

Implementation of Phase II CWIS Rule

TCEQ Staff
September 10, 2015



Purpose of the Rule

The rule is meant to minimize adverse environmental impacts resulting from impingement and entrainment of aquatic organisms resulting from use of cooling water intake structures

Purpose of the Rule, cont.

- Withdrawal of cooling water from surface waters:
 - Accounts for over half of all water withdrawn in US each year
 - Removes and kills billions of aquatic organisms each year – fish, larvae, eggs, crustaceans, shellfish, etc.
 - Most impacts to early life stages of fish and shellfish

History of 316(b)

- 1972: Congress passes CWA and §316(b) applies to regulating CWIS impacts to aquatic life
- 1976: EPA publishes regulations to address cooling water intake structures
- 1977: US Court of Appeals for 4th Circuit remands rule
- 1979: EPA withdraws CWIS rule
 - NPDES permitting authorities left to implement 316(b) on a case-by-case basis based on BPJ
 - Wide variation across States and Regions in level of implementation
 - Many permits currently do not include 316(b) requirements

History of 316(b), cont.

- 1995: Under Consent Decree, EPA begins developing 316(b) regulations establishing national performance standards for electric generating plants and manufacturers
- Phased approach
 - Phase I: New facilities
 - Electric generating plants
 - Manufacturers
 - Phase II: Existing large electric generating plants
 - Withdrawing at least 50 MGD of cooling water
 - Phase III: Other existing facilities
 - Small electric generating plants
 - Withdrawing < 50 MGD
 - Manufacturers
 - New offshore and coastal oil and gas extraction facilities

History of 316(b), cont.

- June 2003: Phase I Final rule published, with clarifying language
- April 2002: Proposed Phase II (Existing Large Power Plants) rule published
- July 2004: Final Phase II rule published
- Final rule challenged by Riverkeeper
- January 2007: Second US Circuit Court of Appeals remands many provisions of the Phase II rule
- July 2007: EPA suspends final Phase II rule
- November 2004: Proposed Phase III (Other Existing Facilities) rule published
- June 2006: Final Phase III rule published

History of 316(b), cont.

- April 2011: Proposed *existing* facilities rule published
 - Combined Phase II rule (large electric generating facilities) with parts of what had been Phase III rule (small electric generating and all manufacturing facilities)
- June 2012: EPA publishes 2 Notices of Data Availability
 - Summary of new information and data received on impingement and entrainment
 - Survey on preferred method for estimating economic value associated with ecosystem improvements
- May 2014: Formal consultation under ESA Section 7 concluded with issuance of joint FWS-NMS biological opinion.
- August 2014: Final Existing Facility rule published
- **Effective October 2014**

Applicability

- The facility is an existing power plant or manufacturing facility that is a point source regulated through a TPDES permit;
- The facility has a cumulative (1 or more CWIS) design intake flow of greater than two million gallons per day (MGD) withdrawn from waters of the United States; and,
- Greater than or equal to 25% of the actual water the facility withdraws is used exclusively for cooling water purposes.
- ***Facilities that do not meet all of these conditions may be subject to best professional judgement requirements established by the Executive Director***

Definitions

➤ Cooling Water Intake Structure

- The total physical structure and any associated constructed waterways used to withdraw cooling water from waters of the United States
- Extends from point at which water is first withdrawn from waters of the US up to, and including the intake pumps

Definitions

➤ Impingement

- Entrapment of any life stages of fish and shellfish on the outer part of an intake structure or against a screening device during periods of intake water withdrawal
- Includes those organisms collected or retained on a sieve with maximum distance in the opening of 0.56 inches, and excludes those organisms that pass through the sieve

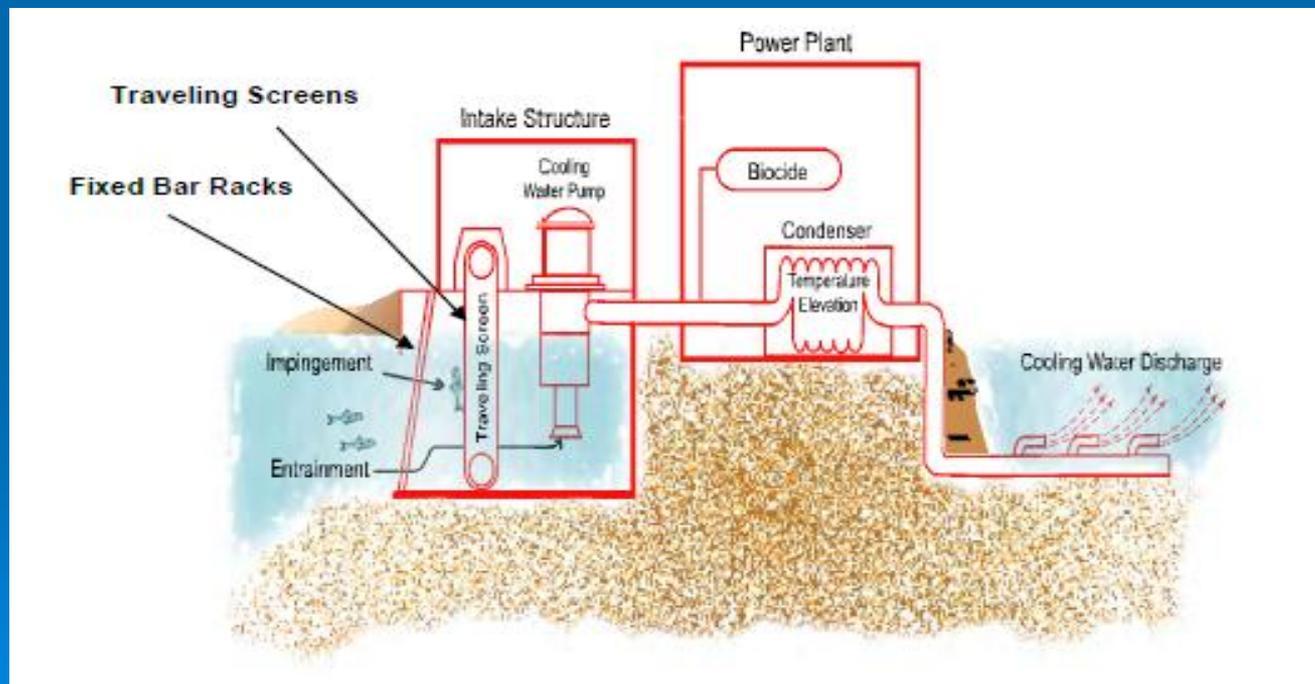
Definitions

➤ Entrainment

- Any life stages of fish and shellfish in the intake water flow entering and passing through a cooling water intake structure and into a cooling water system, including the condenser or heat exchanger
- Excludes those organisms that are collected or retained by a sieve with maximum opening dimension of 0.56 inches

Impingement & Entrainment

- Impingement - Organisms are trapped against cooling water intake structures by force of water being drawn through intake structure.
- Entrainment - Organisms are drawn through the cooling water intake structure into cooling system, through heat exchanger, and then pumped back out into water body.



TPDES Application Worksheet 11

- Upcoming Revisions to address the following:
 - Clarification on Alternate Compliance Schedules
 - More information on application requirement due dates/exceptions
 - More instruction on applicability determinations
 - Examples of clear-cut exemption (Groundwater sources, Public Water Supply Sources)
 - Detailed instructions on what information is required and when that information is required

Timing

- Any renewal application for a permit that expires after July 14, 2018 must include either all applicable application requirements, or documentation of why the information could not be collected by the due date
- The majority of renewal applications being processed at this time do NOT need to include application requirements

“r” requirements – 40 CFR §122.21(r)

- Information required with the permit application
- All facilities are required to submit:
 - Source water physical data
 - Cooling water intake structure data
- Which “r” requirements needed depends on compliance options, and intake flow [all facilities with actual intake flow >125 mgd have to submit “r” requirements 9-13]
- Waivers for “r” requirements may be granted if:
 - Intake on a manmade lake/reservoir
 - Stocked and managed
 - No threatened/endangered species or critical habitat

“r” requirements

Section	Study Name	Study Contents
(r)(2)	Source water physical data	Water body description, hydrology, chemistry, area of influence of intake
(r)(3)	Cooling water intake structure data	Configuration of intake, flows, water balance diagram, typical operations
(r)(4)	Source water baseline biological characterization data	Species present, susceptibility to impingement and entrainment, spawning periods, seasonal patterns; Threatened and Endangered species documentation
(r)(5)	Cooling water system data	Configuration of cooling water system, water reuse
(r)(6)	Intended method of compliance with impingement mortality standard	Select impingement mortality compliance path, option-specific info (e.g., monitoring plan for BTA, documentation of velocity); Impingement Technology Performance Optimization Study
(r)(7)	Existing entrainment performance studies	Previous studies on technology efficacy, studies from other facilities, other entrainment studies
(r)(8)	Operational status	Age, utilization, past upgrades

“r” requirements

Section	Study Name	Study Contents
(r)(9)	Entrainment characterization study	Entrainment data collection plan and data collection
(r)(10)	Comprehensive technical feasibility and cost evaluation study	Evaluate feasibility of all technologies, engineering/social cost estimates
(r)(11)	Benefits valuation study	Monetized losses from impingement and entrainment, other benefit categories
(r)(12)	Non-water quality and other environmental impacts study	Energy penalty, air emissions, safety, reliability, etc.
(r)(13)	Peer Review of (r)(10), (11), and (12)	External peer review of Feasibility, Costs, Benefits, and Environmental Impacts Studies; Must notify Director of reviewers; Director may disapprove and/or require additional reviewers

Compliance – Impingement (§125.94(b))

Compliance Alternative	Technology Basis
Pre-approved technology; no biological compliance monitoring	Close-cycle recirculating system
	Design intake velocity < 0.5 fps
	Existing offshore velocity cap
Streamlined compliance alternative; no biological compliance monitoring	Actual intake velocity < 0.5 fps
	Modified traveling screens with fish-friendly fish return
	System of Technologies (ex. Intake location, behavioral deterrents)
12 month performance standard of no more than 24% mortality	As demonstrated through biological monitoring

Compliance – Entrainment (§125.94(d))

- Rule does not establish national performance standards for entrainment
- Instead, permitting authority establishes Best Technology Available (BTA) for entrainment requirements for each intake on a site-specific basis

Entrainment BTA - Determination

- Must reflect permitting authority's determination of maximum entrainment reduction warranted after consideration of relevant factors
- Director must consider §125.98(f) factors :
 - Numbers and types of organisms entrained and impacts on waterbody
 - *Must identify threatened/endangered species & critical habitat*
 - Impact of changes in particulate emissions or other pollutants.
 - Land availability
 - Remaining useful plant life
 - Social benefits and costs of available entrainment technologies

Entrainment BTA - Determination

- Director may consider the following (f) factors :
 - Thermal discharge impacts
 - Credit for reductions in flow associated with retirement of units
 - Impacts on reliability of energy delivery within immediate area
 - Impacts on water consumption
 - Availability of process water, waste water, or other waters for reuse as cooling water

Weight given to each factor determined by permitting authority based upon circumstances of each facility

Draft: Weighted Approach

Factor	Criteria	Multiplier	Base Score	Total
Numbers and types of entrained organisms (if endangered species present multiplier is 5)	<1,000	0		
	>1,000 and <5,000	2		
	>5,000 and <10,000	3		
	>10,000 and <15,000	4		
	15,000+	5		
Impact of changes in particulate emissions or other pollutants	Will the control measures require amendment to increase loads or cause exceedances to existing limits?	If yes, 0		
		If no, 5		
Land availability (related to feasibility of control tech.)	Does the applicant have the land to include necessary control tech.?	If yes, 5		
		If no, 0		
Remaining plant life	Greater than 20 years?	5		
	<20 and >15	3		
	<15 and >10	2		
	<10 and >5	1		
	<5	0		
Quantified and qualitative social benefits and costs of control	Has the applicant demonstrated costs > benefits?	Yes, 0		
		No, 5		

Independent Supplier

➤ Definition:

- An entity, other than the regulated facility, that owns and operates its own cooling water intake structure and directly withdraws water from waters of the US
- Supplier provides cooling water to other facilities for their use, but may itself also use a portion of the water
- An entity that provides potable water to residential populations (e.g., public water system) is not a supplier

TCEQ status



Permit Requirements

- Depends on Impingement Compliance option: for example, if closed cycle recirculating system must monitor actual intake flow or cycles of concentration at a frequency of daily
- The Director may establish other monitoring requirements for impingement on a case-by-case basis
- For entrainment, permit requirements are best professional judgement and will be site specific
- Annual certification