MODIFICATION OF SECONDARY TREATMENT REQUIREMENT FOR DISCHARGES INTO MARINE WATERS

Introduction

You have asked for comments appropriate to the public hearing to be held by the Environmental Protection Agency concerning its proposed regulations pertinent to the modification of the secondary treatment requirement.

Strictly speaking, the requirement which in certain cases is now subject to modification is that the pollutant concentrations in effluents be subject to limitations based on the level of effluent quality achievable by secondary treatment. This requirement was imposed on the discharges of publicly-owned wastewater treatment works by the federal Clean Water Act as it was amended in 1972. The Environmental Protection Agency (EPA) has defined the effects of secondary treatment in terms of standards as to concentrations of biochemical demand (BOD) and suspended solids and the negative log of the hydrogen ion concentration (pH). However the Clean Water Act was further amended in 1977 to provide that under certain conditions, among them discharge to marine waters, the Administrator of the Environmental Protection Agency may issue a National Pollution Discharge Elimination System (NPDES) permit which modifies the effluent limitations based on these secondary-treatment standards. It is the regulations proposed by EPA in response to this recent amendment that are the subject of the hearing in question.

It is not a primary intent of the hearing to determine the appropriateness of issuing a NPDES permit with modified secondary treatment requirement for any particular discharge. Nevertheless it was the recognition of the inappropriateness of these requirements for certain discharges that led to the amendment of the Clean Water Act. Hence, as examples, the conditions that warrant exemption of some of these discharge from the secondary treatment requirement are certain to be discussed at the hearing. I believe that representatives of the State of Hawaii will present testimony on conditions warranting exemptions in the case of the discharge of sewage effluent from the municipal Sand Island facility on Oahu, for example, and possibly other
municipal discharges as well. I have, in the past several years, contributed to the technical arguments for exempting the Sand Island discharge from the secondary-treatment requirement. I am not aware of significant, valid, counter-arguments, but I expect that the other representatives can supply more up to date information than I can.

It is also not a primary intent of the hearing to argue the philosophy underlying the Clean Water Act and its recent amendment. I wish to discuss this philosophy, however, because the appropriateness of the regulations adopted by the EPA and the wisdom with which they are implemented will depend upon how EPA views the purposes of the Clean Water Act and the amendment.

Fundamental purposes and inconsistent goal statements

I consider that the basic purpose of government should be to induce human beings to control their activities in such a way as to optimize the welfare of the human race in general and over the long term. A narrower purpose may be appropriate for the U.S. Government, but I know of no one who would argue for a more restricted purpose than to optimize the welfare of Americans for the next generation or two.

The objectives of all legislation should be consistent with these purposes. Recognizing, however, that it is beyond human capabilities to determine what will be optimal in all cases, and that expenditures of undue effort to determine what will be optimal in trivial cases would in themselves be non-optimal, it is appropriate that there be some generalization in legislation--some imposition of uniform requirements that represent what will be optimal in the general case although there will be some insignificant exceptions. The original secondary-treatment requirement in the Clean Water Act seems clearly to represent an example of the imposition of a uniform requirement. The allowance for exemptions from the requirement in the amendment of the Act represents recognition that some of the exceptions are significant.

The legislative history of the Clean Water Act Amendment of 1972, and its language, indicate that the Congress was reluctant to delegate to administering agencies significant authority to determine what level of pollution control will be optimal in individual cases. The reluctance stemmed from frustration with the over weighting of benefits that were purely short-term, purely economic, or would accrue primarily to special interest groups, in the disposition of cases by these agencies and the Courts. In the Act there are, as a result, levels of specificity and uniformity that are demonstrably inconsistent with the fundamental objectives.

Even the goals stated in the Act are inconsistent with these objectives. It is declared, for example, that "it is the national goal that the discharge of pollutants into navigable waters be eliminated by 1985." Even if it is considered that the term "pollutants" refers to those of human origin alone, this goal could be considered consistent with the fundamental objectives only if it could be assumed that:
(a) the net effect of every polluting discharge to the water were detrimental;

(b) to every polluting discharge to the waters there were a superior alternative; or

(c) if there were exceptions to (a) and (b) they would be so inconsequential that either (i) it would not be worth the effort, or (ii) we are socially incapable of making the effort, to identify and allow for the exceptions while retaining the prohibition against polluting discharges where it is appropriate.

It will be recognized that there would still be a release of pollutants to marine waters if discharges from municipal sewage systems are permitted after secondary treatment, but it will be instructive to examine the extent to which the imposition of the secondary-treatment requirement would be appropriate, in terms of the listed assumptions, in the case of a discharge to marine waters such as that at Sand Island.

Applicability of assumptions to Sand Island case

There are clearly some detrimental effects of sewage discharges. Those longest recognized as warranting treatment before discharge are the public health hazards. With the past discharge at Sand Island of raw sewage, not far offshore and in shallow water, there was clearly a health hazard, although it was not a major one, and there were no demonstrable health detriments. I expect that other testimony will indicate that: (a) with the present discharge offshore and in deep water, there is no significant health hazard; (b) with advanced primary treatment, bacterial and viral die-offs will be even further increased; and (c) secondary treatment cannot be effective in further reduction of health hazards.

Before the longer, deeper outfall was put to use at Sand Island there was an esthetic detriment associated with the discharge, but that seems now to be wholly eliminated.

A detriment associated with the discharge of sewage that is a principal reason in general for prescribing secondary treatment is BOD. However, the mixing conditions are so good and the aeration of the ocean waters is so great at Sand Island that the depression of oxygen concentrations was not measurable even with the discharge of raw sewage in shallower water. It would be even less with the discharge further offshore in deeper water.

Offsetting these new negligible detriments there has always been, and there remains one definite benefit. This is the increased productivity of the marine waters due to dispersal in them of the nutrients in the effluent. Nutrients in excess are properly regarded as pollutants, but the essentiality of nutrients to life ought not to be overlooked. The benefits of nutrient disposal on land and even in aquaculture are recognized in the Clean Water Act. I expect that other testimony will demonstrate that, in contrast to many restricted waters, the waters of the open ocean are nutrient deficient, and the effects of increased nutrient concentrations should be considered beneficial, not detrimental. With
secondary treatment of the Sand Island effluent there would be some decreases in nutrient discharges, and the nutrients would be discharged more in inorganic form requiring incorporation at lower levels in the food chain than nutrients in organic form discharge after primary treatment alone.

The net environmental impact of the discharge at Sand Island is, therefore, beneficial, but the benefits would be reduced if secondary treatment were introduced.

The alternative to discharge of the Sand Island effluent after the advanced primary treatment that is planned by the State is discharge after secondary treatment such as would be required by the Clean Water Act before the 1977 amendment. Even if the net impact of the discharge without secondary treatment were neutral instead of beneficial it would be impossible to consider discharge with secondary treatment superior because there are clearly costs not offset by benefits associated with the secondary treatment itself. The costs are not only economic but environmental. The disposal of the sludge would present some problems. Much more seriously, there would be an expenditure of energy which, in the light of the world energy resource situation would be most extravagant.

To a federal agency like the EPA, a discharge such as that at Sand Island may perhaps seem inconsequential and not worth exempting from the secondary treatment requirement. However, the Sand Island discharge is the largest discharge of sewage effluent in Hawaii. The construction of the present outfall and of the primary-treatment works are major capital improvements in the State, and a secondary-treatment facility would represent another major capital improvement. Rationally, the identification of and allowance for an appropriate exception to any regulation is worthwhile if the effort at identification is small in comparison with the benefits to be achieved by the exception. The benefits of the exception to the secondary-treatment requirement as applied to the Sand Island discharge are great. The effort to prove the merits of the exception has already been made. Although achievement of its objective has been frustrated for many years by the changing legal situation, the effort has been relatively small relative to the benefits of the exemption from the secondary treatment requirement.

In summary, there is no net detriment, but on the contrary a net benefit, to the discharge of primary-treated effluent at Sand Island. Secondary treatment, rather than being superior, would be detrimental, environmentally as well as economically. It is, not merely worth the effort to exempt the Sand Island discharge from the secondary-treatment requirement, the effort has already been made. The sole rational basis for refusal to grant the exemption would be societal inability to identify and allow for such exemptions where appropriate while retaining the requirement for secondary treatment elsewhere.
The societal ability question

Reference has already been made to the reluctance of Congress in 1972 to delegate significant decision-making authority to agencies administering the Clean Water Act. The legislative history and language of the 1977 amendment to the Act indicate that Congress has remained skeptical of the ability of agencies to allow for exceptions to the secondary treatment requirement while retaining the requirement where it is appropriate. The amendment has been characterized as providing "a limited exception" and a "narrow opportunity." In stressing these characterizations EPA seems to share the skepticism of the Congress even though it is to EPA itself that the decision-making power has been delegated.

The apparent lack of self-confidence in EPA is likely to be the principal bar to the wise implementation of the provision of the amendment. It is not reassuring that, although it has recognized the environmental arguments that have been presented for the exception to the secondary-treatment requirement, EPA has stated in its proposal of the implementing regulations that the provision for the exception was "designed to reduce pollution control costs" for publicly owned treatment works. The EPA seems to overlook still the fact that, under the circumstances pertaining to discharges such as that at Sand Island, it is not so much the increased economic costs of the secondary treatment as the environmental detriments associated with the requirement that have promoted attempts to have the requirement modified and justify that modification.

I would like to believe that the comments in this letter may contribute to providing a rationale for interpreting the Clean Water Act as amended whenever interpretation is possible, and to persuading EPA to use this rationale with confidence.

Specific issues

The EPA has especially invited comment at the public hearing on three questions as to the interpretation of the recent amendment that may be abbreviated as follows:

(1) Should minor discharges be allowed, in their applications for modified NPDES permits, to supply less extensive information than is required in the case of major dischargers or dischargers of effluents that contain toxic substances?

(2) Does the law permit EPA to develop special regulations for small villages in the Trust Territory, etc.?

(3) Does the law permit EPA to issue a modified NPDES permit for a discharge that does not now exist in the form to be permitted?

Rationally, the answer to all three questions should be in the affirmative.
EPA has raised the first question because of the language of the Act that provides that a modified NPDES permit may be issued only if the applicant demonstrates to the satisfaction of the Administrator that certain conditions are met. The Administrator should be satisfied with a less comprehensive demonstration, the ambient conditions being equal, if the discharge to which the application relates is small and contains no toxic substances than otherwise.

EPA has raised the last two questions because of the language of the amended Act that restricts the issuance of a modified NPDES permit "to the discharge of a pollutant in an existing discharge from a [publicly owned treatment works] into marine waters." If a pollutant is being discharged into marine waters, directly or indirectly, whether or not by way of the publicly-owned treatment facility, the amendment should be considered at least to allow, if not to encourage, the issuance of a modified NPDES permit for the discharge providing the extent of treatment will be optimal and the discharge will be through an optimally located outfall.

It would be absurd to require a small Trust Territory village whose sewage reaches the marine waters directly by way of shoreline privies or indirectly by way of inland privies to provide non-beneficial secondary treatment if and when it provides a public collection system and an ocean outfall.

So far as Hawaiian cases are concerned, my comments heretofore have related solely to the discharge from the Sand Island outfall which now exists and which will be subject to advanced primary treatment in a facility now under construction. The same net benefits of modification of the secondary-treatment requirement will apply in the case of the Honouliuli outfall, unless and until the bulk of the effluent from the treatment facility can be used on land for irrigation. The depth and offshore distance of the outfall and the mixing conditions will be essentially the same as those at Sand Island. The discharges that will occur through the new outfall are now made to marine waters by way of Pearl Harbor, where they are objectionable. It would be absurd to require an environmentally detrimental secondary level of treatment of these discharges when they can be disposed of through the new outfall simply because they are not now disposed of through this outfall.

Similar cases may perhaps be made in the case of marine discharges of other municipal sewerage systems in Hawaii, including some through outfalls not yet in operation, but I am not sufficiently informed concerning these other cases to make judgements about them.

Yours very truly,

Doak C. Cox
Director

DCC/ck

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