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NPDES PERMITTING FOR STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY

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ABSTRACT

Recent changes to the National Pollutant Discharge Elimination System (NPDES) program require that storm water discharges associated with industrial activity and from municipal separate storm sewer systems serving a population of 100,000 or more be regulated under the NPDES program. These changes greatly expanded the number of industrial facilities subject to the NPDES program. An industrial facility that is subject to the regulation must apply for a storm water permit based on application requirements that were recently established. The NPDES permit application process for storm water discharges associated with industrial activity is discussed.

INTRODUCTION

The discharge of any pollutant to navigable waters from a point source is prohibited unless the discharge is authorized by an NPDES permit. These permit regulations stem from the 1972 amendments to the Federal Water Pollution Control Act, referred to as the Clean Water Act (CWA). Although the traditional approach was to focus on industrial process water and municipal sewage, the addition of section 402(p) to the Clean Water Act by the Water Quality Act of 1987 required that the U.S. Environmental Protection Agency (EPA) establish regulations addressing storm water discharges from industrial activity and municipal separate storm sewers serving a population of 100,000 or more. On November 16, 1990, final regulations that established requirements for NPDES storm water permit applications were published in the Federal Register (55 FR 48062-48091) and are contained in 40 CFR parts 122, 123, and 124. For storm water discharges associated with industrial activity, these regulations provide three options for a permit application: (1) an individual application, (2) a group application, or (3) an application for coverage under a general permit.

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An individual application requires that an applicant furnish: (1) a site map showing the drainage areas and locations of industrial activities, (2) the size of impervious areas and a narrative of significant materials handled on site, (3) certification that all outfalls have been evaluated to contain no non-storm discharges, (4) information on leaks and spills, and (5) quantitative data based on data collected during storm events.

Group application provides the opportunity for permit coverage for facilities that have sufficiently similar activities. The advantage to a group application is that only a portion of the participants need to obtain quantitative information. A group application consists of two parts [40 CFR 122.26(c)(2)]. Part 1 is a description of the group membership and identification of a sub-group from which quantitative data are to be submitted in Part 2 of the application. Part 2 of the group application is to contain quantitative information in Federal Form 2F Part VII. Both parts are submitted to the EPA where model permit language will be developed. The complete applications and model permit language will then be distributed to every state in which the participants are located. The state will use the model permit to develop the final language of the permit that is consistent with applicable state regulations. EPA regional offices will follow these same steps for participants who are located in states without NPDES authorization.

The final option is a general permit. Application for coverage under a general permit requires only a notice of intent (NOI). However, to apply for coverage requires that a state or regional permitting authority have a general permit in place.

To be subject to the storm water permit regulations, an industrial facility must fall within one of 11 categories specified in 40 CFR 122.26(b)(14)(i)-(xi). Five of these categories are defined in terms of Standard Industrial Classification (SIC) codes. The six remaining categories are defined descriptively. A facility having an SIC code (based on its primary activity) that fits in one of the five SIC-controlled categories is not subject to the other four SIC-controlled categories. However, the facility may still have activities that fall within one or more of the six descriptive categories. If any activities at a facility fall into one of the 11 categories, a storm water permit is required.

CASE STUDY

The United States Air Force (Air Force) submitted Part 1 of a group application for 71 of its facilities across the country. These facilities are limited to those that have flying operations. Separate group applications were made for its non-flying (40) and range operations (18).

Identification of Areas of Industrial Activity

The identification of the areas of industrial activity is central to the storm water regulations because only those storm water discharges associated with industrial activity are covered. The

mission of the Air Force is national security, which corresponds to an SIC code of 9711. The activities of an industry having an SIC code of 9711 are "establishments of the armed forces, including the National Guard, primarily engaged in national security and related activities" (OMB 1987) including the Air Force. An industry having an SIC code of 9711 is not considered to be engaged in an industrial activity and, therefore, is not required to apply for an NPDES storm water permit unless it has activities that fall under one of the six descriptive categories.

Despite their national security classification, the Air Force facilities were evaluated with a nonmilitary mission for its primary activity. This approach is considered to be consistent with the intent of the storm water application regulations. The primary activity of the Air Force for its flying operations is the operation and maintenance of aircraft. This activity corresponds to an SIC code of 4581, "establishments primarily engaged in operating and maintaining airports and flying fields; in servicing, repairing, maintaining, and storing aircraft; and in furnishing coordinated handling services for airfreight or passengers at airports" (OMB 1987). A facility with an SIC code of 4581 falls into category (viii) [40 CFR 122.26(b)(14)].

The industrial activities covered under category (viii) are limited to portions of the facility that are involved in aircraft maintenance (including aircraft rehabilitation, mechanical repairs, painting, fueling, and lubrication), aircraft cleaning operations, aircraft deicing operations, or are identified under the other six descriptive categories. At an Air Force base, category (viii) activities are usually confined to the flightline (the area contiguous to the runways, taxiways and aprons). When this paper was written, EPA was in the process of considering whether to direct military bases to evaluate secondary SIC codes. However, discussion is limited to the primary SIC code. To determine whether additional portions of the facility are engaged in industrial activity, the six descriptive categories were investigated.

Category (i) includes facilities that are subject to storm water effluent limitations guidelines, new source performance standards, or toxic pollutant effluent standards under 40 CFR subchapter N (parts 402 through 699). These effluent standards are geared to the commercial manufacture of products that do not normally occur at military facilities. However, two potential activities that were identified were Part 459 Subpart A -- Photographic Processing Subcategory and Part 460 Subpart A -- Hospital Category. Photographic processing activities are derived from the radiographic inspection of aircraft and base photographic services. Facilities in which less than 1,600 square feet per day of prints, slides, negatives, enlargements, movie film, and other sensitized materials are developed, are exempt from Part 459. Facilities having fewer than hospital 1,000 beds are exempt from Part 460.

To be considered a hazardous waste storage site under category (iv) of the storm water regulations, a facility must either be operating under interim status or under a permit pursuant to subtitle C of the

Resource Conservation and Recovery Act (RCRA). Without a RCRA permit all hazardous waste must be transported offsite within 90 days.

Also related to category (iv), the Installation Restoration Program (IRP) seeks to identify and evaluate past hazardous material disposal sites. The IRP is conducted in accordance with the National Contingency Plan and requirements outlined in the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) and the Superfund Amendments and Reauthorization Act (SARA) of 1986. To be subject to the storm water regulations, the disposed hazardous material must contribute pollutants to storm water runoff and must be derived from activities that can be assigned to one of the 11 categories.

The wastes contributed to a landfill under category (v) must be industrial under the storm water regulations. Most bases do not have active landfills located onsite, and sanitary waste is removed and disposed of off-base. Abandoned landfills are addressed by IRP investigations.

Category (vii) is limited to steam generated electricity. Most Air Force facilities obtain power from the grid with backup power furnished by diesel-powered generators.

Wastewater treatment under category (ix) must have a plant design capacity of one million gallons per day (MGD) or more. Most facilities have sanitary wastewater treated at a municipal plant. If a base has a wastewater treatment facility, its design capacity is usually below 1 MGD. Abandoned wastewater treatment facilities are addressed by IRP investigations.

Category (x) was not considered because the activities are typically of limited duration and will need to be individually addressed as they occur. It was assumed that NPDES storm water permit requirements are satisfied through local building permits and soil erosion and sediment control policies.

Outfall Identification

The storm water regulations require that outfalls whose drainage areas contain industrial activity be identified. From a regulatory perspective, a storm water outfall is a conveyance that carries storm water offsite or discharges storm water to the waters of the United States.

Chemical Identification

Storm water regulations require a permit applicant to identify chemicals expected to be present in the storm water runoff and to collect quantitative data from the analysis of storm water samples. These samples are to be collected at outfalls identified in the previous section. The sampling location should be selected so that it does not allow commingling with storm water containing pollutants

from off-site activities. However, if this cannot be avoided, then a mass balance approach should be used.

An applicant for a storm water permit is required to submit quantitative data based on chemical analyses of storm water samples for the following parameters [40 CFR 122.26(c)(1)(i)(E)]:

(1) Any pollutant limited in an effluent guideline to which a facility is subject;

(2) Any pollutant listed in the facility's NPDES permit for its process wastewater (if the facility is operating under an existing NPDES permit); and

(3) Oil and grease, pH, biochemical oxygen demand (BOD5), chemical oxygen demand (COD), total suspended solids (TSS), total phosphorus, total Kjeldahl nitrogen, and nitrate plus nitrite nitrogen.

The applicant is required to identify any chemical in Tables 2F-2, 2F-3, and 2F-4, of Federal Form 2F. However, the only chemicals that require quantitative data are those in Table 2F-3 that are expected to be present in storm water runoff in concentrations greater than 10 parts per billion (ppb). Because it is impractical to attempt to calculate the concentration of a contaminant in storm water runoff, by making a few simple assumptions, it can be shown that only a small amount of spilled chemical will result in a concentration in excess of 10 ppb. Therefore, all chemicals in Table 2F-3, which can reasonably expected to be present in runoff, were included.

Although automatic samplers were considered to collect samples of storm water runoff, they were not used for the following reasons. Firstly, pH and temperature must be measured immediately. Secondly, oil and grease can adhere to the intake tubing, thereby biasing the samples. Thirdly, EPA protocol requires that samples for volatile organics be immediately sealed with a teflon-lined septum and preserved (40 CFR 136.3). Lastly, most automatic samplers cannot collect both a grab and composite sample and the cost for two samplers for every outfall is prohibitive.

The required quantitative data include an estimate of flow rate, which is also used to produce a flow-weighted composite sample. A sampling location was selected based on ease of obtaining a suitable hydraulic control so a flow control structure would not be required.

Certification of Non-Storm Discharges

Although this certification is not required as part of the group application, a methodology was presented to the Air Force in anticipation of the permit conditions. The NPDES storm water regulations require that applicants for individual permits certify that there are no non-storm water discharges to the storm drainage system.

Six options that were considered to certify that no non-storm water discharges are present in the outfalls include: (1) visual inspection, (2) building utility schematics, (3) smoke testing, (4) dye testing, (5) videotape survey, and (6) excavation. The least costly action necessary to provide a certification of non-storm discharges includes a combination of visual inspection and review of schematics. Where the results are not conclusive, dye testing is recommended.

EXPECTED PERMIT REQUIREMENTS

Although developing practices to prevent pollution in industrial storm water is not a requirement of the permit application, it is expected that facilities covered under a storm water permit will be required to develop and implement storm water pollution prevention plans. Required elements of a plan include: potential pollutant source identification, spill prevention control and countermeasures (SPCC), preventive maintenance, housekeeping, employee training, periodic facility inspection, structural storm water management practices, and the elimination of unpermitted nonstorm water discharges to the industrial storm water system.

REFERENCES

Office of Management and Budget. 1987. Standard Industrial Classification Manual. OMB, Washington, DC.