



SUMMARY OF EPAs FINAL 316(B) RULE FOR COOLING WATER INTAKE STRUCTURES

BY CHRISTINE TOMICHEK

The Environmental Protection Agency (EPA) issued their final rule regarding Section 316(b) of the Clean Water Act. The rule establishes requirements for cooling water intake structures (CWISs) at existing facilities. Section 316(b) requires that the location, design, construction and capacity of CWISs reflect the best technology available (BTA) for minimizing adverse environmental impacts. The 316(b) Rule will affect 1,065 existing facilities, including 544 electric generators and 509 manufacturers. It applies to existing facilities that withdraw more than 2 million gallons per day of water and uses at least 25 percent of this water for cooling purposes.

Existing facilities that withdraw more than 2 million gallons per day of water have seven options to select from to meet the **impingement** reduction standard.

1. Operate a closed-cycle recirculating system;
2. Operate a CWIS that has a maximum through-screen design intake velocity of 0.5 foot per second (fps);
3. Operate a CWIS that has a maximum through-screen intake velocity of 0.5 fps;
4. Operate an offshore velocity cap, an open intake designed to change the direction of water withdrawal from vertical to horizontal and located a minimum of 800 feet from the shoreline;
5. Operate a modified traveling screen that the EPA or state permitting authorities determine meets the Final Rule standard and is the BTA for impingement reduction;
6. Implement another combination of technologies, management practices and operation measures that the EPA or state permitting authorities determine is BTA for impingement reduction; or
7. Achieve the specified impingement mortality performance standard set forth in the Final Rule.

Options 1, 2 and 4 are preapproved technologies, so little or no demonstration of flow reduction is required. Options 3, 5 and 6 require detailed information be submitted to the permitting agency before the technology is accepted as BTA to control impingement mortality. Option 7 requires that a facility achieve a 12-month impingement mortality performance of 24 percent mortality or less, including latent mortality (18 to 96 hours), for all nonfragile species.

Reports required as part of the impingement mortality assessment include:

Source Water Physical Data Report

This report requires a description and scaled drawings showing the physical configuration of the water body, including areal dimensions, depths, and temperature regimes, identification and characterization of the source waterbody's hydrological and geomorphological features, estimate the intake's area of influence within the waterbody and locational maps.

Cooling Water Intake Structure Data Report

This report requires information on the design of the intake structure and its location in the water column. It includes design intake flows, daily hours of operation, number of days of the year in operation and seasonal changes, if applicable; a flow distribution and water balance diagram that includes all sources of water to the facility, recirculating flows, and discharges, and engineering drawings of the cooling water intake structure.

Source Water Baseline Biological Characterization Data Report

This report characterizes the biological community in the vicinity of the cooling water intake structure.

Cooling Water System Data Report

This report provides information on the operation of the cooling water system including descriptions of reductions in water withdrawals, recycled water, proportion of the source waterbody withdrawn.

Chosen Method for Impingement Compliance Report

Under this provision the applicant can either demonstrate that a modified intake system has been installed and has minimized impingement mortality or the applicant can identify and implement a plan for optimizing the intake system. The proposed sampling and data analysis methods would be appropriate for a quantitative survey and include consideration of the methods used in other studies performed in the source waterbody.

Performance Studies

This rule section requires a summary of biological survival studies conducted at the facility and a summary of any conclusions or results, including; site-specific studies addressing technology efficacy, entrainment survival, and other impingement and entrainment mortality studies.

Operational Status

The operational status report includes descriptions of each unit's operating status including age of the unit, capacity utilization for the previous 5 years, and any major upgrades completed within the last 15 years.

Existing facilities that withdraw at least 125 million gallons of water per day must also provide detailed information and conduct comprehensive studies to assist the regulatory agencies in determining what site-specific, best professional judgment measures would be required to reduce **entrainment**. Reports required as part of the entrainment assessment include:

Entrainment Characterization Study

Entrainment Characterization Study requirements have 3 parts. Part (i) is to develop and submit an entrainment mortality data collection plan. Part (ii) requires that a peer review of the entrainment mortality data collection plan be completed within 1 year of the effective rule. Part (iii) is to implement the entrainment mortality data collection plan no later than 6 months after submission of the entrainment mortality data collection plan to the Director.

Comprehensive Technical Feasibility and Cost

This report would include a description of all technologies and operational measures considered, and documentation of factors that make a technology impractical for further evaluation. Based on a conceptual design an order of magnitude calculation of present value of the social costs, facility level compliance costs and a cost estimate of all technologies and documentation of any outages, downtime, energy penalties or other impacts to revenue. The cost evaluation would be based on least-cost approaches to implementing each technology while meeting all regulatory and operational requirements of the plant. A peer review of the report is required.

Benefits Valuation Study

This report would include a detailed discussion of the magnitude of water quality benefits, both monetized and non-monetized, of the entrainment mortality reduction technologies evaluated in the Comprehensive Technical Feasibility and Cost Report including incremental changes in the impingement mortality and entrainment mortality of fish and shellfish; and monetization of these changes to the extent appropriate and feasible using the best available scientific, engineering, and economic information. Benefits that cannot be monetized will be quantified where feasible and discussed qualitatively. The study would also include discussion of recent mitigation efforts already completed and how these have affected fish abundance and ecosystem viability in the intake structure's area of influence. Finally, the report would identify other benefits to the environment and the community.

Non-Water Quality Impacts Assessment

This assessment includes a detailed discussion of the changes in non-water quality factors attributed to technologies and/or operational measures considered. These changes could include increases or decreases in the following, as examples, energy consumption, thermal discharges including an estimate of increased facility capacity, operations, and reliability due to relaxed permitting constraints related to thermal discharges; air pollutant emissions and their health and environmental impacts, noise, safety such as the potential for plumes, icing, and availability of emergency cooling water, grid reliability including an estimate of changes to facility capacity, operations, and reliability due to cooling water availability, consumptive water use, and facility reliability. This assessment requires peer review.

Endangered Species and Critical Habitat Conditions

EPA consulted with the US Fish and Wildlife Service and the National Marine Fisheries Service under the Endangered Species Act rules. The Services concluded that the new 316(b) rule is not likely to jeopardize the continued existence of listed species or result in adverse modification of designated critical habitat. However the Services added a number of conditions to the final rule. The rule requires that facilities identify all Federally-listed threatened and endangered species and designated critical habitat that are present in the zone of influence area of the intake. This condition includes all listed species not just fish and shellfish. Additional control measures, monitoring and reporting requirements may be established to minimize incidental take. The Services will have 60 days to review and comment on measures related to listed species and critical habitat.

Implementation

The Final Rule is implemented through the National Pollutant Discharge Elimination System (NPDES) permit program as permits under that program are renewed. Reporting time lines are shown below based on the date of permit expiration:

1. Existing permit expires after 45 months following the effective date of the rule – Submit applicable permit application reports when applying for a subsequent permit.
2. Existing permit expires prior to or at 45 months after the effective date of the rule – Applicant may ask for an alternative schedule for submission of the permit application reports.
3. For new units, the permit application reports must be submitted at least 180 days before the planned commencement of cooling water withdrawal.

The Director has the discretion to determine the time lines for compliance including the installation of modified structures. Continuing compliance will be enforced within the NPDES

discharge permit upon renewal. During permit renewal, the facility must demonstrate, and the agency Director must stipulate, that the facility's compliance option(s) represent 316(b) BTA and meet the performance standard established by the Director for reducing impingement and entrainment mortality. As a result, the agencies have an opportunity every five years to re-evaluate BTA and impose further restrictions and/or undertake additional technology evaluations.

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Christine Tomichek is Kleinschmidt's Senior Manager – Fisheries and Aquatic Sciences. Chris is responsible for assisting clients in planning and implementing of aquatic organism studies including fisheries, and macroinvertebrate assessments. She plans and implements studies for fish passage, site assessments, NPDES 316(b) and hydro licensing compliance working closely with our engineering staff in identifying the need for engineering solutions, their location and their design. Chris is involved in consultation with both state and federal resource agencies in support of clients. Prior to joining Kleinschmidt, Chris worked for over 20 years at Millstone Nuclear Power Facility assessing, reporting and mitigating fisheries related power plant impacts. Her responsibilities ranged from primary data collection, using various data collection techniques, to assisting in study and survey designs, supervision of study teams, to analysis and reporting. Chris has extensive expertise in endangered species assessment and currently holds an Endangered Species research permit for shortnose sturgeon.

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