 deadline may seem far off, all of the 28 months between now and then may be needed to ensure timely compliance when that date arrives. It will pay to be prepared.

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