

CHAPTER 1

INTRODUCTION

1.1 SCOPE AND PURPOSE

The U.S. Environmental Protection Agency (EPA) proposes and promulgates water effluent discharge limits (effluent limitations guidelines and standards) for industrial sectors. This document summarizes both the costs and economic impacts of technologies that form the bases for the proposed limits and standards for the concentrated aquatic animal production (CAAP) industry and the change in water quality and potential benefits associated with the proposed regulation.

The Federal Water Pollution Control Act (commonly known as the Clean Water Act [CWA, 33 U.S.C. §1251 et seq.]) establishes a comprehensive program to “restore and maintain the chemical, physical, and biological integrity of the Nation's waters” (section 101(a)). EPA is authorized under sections 301, 304, 306, and 307 of the CWA to establish effluent limitations guidelines and standards of performance for industrial dischargers. The standards EPA establishes include:

- Best Practicable Control Technology Currently Available (BPT). Required under section 304(b)(1), these rules apply to existing industrial direct dischargers. BPT limitations are generally based on the average of the best existing performances by plants of various sizes, ages, and unit processes within a point source category or subcategory.
- Best Available Technology Economically Achievable (BAT). Required under section 304(b)(2), these rules control the discharge of toxic and nonconventional pollutants and apply to existing industrial direct dischargers.
- Best Conventional Pollutant Control Technology (BCT). Required under section 304(b)(4), these rules control the discharge of conventional pollutants from existing industrial direct dischargers.¹ BCT replaces BAT for control of conventional pollutants.
- Pretreatment Standards for Existing Sources (PSES). Required under section 307(b). Analogous to BAT controls, these rules apply to existing indirect dischargers (whose discharges flow to publicly owned treatment works [POTWs]).

¹ Conventional pollutants include biochemical oxygen demand (BOD), total suspended solids (TSS), fecal coliform, pH, and oil and grease. EPA now measures oil and grease as “hexane extractable material.”

- New Source Performance Standards (NSPS). Required under section 306(b), these rules control the discharge of toxic and nonconventional pollutants and apply to new source industrial direct dischargers.
- Pretreatment Standards for New Sources (PSNS). Required under section 307(c). Analogous to NSPS controls, these rules apply to new source indirect dischargers (whose discharges flow to POTWs).

Prior to this proposed rule, EPA defined “concentrated aquatic animal production facilities” at 40 CFR 122, Appendix C, and identified the need for them to obtain National Pollutant Discharge Elimination System (NPDES) permits, but had not set national effluent limitations guidelines or standards for these dischargers.

1.2 DATA SOURCES

EPA’s economic analysis relied on a wide variety of data and information sources. Data sources used in the economic analysis include:

- EPA’s Screener Questionnaire for the Aquatic Animal Production Industry (U.S. EPA, 2001)
- U.S. Department of Agriculture (USDA; particularly the *1998 Census of Aquaculture*, USDA, 2000)
- Joint Subcommittee on Aquaculture (JSA). JSA is an interagency statutory committee established by the National Aquaculture Act of 1980 to encourage the industry.
- Academic literature
- Industry journals
- General economic and financial references

The use of each of these major data sources is discussed in turn below.

EPA collected facility-level production data from individual aquatic animal producers through a screener survey administered under the authority of the CWA Section 308 (U.S. EPA, 2001). EPA used response data from the screener survey to classify and subcategorize facilities by production method,

species produced and production level, and water treatment practices in place prior to the proposed regulation. EPA identified the subset of concentrated aquatic animal production facilities deemed to be in scope of the proposed rule.

EPA relied heavily on the USDA *1998 Census of Aquaculture* to profile the industry (USDA, 2000). EPA used the *Census* to identify the approximate number of aquaculture facilities in the U.S., their geographic distribution, species raised and production levels, and the distribution of facilities by revenue classification. EPA developed the production rate thresholds based on 1998 Census of Agriculture data and the screener data that was available prior to proposal. Six production size categories, corresponding to the revenue classifications used in the 1998 Census of Agriculture (i.e., \$1,000-\$24,999; \$25,000 - \$49,999; \$50,000 - \$99,999; \$100,000 - \$499,999; \$500,000 - \$1,000,000; and >\$1,000,000) were used to group facility production data reported in the screener surveys. EPA used national average product prices taken from the 1998 Census to estimate the production (in pounds) for the dominant species that were reported grown in flow-through (e.g., trout salmon, tilapia), recirculating (e.g., tilapia, hybrid striped bass), and net pen (e.g., salmon) systems.

Based on revenues from aquaculture sales alone (not including other farm-related revenues from other agricultural crops at the facility), more than 90 percent of the facilities have revenues less than \$0.75 million annually and thus may be considered small businesses. The Small Business Administration's (SBA) size standard is based on annual revenue at the company level for all products, so using facility revenue from aquaculture sales reported in the 1998 Census of Aquaculture is likely to over-estimate the proportion of small businesses in the industry. The Census data revenue category of \$500,000 to \$1,000,000 spans the SBA size standard of \$0.75 million for this industry. USDA's National Agricultural Statistics Service (NASS) provided a special tabulation of statistics (count, sum, mean, median, standard deviation, and coefficient of variation) by species by revenue class where one of the revenue classes corresponded to SBA size standard (\$0.75 million and greater).

JSA formed an Aquaculture Effluents Task Force to assist EPA. The Economics Subgroup provided enterprise budgets, additional references, and articles to EPA. An enterprise budget depicts financial conditions for representative aquaculture facilities. Enterprise budgets are useful tools for examining the potential profitability of an enterprise prior to actually making an investment. To create an enterprise budget, an analyst gathers information on capital investments, variable costs (such as labor

and feed), fixed costs (e.g., interest and insurance), and typical yields and combines it with price information to estimate annual revenues, costs and return for a project. By varying different input parameters, enterprise budgets can be used to examine the relative importance of individual parameters to the financial return of the project or to identify breakeven prices required to provide a positive return. The Economics Subgroup of the JSA/AETF provided EPA with enterprise budgets for trout, shrimp, hard clams, prawns, and alligators.

EPA used academic journals and industry sources such as trade journals and trade associations to develop its industry profile, to formulate a better understanding of industry changes, trends, and concerns. As necessary, EPA cites various economic and financial references used in its analysis throughout the EA. These references may be in the form of financial and economic texts, or other relevant sources of information germane to the impact analysis.

1.3 REPORT ORGANIZATION

This report is organized as follows:

- Chapter 2—Industry Profile. Provides background information on the CAAP industry.
- Chapter 3—EPA’s Screener Questionnaire for the Aquatic Animal Production Industry. Provides information from EPA’s screener survey and focuses on the facilities EPA determined to be within the scope of the proposed rule.
- Chapter 4—Engineering Cost Methodology. Summarizes the engineering cost models and assumptions; a precis of the Development Document accompanying the proposal (U.S. EPA, 2002).
- Chapter 5—Economic Impact Methodology. Summarizes the methodology by which EPA examines incremental pollution control costs and their associated economic impacts.
- Chapter 6—Regulatory Options: Descriptions, Costs, and Conventional Pollutant Removals. Presents short descriptions of the regulatory options considered by EPA. More detail is given in the Development Document (U.S. EPA, 2002).
- Chapter 7—Economic Impacts. Using the methodology presented in Chapter 5, EPA presents the economic impacts associated with the compliance costs, including impacts on commercial and non-commercial facilities.

- Chapter 8—Small Business Analysis. Pursuant to the Regulatory Flexibility Act as amended by the Small Business Regulatory Enforcement Fairness Act, EPA examines whether the regulatory options have a significant adverse impact on a substantial number of small entities.
- Chapter 9—Environmental Impacts. Summarizes the issues examined by EPA regarding water quality impacts from nutrients and solids, ecological impacts, aquatic nuisance species, pathogens, drugs, and other potential impacts.
- Chapter 10—Environmental Benefits. Summarizes the methodology by which EPA identifies, qualifies, quantifies, and—where possible—monetizes the benefits associated with reduced pollution from implementing the proposed rule.
- Chapter 11—Cost-Benefit Comparison and Unfunded Mandates Reform Act Analysis. Using the benefits described in Chapter 10, EPA presents an assessment of the nationwide costs and benefits of the regulation pursuant to Executive Order 12866 and the Unfunded Mandates Reform Act (UMRA).

1.4 REFERENCES

USDA. 2000. United States Department of Agriculture. National Agricultural Statistics Service. *1998 Census of Aquaculture*. Also cited as 1997 Census of Agriculture. Volume 3, Special Studies, Part 3. AC97-SP-3. February.

USDA, NASS. 2002. Special tabulation request submitted to USDA NASS. Information relayed to EPA and Eastern Research Group, Inc. March 6.

U.S. EPA. 2002. Development Document for the Proposed Effluent Limitations Guidelines and Standards for the Aquatic Animal Production Industry. EPA-821-R-02-016. Washington, DC: U.S. Environmental Protection Agency, Office of Water.

U.S. EPA. 2001. United States Environmental Protection Agency. Screener Questionnaire for the Aquatic Animal Production Industry. Washington, DC: OMB Control No. 2040-0237. Expiration Date July 26, 2004.