STORMWATER MANAGEMENT AT THE ARID INEL

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ABSTRACT

NPDES stormwater permits are required for stormwater discharges to waters of the U.S. (WUS). The Idaho National Engineering Laboratory (INEL) applied for coverage under a general NPDES stormwater permit because there is some potential for stormwater discharge to the Big Lost River System, which could infiltrate to groundwater. The main requirements of the permit are to prevent contaminants from coming into contact with stormwater and prevent contaminated stormwater from running off of facilities into WUS or groundwater. All INEL major facility areas have prepared and implemented stormwater pollution prevention plans (SWPPPs). The INEL also applied for coverage under a separate NPDES general permit for stormwater discharges from construction sites. An INEL Generic SWPPP for construction activities was prepared and implemented for all construction projects at the INEL.

Stormwater is recognized as a significant source of surface water contamination in the United States. The National Pollutant Discharge Elimination System (NPDES) permit requirements for stormwater are found in 40 CFR 126.26. A key element in determining NPDES stormwater requirements for an industrial facility is to ascertain where waters of the U.S. (WUS) are located in relation to the facility. WUS includes all interstate and intrastate waters where the use or degradation of which could affect interstate or foreign commerce. The courts are determining where WUS are. For example, in the Hoffman vs. Holmes case, the court ruled that if migratory waterfowl use an isolated intrastate body of water, this constitutes a potential impact to commerce and therefore could be considered WUS. In addition, intermittent streams and tributaries may be considered WUS. However, currently manmade wastewater treatment and disposal ponds or lagoons are exempt from definition as WUS. NPDES permits are required for stormwater discharges to WUS from 11 categories of industrial activity types. The Idaho National Engineering Laboratory (INEL) has the following industrial categories: Emergency Planning and Community Right to Know (EPCRA) or Superfund Amendments and Reauthorization Act (SARA) 313 facilities; chemical and allied products;

hazardous waste treatment, storage, and disposal facilities (TSDFs); land disposal facilities and landfills; steam electric power facility; and vehicle maintenance shops. NPDES stormwater permits comprise group, individual, and general. The NPDES general permit became effective on October 1, 1992, in 13 states (including Idaho) that do not have NPDES permitting authority. On September 28, 1992, the Department of Energy, Idaho Operations Office (DOE-ID) submitted a notice of intent for the entire INEL to receive coverage under the NPDES general permit.

Since the definition of WUS could include any body of water, DOE-ID presented a strategy map to Environmental Protection Agency (EPA) Region 10, delineating the Big Lost River System (BLRS) as the area subject to the NPDES stormwater regulations. The BLRS consists of an isolated intermittent stream, tributary channels, and terminal sinks and playas. The Big Lost River terminates on the INEL at sinks and playas and does not flow off-site. In the recent past, there was no measurable flow in the river between 1987 and 1992. Measurable flow was detected in 1993 but only lasted approximately one month. Nevertheless, the EPA and DOE-ID concur that the BLRS is WUS. The determination to have the entire INEL covered under the General Permit, is based on some potential to discharge to the BLRS; the general permit requirement in Idaho to prevent groundwater contamination; and the fact that all major facilities areas are connected by common roads. The potential to discharge to the BLRS is remote and would likely only occur in the event of an early thaw of snow over frozen ground. As part of the general permit, the State of Idaho included a requirement that groundwater would also be protected. INEL has several surface water runoff injection wells that must be protected from contaminated stormwater.

The main requirements of the permit are to prevent contaminants from coming into contact with stormwater and prevent contaminated stormwater from running into WUS or groundwater. Preventing contact of stormwater with contaminants is accomplished primarily by covering materials, moving materials inside, cleanup and good housekeeping, and removing excess materials. Preventing contaminated stormwater from running into WUS is primarily accomplished by secondary containment, dikes and berms, and diversion to drainage basins. All INEL major facility areas prepared stormwater pollution prevention plans (SWPPPs), which include provisions to prevent environmental degradation, reduce contact with stormwater, reduce the potential for contaminated stormwater to leave the major facility area fence, and establish stormwater monitoring stations. Major area plans were included in the INEL SWPPP by the April 1, 1993, permit deadline, and implementation began by the October 1, 1993, permit deadline. The INEL plan is kept on file and is not to sent the EPA. The EPA may review the plan and implementation of the plan, as part of a media specific or multi-media inspection. Elements of the SWPPP include pollution prevention team makeup; description of potential pollution sources; drainage map (where does stormwater go from facility areas of concern); inventory of exposed material (including raw and finished materials, tanks, ponds, and equipment); listing significant spills and leaks in the

last three years; provisions for separation of non-stormwater discharges (allowable non-stormwater discharges include fire fighting, fire hydrant flushings, lawn watering, air conditioning condensate, and building and pavement washdowns with no detergents); previous sampling data; and risk identification (areas where pollutant sources must be controlled). Also included in the SWPPP are provisions for inspection, training, record keeping, reporting, and evaluation of stormwater management practices. Measures and controls listed in the plan include good housekeeping, preventive maintenance, spill prevention and response procedures, inspections, employee training, record keeping, and management of runoff.

The monitoring and reporting section of the plan established a stormwater monitoring team. The level of monitoring and reporting is based on industrial activity type and relation to the BLRS. All major facility areas will, at a minimum, conduct monitoring annually. Sampling is be conducted in accordance with the NPDES stormwater sampling guidance document or DOE surveillance requirements. For facilities that must comply with the NPDES permit monitoring requirements, analysis for required specific parameters was incorporated into the monitoring plan. In addition, semi-annual monitoring with annual reporting and annual monitoring with records retained on site were included in the monitoring plan for certain facilities subject to the full NPDES requirements.

The INEL strategy for compliance with the NPDES general permit for stormwater discharges from construction sites is discussed in the subsequent section of this paper. A separate general permit, effective October 1, 1992, was published in 40 CFR 122.26 for stormwater discharges from construction sites involving five or more acres with a potential to discharge to WUS. Construction activities include any clearing, grading, or excavation. EPA requirements are based on a five-acre plan of development rather than any specific project. The INEL development plan involves five acres or more cumulative construction activities. Therefore, an INEL generic SWPPP for construction activities was prepared. DOE then submitted a notice of intent (NOI) for the entire INEL to comply with general permit requirements for construction activities. This procedure is just the reverse of the procedure for industrial activities. The SWPPP for construction activities must be prepared and the NOI submitted at least two days before construction commences. A separate SWPPP for each construction project is addended to the Generic INEL Construction SWPPP for each construction activity started or not stabilized after October 1, 1992. Like the industrial plan, the SWPPP for construction is not submitted to EPA but is kept on file at the INEL. The SWPPP for specific construction activity is to be completed at least two days before construction begins. The SWPPP level of detail is dependent on proximity to the Big Lost River System. For most projects, a simplified checklist is utilized as the project plan. Project SWPPPs will be moved to a termination file when final stabilization is achieved. The project plans address sediment and erosion control, stormwater management

measures, housekeeping, and final stabilization. Other requirements of the general permit for construction activity included in the INEL construction SWPPP include provisions for a contractor certification statement if there is a potential to discharge to the BLRS, inspections, separation of non-stormwater, and record keeping.