

of effluent type and discharge frequency.

We then proposed limitations based on these CAAP subcategories: flow-through, recirculating, and net pen systems. Flow-through systems tend to have high effluent flows that can exceed a complete system volume exchange per hour. Some flow-through facilities may treat two discharges: a bulk discharge and a discharge from a settling basin referred to as off-line settling. The bulk discharge is large volume and flows directly from the areas where the animals are confined. The off-line settling discharge is water drawn from, without disturbing, the solids collected from the production process that are treated in a basin through settling. Compared to the bulk flow discharge, the volume of discharge from the off-line settling basin is small but more concentrated in pollutants such as TSS, BOD, or nutrients. Other flow-through facilities choose to treat their entire discharge through a single treatment system (full-flow settling) that includes the solids generated from the production process and the entire production volume of water. Facilities that use full-flow settling with a single discharge point usually have relatively low concentrations of TSS, BOD, and nutrients.

Some recirculating systems have single discharges with relatively small volumes (often a fraction of the system volume per day) of treated effluent with concentrations of TSS, BOD, and nutrients comparable to the off-line settling basin discharge at some flow-through facilities. Other recirculating systems (called dual discharge) may have two discharges, one from a solids treatment process and one often described as "overtopping" water. Overtopping water is process water that drains from production tanks or process water treatment units as a result of continually adding a small amount of water to the recirculating system. This practice provides make-up water that offsets losses and some dilution for a "margin of safety" that ensures adequate process water quality. The overtopping water effluent TSS, BOD, and nutrients are typically less concentrated than solids treatment system effluent, but they are more concentrated than bulk discharges from flow-through systems. Solids treatment effluents from a dual discharge recirculating system are similar in concentration to flow-through offline settling basin and single discharge recirculating systems. Net pen systems release TSS, BOD, and nutrients directly to receiving waters.

EPA then divided the subcategories by facility size (*i.e.*, the amount of

aquatic animals produced) because of differences in economic factors related to production size. The proposal did not include facilities with annual production below 100,000 pounds due to economic achievability concerns. We also proposed less stringent requirements for flow-through facilities with production between 100,000 and 475,000 pounds a year (again based on concerns about economic achievability). EPA based its proposed conclusions on economic achievability of limitations based on the model technology and model facility analysis. The proposed model facilities represented specific size ranges in pounds produced. Pounds produced were derived from annual revenue ranges and price data from the 1998 Census of Aquaculture. Most of the impacts that EPA identified would adversely affect trout producers below an annual threshold of 94,000 pounds production. Therefore, EPA proposed to establish the applicability threshold for the effluent guideline at 100,000 pounds a year to avoid projected impacts in the trout sector. Production of other species also faced similar economic stress at lower production levels. EPA proposed the same applicability threshold for other species because doing otherwise would add needless complexity to the regulation, with little corresponding environmental benefit.

EPA identified technology options for each of the system/size subcategories based on technologies and practices found at facilities in the subcategory. We evaluated the options in order of increasing stringency, both in the degree of pollutant reduction achieved as well as in cost. Each successive option incorporates the technologies and practices of the previous option.

Option 1 for flow-through systems includes primary settling (*e.g.*, quiescent zones and settling basins) and developing and implementing a BMP plan for solids control. Option 1 for recirculating systems includes similar technologies/practices to those for flow-through systems. Option 1 for net pens includes feed management and BMP plan development for solids control.

Option 2 for all subcategories combined the Option 1 requirements with identifying and implementing BMPs to control discharges of drugs, chemicals, and non-native species. Option 2 also included a reporting requirement for the use of Investigational New Animal Drug (INAD) and extra-label use drugs. Option 3 combines Option 2 requirements with solids polishing (*e.g.*, microscreen filtration) for flow-through and recirculating systems and active feed monitoring for net pens.

EPA selected the proposed regulatory options for each subcategory based, in part, on the costs and economic impacts of installing and implementing these options. The proposed regulation for flow-through systems applied a two-tiered approach reflecting economic achievability concerns. For facilities that produce between 100,000 and 475,000 pounds of aquatic animals a year, EPA proposed to base BPT, BCT, BAT and NSPS on Option 1. For facilities that produce more than 475,000 pounds of aquatic animals per year, we proposed BPT, BCT, BAT and NSPS requirements on Option 3. For recirculating systems, EPA proposed Option 3 as the basis for the BPT, BCT, BAT and NSPS requirements. For net pen systems, EPA also proposed Option 3 as the basis for BPT, BCT, BAT and NSPS. The components for each option for flow-through and recirculating systems are summarized in Table IV.B.1.

EPA is still considering a no further regulation option. EPA received many comments supporting a no rule option for this industry. Comments referred to programs within the Federal and State governments such as the NPDES permitting process and TMDLs, indicating that these programs are better equipped to address local problems than national guidelines. They also argued that the baseline discharge loadings do not warrant national guidelines. The Agency will fully consider this option and the comments when it issues the final action.

#### *B. Modifications Being Considered for the Final Rule*

The following sections discuss several alternatives EPA is considering. We present the revised costs, pollutant reductions, and economic impact estimates for both the proposed options (1 to 3) and two new options (A&B) (*see* Section VI of today's notice). These revised estimates reflect:

- Data from EPA's detailed surveys.
- Data received with comments to the proposed rule.
- Effluent monitoring (DMR) data received from EPA regional and State permitting authorities.
- Changes resulting from methodological revisions to EPA's analytical approach. Before final action, EPA will consider these and any further revisions resulting from comment on today's notice. The following sections describe alternatives we are considering for the different regulatory levels of control (*e.g.*, BPT, BCT, BAT, NSPS).