ADDRESS ONLY THE DIRECTOR,
BUREAU OF SPORT FISHERIES
AND WILDLIFE

United States Department of the Interior
FISH AND WILDLIFE SERVICE
BUREAU OF SPORT FISHERIES AND WILDLIFE
WASHINGTON, D.C. 20240

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Instructional Memorandum RB-44

Memorandum

To: Regional Directors, Alaska Area Director and Division of River Basin Studies Personnel

From: Assistant Director, Bureau of Sport Fisheries and Wildlife

Subject: Review of NPDES (National Pollutant Discharge Elimination System) Permit Applications processed by the EPA (Environmental Protection Agency) or by the State with EPA oversight

This replaces Dr. King's Instructional Memorandum RB-41, included as Part E-10 of the draft of the DRBS Navigable Waters Handbook. It is intended to serve until its subject matter is included in the handbook's detailed policy and procedural guidelines and while experience is gained with this new permit program.

The NPDES permit system was authorized by the Federal Water Pollution Control Act Amendments of 1972, P.L. 92-500 (enacted October 18, 1972) which Act completely revised the FWPCA (Federal Water Pollution Control Act). (See Navigable Waters Handbook Appendix Part D-2s.)

The NPDES permit program was established by Section 402 of the revised Act and specifically incorporates the prior program for the control of pollutant discharges established under joint authority of earlier revisions of the Act and Section 13 of the Act of March 3, 1899 (33 U.S.C. 407). Such aspects of the control of "refuse" discharges under Section 13 as relate to navigation are reserved to the Secretary of the Army acting through the Chief of Engineers (in consultation with the Coast Guard's Secretary) by Sections 402(b)(6) and 404 of the Act.

The new Act provides that a State may be granted authority to administer a permit system within its borders, subject to oversight of EPA and under defined conditions. A number of States already have been granted interim authority, and guidelines have been promulgated by EPA defining standards each State must meet before permanent (revokable for cause by EPA) authority can be granted by EPA to such State. (Navigable Waters Handbook Appendix Part D-1b(1).)

The Regional Director, if he has not already done so as recommended by Dr. King's January 4 memorandum of similar subject, should promptly request that notice and related fact sheet for each application for NPDES permit be provided him upon publication. Since both EPA and some if not all of the States will be processing the permits, requests for notices and fact sheets must be directed to EPA Regional Offices and to each State known to be administering the program. Dr. King's cited memorandum listed 10 States granted interim authority and you should request EPA Regional Offices to keep you apprised of changes in authority granted to the States in your region.

The following procedural guidelines are recommended for reviewing applications for NPDES permits:

1. Each permit application received must be logged, screened, scheduled, reviewed, coordinated and reported upon, as appropriate, or otherwise classified and processed as outlined in Sections 3, 4, 6, and 7 of the Navigable Waters Handbook. As with other types of permit applications, a field investigation of reconnaissance grade will be made and a field appraisal report completed in pertinent parts by the assigned field biologist for each application involving significant Service interest.

2. In considering the acceptability of an NPDES application, the objectives and policies of Section 2 and the general and detailed guidelines of Section 5 of the Navigable Waters Handbook should be followed insofar as applicable.

3. As an aid to assessing the impact of an ongoing or proposed pollutant discharge, at least the following items should be considered:

   -- the detailed characteristics (volumes; rates; degree or intensity; and diurnal, weekly, and seasonal patterns) and composition (by averages, ranges, variations, and patterns) of the applied for pollutant discharge including:

      -- total volume rate of discharge in MGD or other rate, and in relation to the rate of flow or exchange of the receiving water.

      -- BOD (biological oxygen demand) and COD (chemical oxygen demand) each in parts per million over a defined time span.

      -- velocity of discharge and its direction and tendency to cause scouring of shoreline or bottom materials.

      -- temperature and in relation to ambient temperature of the receiving water.

      -- concentration or occurrence of indicator (coliform), harmful, pathogenic, or parasitic bacteria and other organisms; weed or exotic species, their seeds, eggs, or larvae.

-- density of discharge and in relation to ambient densities of the receiving water, giving special attention to sinking plumes and other density related effects.

-- TDS (total dissolved solids).

-- chlorides, sulfates, carbonates, bicarbonates, and other salts.

-- DO (dissolved oxygen).

-- pH (acidity - alkalinity).

-- toxic and hazardous substances (heavy metals, pesticides, PCB's, chlorine, hydrogen sulfide, phenols, cresols, etc.).

-- oils, greases, fatty substances, etc.

-- nutrients (nitrogen, phorphorus, carbon).

-- settleable solids, fibers, abrasive substances, etc.

-- colloidal solids (clays, organics, etc.).

-- sugar and other highly oxidizable organics.

-- turbidity.

-- color.

-- the historical or pristine natural quality of the receiving water and the fish and wildlife species and populations native thereto.

-- the existing quality of the receiving water contrasted with that forecast with the proposed discharge (considering ranges and variations, as well as averages, patterns of occurrence and distribution--horizontally and vertically throughout the receiving water body and other factors noted below). In particular, does the receiving water meet water quality standards without the applied-for discharge? Would or does the applied-for discharge degrade the receiving water? Would or does the discharge meet other established water quality requirements, including effluent limitations, standards of performance, etc., if any? Would or does the discharge require or involve a waiver of any water quality requirement? Is the discharge to be treated; if so, will the treatment be adequate; or if inadequate or untreated, what treatment is required? Such questions should be answered by the regulatory agency, but the investigator may have to pose them to it.

-- the particular species of fish and wildlife, including their supporting habitat and food species, known or likely to be of concern together with their tolerance and sensitivity to the water quality parameters being or to be altered. Guidance as to tolerance should be sought in Water Quality Criteria, a report to the Secretary of the Interior by the National Technical Advisory Committee, April 1, 1968, until an updated version is issued by the EPA.

-- appropriate comparisons and extensions of the foregoing items, including:

  -- patterns of dispersion downstream and within the receiving water body;

  -- persistence of involved pollutants; adsorption, precipitation, flocculation, and other physical means of accumulation of such pollutants on surfaces and in sediments;

  -- biological magnification and biochemical intensification of toxicity (e.g., methylation of mercury);

  -- synergistic intensification of toxicity (e.g., copper and zinc);

  -- effects of scheduled and emergency shutdowns of the proposed discharge (especially in regard to any thermal loads); etc.

  In such comparisons and extensions due regard must be given to:

  -- density current and stratification phenomena due to variations and prospective changes in temperature, sediment, and salinity;

  -- additions and cumulative effects of pollutants from proximal and other related discharges, non-point sources, and natural deposits;

  -- tidal, littoral, riverine, and other currents and exchanges;

  -- modifications of current patterns by the coriolis force, winds, air pressure, etc;

  -- natural changes due to runoff accretions, upstream storage and regulation, evapotranspiration, and groundwater exchanges; and

  -- variations in sensitivity of concerned organisms among individuals and during different life stages.

In summary, the assigned biologist must make his best judgment of the total impact of an applied-for pollutant discharge for each species of concern, including the effects on human uses thereof due to odors, tastes, etc., by review of the available data in light of the factors known or suspected to intensify or lessen the apparent impact. Generally this will form an adequate basis for questioning conclusions of others and making cautionary recommendations. The information and expertise available will likely never be sufficient to support unequivocal conclusions or recommendations. This should not deter the responsible field biologist nor his supervisors from strongly defending their judgment, for it is probable that the "experts" also lack unequivocal answers to most of the questions posed by all but the simplest pollutant discharges.

In reporting the Service assessment of existing or potential impact of a pollutant discharge, any questions of the ability of the applicant to meet the standards, effluent limitations or other requirements of the FWPCA should be left to the EPA or the State with EPA oversight. However, the established requirements, per se, may be questioned if they are determined or otherwise known to be inadequate for the known or suspected needs of a fish or wildlife species, life stage of a species, or group of species dependent on the waterway concerned. Yet the Service report on a particular application is not an entirely adequate vehicle for such questioning; such a question also should be separately addressed to the EPA with a copy to the concerned State agencies.

The Service assessment and comment will be directed to the anticipated impacts of specific pollutants on specific species or specific habitat areas. Emphasis will be placed on any critical situations found or anticipated to develop as a result of the place, time, or rate of discharge, the quantity or velocity of the discharge, or the siting of related facilities, per se, e.g. siting of lagoons or treatment works on productive marsh, etc. Particular attention should be given to sensitive species, life stages, and habitats. Also the facilities for diverting water as well as for discharging water should be closely examined for potential mechanical hazards requiring saving devices such as screens and bypasses at intake and diffusion facilities on the discharge lines. Entrainment of larvae, plankton organisms, and other weak swimmers can occur at both the intake and outlet when velocities are excessive. The maximum velocity protecting most small fish is 0.5 f.p.s. (foot per second) but even lower velocities will entrain larvae and plankton and even small fish where intake channels are not provided with an effective escape bypass.

Recommendations for conditioning a pollutant discharge permit or denying issuance of the permit, in accordance with the severity of the expected impacts, will be made as suggested in Appendix Part C of the Navigable Waters Handbook if any or a combination of the following findings have been made:

-- Service investigations and assessment of the applied-for discharge, including the siting of related lagoons and other facilities, indicate that damage or degradation of fish and wildlife, their habitat (aquatic, submersible or upland), or the human satisfaction and uses thereof are or would be significant.

-- The discharge includes or would include toxic, hazardous, harmful, and/or unevaluated potentially harmful substances in concentrations significant or questionably significant to fish and wildlife, their habitats, or the human satisfactions and uses thereof.

-- Facilities needed to protect fish and wildlife or their habitats (e.g. screens, bypasses, diffusion structures, etc.) are either lacking, improperly designed or operated, or unacceptably planned.

Reports will be made directly to the permitting agency (the EPA or the State). If reporting is to the State a copy should be sent to the EPA since it has oversight responsibility for any State permitting actions under the program. Notices of applications found not to involve a significant Service interest may be responded to weekly or biweekly by form letter as arranged with the permitting agency or otherwise (see Sections 3 and 7 of the Navigable Waters Handbook).

Willis King