treatment systems. The technologies used include physical-chemical treatment, biological treatment, and advanced wastewater treatment. Based on information obtained from the 1991 Waste Treatment Industry Questionnaire and site visits, EPA has concluded that a significant number of these treatment systems need to be upgraded to improve effectiveness and to remove additional pollutants.

Physical-chemical treatment technologies in use are:

• Precipitation/Filtration, which converts soluble metal salts to insoluble metal oxides which are then removed by filtration;

• Dissolved Air Flotation (DAF), which separates solid or liquid particles from a liquid phase by introducing air bubbles into the liquid phase. The bubbles attach to the particles and rise to the top of the mixture;

 Activated Carbon, which removes pollutants from wastewater by adsorbing them onto carbon particles;

• Multi-media/Sand Filtration, which removes solids from wastewater by passing it through a porous medium. Biological treatment technologies in use are:

• Sequential Batch Reactor, which uses microorganisms to degrade organic material in a batch process;

• Activated Sludge, which uses microorganisms suspended in wellaerated wastewater to degrade organic material;

 PACT[®] System, a patented process in which powder activated carbon is added to an activated sludge system; and

• Coagulation/Flocculation, which is used to assist clarification of biological treatment effluent.

Advanced wastewater treatment technologies in use are:

• Ultrafiltration, which is used to remove organic pollutants from wastewater according to the organic molecule size; and

• Reverse osmosis, which relies on differences in dissolved solids concentrations to remove inorganic pollutants from wastewater.

The typical treatment sequence for a facility depends upon the type of waste accepted for treatment. Most facilities treating metal-bearing wastes use precipitation/filtration to remove metals. Those that treat oily wastes relied on dissolved air flotation largely to remove oil and grease, but this technology is typically ineffective in removing the metal pollutants that are in many cases also present in these wastewater. Aerobic batch processes and types of conventional activated sludge systems were the most widely-

found treatment technology for the organic-bearing wastes.

E. Rationale for Selection of Proposed Regulations

To determine the technology basis and performance level for the proposed regulations, EPA developed a database consisting of daily effluent data collected from the Detailed Monitoring Questionnaire and the EPA Wastewater Sampling Program. This database is used to support the BPT, BCT, BAT, NSPS, PSES, and PSNS effluent limitations and standards proposed today.

1. BPT

a. Introduction. EPA today is proposing BPT effluent limitations for the three discharge subcategories for the Centralized Waste Treatment Industry. The BPT effluent limitations proposed today would control identified conventional, priority, and nonconventional pollutants when discharged from CWT facilities.

b. Rationale for BPT limitations by subcategory. As previously noted, the Centralized Waste Treatment Industry receives for treatment large quantities of concentrated hazardous and nonhazardous industrial waste which results in discharges of a significant quantity of pollutants. The EPA estimates that 176.8 million pounds per year of pollutants are currently being discharged directly or indirectly.

As previously discussed, Section 304(b)(1)(A) requires EPA to identify effluent reductions attainable through the application of "best practicable control technology currently available for classes and categories of point sources." The Senate Report for the 1972 amendments to the CWA explained how EPA must establish BPT effluent reduction levels. Generally, EPA determines BPT effluent levels based upon the average of the best existing performances by plants of various sizes, ages, and unit processes within each industrial category or subcategory. In industrial categories where present practices are uniformly inadequate, however, EPA may determine that BPT requires higher levels of control than any currently in place if the technology to achieve those levels can be practicably applied. A Legislative History of the Federal Water Pollution Control Act Amendments of 1972, p. 1468.

In addition, CWA Section 304(b)(1)(B) requires a cost effectiveness assessment for BPT limitations. This inquiry does not limit EPA's broad discretion to adopt BPT limitations that are achievable with available technology unless the required additional reductions are "wholly out of proportion to the costs of achieving such marginal level of reduction." A Legislative History of the Water Pollution Control Act Amendments of 1972, p. 170. Moreover, the inquiry does not require the Agency to quantify benefits in monetary terms. See e.g. American Iron and Steel Institute v. EPA, 526 F. 2d 1027 (3rd Cir., 1975).

In balancing costs against the benefits of effluent reduction, EPA considers the volume and nature of expected discharges after application of BPT, the general environmental effects of pollutants, and the cost and economic impacts of the required level of pollution control. In developing guidelines, the Act does not require or permit consideration of water quality problems attributable to particular point sources, or water quality improvements in particular bodies of water. Therefore, EPA has not considered these factors in developing the limitations being proposed today. See Weyerhaeuser Company v. Costle, 590 F. 2d 1011 (D.C. Cir. 1978).

EPA concluded that the wastewater treatment performance of the facilities it surveyed was, with very limited exceptions, uniformly poor. Under these circumstances, for each subcategory, EPA has preliminarily concluded that only one treatment system meets the statutory test for best practicable, currently available technology. EPA has determined that the performance of facilities which mix different types of highly concentrated CWT wastes with non-CWT waste streams or with stormwater are not providing BPT treatment. The mass of pollutants being discharged is unacceptably high, given the demonstrated removal capacity of treatment systems that the Agency reviewed. Thus, comparison of EPA sampling data and CWT industrysupplied monitoring information establishes that, in the case of metalbearing waste streams, virtually all the facilities are discharging large total quantities of heavy metals. As measured by total suspended solids (TSS) levels following treatment, TSS concentrations are substantially in excess of levels observed at facilities in other industry categories employing the same treatment technology-10 to 20 times greater than observed for other point source categories.

In the case of oil discharges, most facilities are achieving low removal of oils and grease relative to the performance required for other point source categories. Further, facilities treating organic wastes, while successfully removing organic