

Guidance Document for Implementation of

Section 316(b) Rules for Cooling Water Intake Structure(s) for Existing Power Generation Facilities (Phase II Facilities)

Introduction

Section 316(b) of the federal Clean Water Act requires that the location, design, construction, and capacity of cooling water intake structures for facilities having NPDES permits reflect the best technology available for minimizing adverse environmental impact. The U.S. Environmental Protection Agency (U.S. EPA) has developed (or in the case of Phase III, is developing) rules to implement Section 316(b) of the Clean Water Act for three separate classifications of facilities: 1) Phase I - new facilities; 2) Phase II - large, existing power generation facilities; and 3) Phase III - existing manufacturing facilities and small electric generating plants. This document is intended to be a guide and facilitate the submittal of the appropriate information, however, it is not a substitute for the regulations.

This guidance document addresses Phase II facilities, and provides information necessary to determine:

- applicability of the Phase II regulations to a facility;
- the type of requirements to which a facility will be subject; and
- necessary compliance schedules and conditions to be included in the NPDES permit renewal.

What is Required to Demonstrate Compliance with the Phase II Rules?

All NPDES permit renewal applications for existing power generating facilities submitted on or after **September 7, 2004** must include additional information in order to demonstrate compliance with the Phase II rules. The required information is discussed in Parts I through VIII of this guidance document, and the required submittal of this information is dependent upon the expiration date of the existing NPDES permit as explained below.

- **All permittees** should include the information in Part I of this guidance document with the submittal of the NPDES permit renewal application; and
- **For permittees whose existing permit expires on or after July 9, 2008** - all of the information discussed in Parts III through VIII must be included with the submittal of the NPDES permit renewal application. (Part II is not applicable for these permittees.); or
- **For permittees whose existing permit expires prior to July 9, 2008** - Information discussed in Parts II through VIII may be submitted after the submittal of the NPDES permit renewal application through the use of compliance schedules. However, Ohio EPA suggests that the information in Parts

II and III be included with the submittal of the NPDES permit renewal application to facilitate development of the permit renewal.

How to Use this Guidance Document

This guidance document is intended to help a permittee determine the applicability of the Phase II rules, and if the permittee's facility is subject these rules, facilitate in the understanding of the information which must be submitted. The applicability of the rules and the rule requirements are discussed in the following Parts of this guidance document:

- Part I a guide to determine the applicability of the rules to a facility;
- Part II explains that certain facilities are eligible for compliance schedules for submittal of the required information;
- Part III explains the alternatives which are available to permittees to demonstrate compliance with the Phase II rules;
- Part IV discusses the criteria used to determine if a facility is subject to the performance standards for entrainment;
- Part V-VII discusses the information which must be submitted by all facilities which are subject to these rules. The basic information required should be available to all facilities without the need for data collection; and
- Part VIII discusses the detailed information and studies which may be required, depending upon the compliance alternative which is selected by the permittee. Extensive data collection and analysis may be necessary to fulfill the requirements of this section.

Although not required, Ohio EPA suggests that permittees submit the necessary information for the Phase II rules in accordance with the organizational structure of this guidance document. For example, it is suggested that permittees submit the information discussed in Parts I through VIII as necessary, and label each section "Part I", "Part II", etc.

It is important to emphasize that Parts I through VIII are intended to function only as guidance for providing the necessary information, and as such, the requirements discussed for some sections of the document have been abbreviated and/or summarized. **These sections should not be used as a replacement for the actual regulations for Phase II facilities. While this document is intended to be a guide and facilitate the submittal of the appropriate information, it is not a substitute for the regulations. Applicants will need to refer to the regulations (40 CFR Part 122 and Part 125) to ensure that all required data has been included in the NPDES renewal application.** Finally, Table 2 at the end of this document is a summary of the requirements for each of the compliance alternatives.

Part I. Applicability of the Facility to Phase II Regulations

The following questions can be used to determine if the facility is subject to the Phase II rules:

- A. What is the name of the facility? _____
- B. Does this facility have an existing NPDES permit? _____ If so, what is the permit number?

- C. What is the total design intake flow of the cooling water intake structure(s) used by this facility? _____ million gallons per day (MGD). Is the total design intake flow greater than or equal to 50 MGD?
- D. As its primary activity, does this facility generate and transmit electric power, or generate electric power and sell it to another entity for transmission?
- E. What is the quantity of water withdrawn by the intake structure in MGD, measured on an average annual basis? _____ MGD
What is the quantity of water withdrawn by the intake structure in MGD, measured on an average annual basis which is used exclusively for cooling purposes. _____ MGD
Is at least 25 percent of the total quantity of water withdrawn used for cooling purposes?

If the answer to any of the questions in “B” through “E” is “no”, the facility is not subject to the Phase II regulations. However, if the answer to each question is “yes”, the facility is subject to the Phase II regulations, and additional investigation is necessary to determine the extent of information submittal required to demonstrate compliance with the Phase II rules.

Part II. Eligibility for Compliance Schedules to Submit Required Information

Any facility whose existing permit expires less than four years after the publication date of the Phase II regulations in the Federal Register (or **prior to July 9, 2008**) is eligible for compliance schedules to submit the required information. The compliance schedules may not extend more than three years and 180 days after the publication date of the Phase II regulations in the Federal Register, or **January 7, 2008**. What is the expiration date of the existing permit for the facility? _____

- If the expiration date occurs on or after July 9, 2008, the facility is not eligible for compliance schedules to submit the information required by the Phase II rules.
- If the expiration date occurs prior to July 9, 2008, the facility is eligible for compliance schedules. Are compliance schedules needed to provide enough time for development and submittal of required information? ____ If “yes”, and the facility is eligible for compliance schedules, Table 1 on the following page can be used as a request form as well as a planning tool for Ohio EPA when drafting the NPDES permit renewal.

Table 1. Requested Compliance Schedule Dates

Part of this Guidance Document	Schedule Requested ? (yes/no)	Date to submit
Part III. Selection of Compliance Alternative		
Part IV. Performance Standards for Entrainment		
Part V. Source Water Physical Data		
Part VI. Cooling Water Intake Structure Data		
Part VII. Cooling Water System Data		
Part VIII. Comprehensive Demonstration Study		
A. Proposal for Information Collection		
B. Source Waterbody Flow Information		
C. Impingement Mortality and/or Entrainment Characterization Study		
D. Technology and Compliance Assessment Information		
E. Restoration Plan		
F. Site-specific Determination of Best Technology		
G. Verification Monitoring Plan		

Part III. Selection of a Compliance Alternative - Meeting the Performance Standards

Permittees are required to select and implement at least one of the compliance alternatives outlined in 40 CFR Part 125.94(a). One or more of these alternatives must be used to demonstrate compliance with the performance standards for cooling water intake structures for impingement and entrainment of fish, shellfish, etc. established in the Phase II rules. (See the next part - Part IV - for a discussion of the criteria used to determine if a facility is subject to the entrainment standards.)

It is likely that some permittees will select only one of these alternatives to demonstrate compliance (e.g. flow commensurate to closed-cycle system, or generally the use of cooling towers). Other permittees may use more than one alternative to demonstrate compliance (e.g. intake flow rate reduced to 0.5 ft./sec. for impingement and installation of a technology improvement for entrainment). In addition, alternatives “C” through “F” may be met through the use of facility design and construction technologies, changes in operation at the facility, or restoration measures, or some combination of these three.

With the exception of a facility with existing cooling towers and the permittee selecting alternative “A”, a permittee may not be able (or desire) to select the compliance alternative(s) until data is collected and

studies are completed. The completed studies should facilitate the selection of the most appropriate alternative for a facility. However, Ohio EPA also believes that permittees may find it helpful to give some prior thought to their preferred compliance alternatives before completing the necessary studies so that data collection efforts and study designs might be more focused.

The compliance alternatives are as follows:

A. Flow commensurate to closed-cycle system

The permittee demonstrates that the intake flow has been reduced, or will be reduced, commensurate with a closed-cycle recirculating system. A permittee making this demonstration is deemed to have met the applicable performance standards: no data collection or studies are required; or

B. Intake flow rate reduced to 0.5 ft/sec

The permittee demonstrates that the maximum through-screen design intake velocity has been reduced, or will be reduced, to 0.5 ft/s or less. In this case, the permittee is deemed to have met the impingement mortality performance standards. However, selecting this compliance alternative does not address entrainment issues, and the permittee would still need to select a compliance alternative to meet the performance standards for entrainment, if applicable. (See Part IV of this guidance document for performance standards regarding entrainment.); or

C. Existing design, etc. meets performance standards

The permittee demonstrates that the existing design and construction technologies, operational measures, and/or restoration measures meet the performance standards; or

D. Will implement improvements/changes, etc. to meet performance standards

The permittee demonstrates that design and construction technologies, operational measures, and/or restoration measures have been selected, and will be implemented that will meet the performance standards; or

E. Will implement a previously-approved technology

The permittee demonstrates that a previously-approved design and construction technology has been installed, or will be installed, and properly operated and maintained; or

F. Will implement site-specific determination of best technology available

The permittee demonstrates that design and construction technologies, operational measures, and/or restoration measures that the Director has determined to be the best technology available to minimize adverse environmental impact have been selected, installed, and are being properly operated and maintained, or will be installed and properly operated and maintained. This option is a site-specific determination for facilities demonstrating that costs of compliance with other alternatives are significantly greater than the costs considered by U.S. EPA in developing the performance standards, or the costs are significantly greater than the benefits.

Part IV. Performance Standards for Entrainment

If a permittee chooses compliance alternative “A” in Part III (Flow commensurate to closed-cycle system), the facility is deemed to have met the performance standards for entrainment and the questions below can be ignored. For all other compliance alternatives, the questions below should be answered to determine if the facility is subject to the entrainment performance standard:

- A. Is the facility’s capacity utilization rate 15 percent or greater? _____
- B. 1. Does the facility use cooling water withdrawn from Lake Erie? _____); or
- 2. Does the facility use cooling water withdrawn from a freshwater river or stream? _____. If “yes”, what is the mean annual flow of the river or stream immediately upstream of the cooling water intake structure? _____ (See the document entitled, “_____” at _____ for the mean annual flow of the river.) Is the design intake flow of the cooling water intake structure (see Part I.B.) greater than five percent of mean annual flow of the river? _____

If the answers to question “A” and question “B.1.” or question “B.2.” are both “yes”, the facility is subject to performance standards for entrainment.

Part V. Source Water Physical Data [40 CFR 122.21(r)(2)]

All Phase II facilities are required to provide the source water physical data specified in 40 CFR 122.21(r)(2). These data are needed to characterize the facility, and evaluate the type of waterbody and species potentially affected by the cooling water intake structure. The following information must be submitted:

- A. A narrative description and scaled drawings showing the physical configuration of all source water bodies used by the facility and the area of influence of the cooling water intake structure;
- B. Identification and characterization of the source waterbody’s hydrological and geomorphological features; and
- C. Locational maps.

Part VI. Cooling Water Intake Structure Data [40 CFR 122.21(r)(3)]

All Phase II facilities are required to provide the cooling water intake structure data specified in 40 CFR 122.21(r)(3). This information is needed to characterize the cooling water intake structure. The following information must be submitted:

- A. A narrative description of the configuration and location of each cooling water intake structure;
- B. Latitude and longitude in degrees, minutes, and seconds for each cooling water intake structure;
- C. A narrative description of the operation of each cooling water intake structure;
- D. A flow distribution and water balance diagram; and
- E. Engineering drawings of the cooling water intake structure.

In addition, Ohio EPA suggests that the permittee include in this section the through-screen intake velocity as well as a detailed description of the method used for the velocity measurement.

Part VII. Cooling Water System Data [40 CFR 122.21(r)(5)]

All Phase II facilities are required to provide the cooling water system data specified in 40 CFR 122.21(r)(5). This information is needed to characterize the operation of cooling water systems and their relationship to the cooling water intake structure(s) at the facility. The following information must be submitted:

- A. A narrative description of the operation of the cooling water system; and
- B. Design and engineering calculations prepared by a qualified professional and supporting data to support the description required above.

Part VIII. Comprehensive Demonstration Study [40 CFR 125.95(b)]

The purpose of the Comprehensive Demonstration Study (CDS) is to characterize impingement mortality and entrainment, to describe the operation of cooling water intake structures, and to confirm that the technologies, operational measures, and/or restoration measures selected and implemented (or which will be implemented) meet the applicable requirements of the selected compliance alternative as defined in § 125.94. **Check Table 2 at the end of this guidance document to determine which of the following components of the CDS (“A” through “G”) are required for each of the compliance alternatives.** (If the permittee intends to comply with § 125.94 by reducing its flow commensurate with a closed-cycle, recirculating system - compliance alternative “A” in Part III of this document - the CDS is not required.)

A. Proposal for Information Collection [§125.95(b)(1)]

The Proposal for Information Collection (or PIC) should be submitted prior to the start of information collection activities required for the Comprehensive Demonstration Study, in accordance with §125.95(b)(1). The PIC is intended to give Ohio EPA an opportunity to provide feedback to the permittee regarding the data collection efforts, the sampling plan, and the use of historical data. Ohio EPA will review the PIC, and provide comments and suggestions to the permittee, making every effort to do so within 60 days of submittal. (See Table 2 for a listing of those compliance alternatives requiring a PIC.)

U.S. EPA has recommended that the PIC is submitted for review at least 15 months prior to the submittal of the Comprehensive Demonstration Study. However, this time period would need to be extended if the permittee expects to undertake more than one year of data collection. The PIC must include the following sections:

1. Technologies, Operational Measures and Restoration Measures - A description of the proposed and/or implemented technologies, operational measures, and/or restoration measures to be evaluated in the Comprehensive Demonstration Study;
2. Historical Studies - A list and description of any historical studies characterizing impingement mortality and entrainment and/or the physical and biological conditions in the vicinity of the cooling water intake structures and their relevance to the proposed Comprehensive Demonstration Study. If the permittee proposes to use existing data, the permittee must demonstrate the extent to which the data are representative of current conditions and that the data were collected using appropriate quality assurance/quality control procedures;
3. Consultations with Fish and Wildlife Agencies - A summary of any past or ongoing consultations with appropriate fish and wildlife agencies that are relevant to this Comprehensive Demonstration Study; and
4. Sampling Plan - A sampling plan for any new field studies proposed to conduct in order to ensure that the permittee has sufficient data to develop a scientifically valid estimate of impingement mortality and entrainment at the site. The sampling plan must document all methods and quality assurance/quality control procedures for sampling and data analysis.

B. Source Waterbody Flow Information [§125.95(b)(2)]

The following source waterbody flow information is required, except for facilities whose cooling water intake structure is located in Lake Erie:

1. Cooling water intake structure located in a freshwater river or stream. If the cooling water intake structure is located in a freshwater river or stream, provide the annual mean flow of the waterbody; and
2. Cooling water intake structure located in a lake. If the cooling water intake structure is located in a lake (other than Lake Erie) and the permittee proposes to increase the design

intake flow, the permittee shall provide a description of the thermal stratification in the waterbody, and any supporting documentation and engineering calculations.

C. Impingement Mortality and/or Entrainment Characterization Study [§125.95(b)(3)]

The purpose of an Impingement Mortality and/or Entrainment Characterization Study is to provide information to support the development of a calculation baseline for evaluating impingement mortality and entrainment and to characterize current impingement mortality and entrainment. The documentation may include historical data, however, that data must be representative of the current operation of the facility and of current biological conditions at the site.

** Impingement data is not required for facilities selecting compliance alternative “B” in Part III of this document - reducing intake velocity to 0.5 feet/second.) **

** The entrainment characterization portion of this study is not required if the permittee has determined that the facility is not subject to the performance standards for entrainment. See Part IV.**

This section shall include the following information related to impingement and entrainment:

1. Taxonomic identification of all life stages of fish, shellfish, and any species protected under Federal or State law that are in the vicinity of the cooling water intake structure(s) and are susceptible to impingement and entrainment;
2. A characterization of all life stages of fish, shellfish, and any species protected under Federal or State law identified in the requirement above; and
3. Documentation of the current impingement mortality and entrainment of all life stages of fish, shellfish, and any species protected under Federal or State law and an estimate of impingement mortality and entrainment to be used as the calculation baseline.

D. Technology and Compliance Assessment Information [§ 125.95(b)(4)]

1. Design and Construction Technology Plan.

If the permittee has chosen to use design and construction technologies and/or operational measures, in whole or in part to meet the requirements of compliance alternative “C” or “D”, the permittee must submit a Design and Construction Technology Plan to the Director for review and approval. In the plan, the permittee shall include the capacity utilization rate for the facility and provide supporting data (including the average annual net generation of the facility in MWh) measured over a five year period (if available) of representative operating conditions and the total net capacity of the facility (in MW) and underlying calculations. The plan shall explain the technologies and/or operational measures which are in place and/or which have been selected to meet the requirements in § 125.94 and shall contain the following information:

- a. a narrative description of the design and operation of all design and construction technologies and/or operational measures (existing or proposed) that are in place or will be used to reduce impingement mortality;
- b. a narrative description of the design and operation of all design and construction technologies and/or operational measures (existing or proposed), that are in place or will be used to reduce entrainment;
- c. calculations of the reduction in impingement mortality and entrainment of all life stages of fish and shellfish that would be achieved by the technologies and/or operational measures that have been selected; and
- d. design and engineering calculations, drawings, and estimates prepared by a qualified professional to support the description required by paragraphs a, b, and c above.

In general, a permit-to-install application will not be required for the installation or modification of design and construction technologies such as screens. However, permittees should check with the appropriate Ohio EPA district office for confirmation. Permittees should consult with staff in Ohio EPA's 401/Wetland Section to determine the need for a 401 certification. (See information at:

<http://www.epa.state.oh.us/dsw/401/401WetlandSection.html>

2. Technology Installation and Operation Plan.

If the permittee has chosen the compliance alternative "C", "D", "E", or "F" and uses or will use design and construction technologies and/or operational measures in whole or in part to comply with the selected compliance alternative, the permittee must include the following information for review and approval by the Director:

- a. a schedule for the installation and maintenance of any new design and construction technologies;
- b. a list of operational and other parameters to be monitored, and the location and frequency that the permittee will monitor them;
- c. a list of activities that the permittee will undertake to ensure, to the degree practicable, the efficacy of installed design and construction technologies and operational measures, and the schedule for implementing them;
- d. a schedule and methodology for assessing the efficacy of any installed design and construction technologies and operational measures in meeting applicable performance standards or site-specific requirements; and
- e. if compliance alternative "E" in Part III of this guidance document is chosen, documentation that the appropriate site conditions exist at the facility in accordance with § 125.99(a) or (b).

E. Restoration Plan [§ 125.95(b)(5)].

Restoration of fish and shellfish species is included as option for permittees in meeting the performance standards, and restoration must take place within the waterbody or watershed of the facility. If the permittee proposes to use restoration measures, in whole or in part, to meet the selected compliance alternative, the permittee must submit the following information as part of the application for review and approval by the Director:

1. a demonstration that the use of design and construction technologies and/or operational measures have been evaluated and an explanation of the determination that restoration would be more feasible, cost-effective, or environmentally desirable. In making this demonstration, the permittee must show that the most cost effective design and construction technologies and/or operational measures have been included in the evaluation;
2. a narrative description of the design and operation of all restoration measures (existing and proposed) that the permittee has in place or will use to produce fish and shellfish;
3. quantification of the ecological benefits of the proposed restoration measures;
4. design calculations, drawings, and estimates to document that the proposed restoration measures in combination with design and construction technologies and/or operational measures, or alone, will produce ecological benefits (fish and shellfish), at a level that is substantially similar to the level which would be achieved by meeting the applicable performance standards for this facility, or that satisfies alternative site-specific requirements in accordance with compliance alternative “F” in Part III of this guidance document;
5. a plan utilizing an adaptive management method for implementing, maintaining, and demonstrating the efficacy of the restoration measures the permittee has selected and for determining the extent to which the restoration measures, or the restoration measures in combination with design and construction technologies and operational measures, have met the applicable requirements as described in paragraph 4 above regarding ecological benefits. This plan must include:
 - a. a monitoring plan that includes a list of the restoration parameters that will be monitored, the monitoring frequency, and the criteria for evaluating success of each parameter;
 - b. a list of activities which will be undertaken to ensure the efficacy of the restoration measures, a description of the linkages between these activities and the parameters included in the monitoring plan, and an implementation schedule; and
 - c. a process for revising the Restoration Plan as new information becomes available, including monitoring data.
6. a summary of any past or ongoing consultation with appropriate Federal, State, and Tribal fish and wildlife management agencies on the permittee’s use of restoration measures;
7. If requested by the Director, a peer review of the items that the permittee submits for the Restoration; and

8. a description of the information to be included in a bi-annual (once every two years) status report to the Director.

F. Information to Support Site-specific Determination of Best Technology Available for Minimizing Adverse Environmental Impact [§ 125.95(b)(6)].

** This section of the CDS is required only if the permittee has selected compliance alternative “F” as defined in Part III of this document.**

There are two possible scenarios for a permittee requesting this compliance alternative. If the permittee believes that the costs of complying with the applicable performance standards are significantly greater than those considered by the Administrator for a facility like the permittee’s in establishing the applicable performance standards (**cost-cost test**), the permittee may request a site-specific determination of best technology available for minimizing adverse environmental impact. The permittee is required to provide to the Director the information specified in paragraphs 1. and 3. below.

Under the second scenario, if the permittee believes that the costs of complying with the applicable performance standards are significantly greater than the benefits of meeting the applicable performance standards (**cost-benefit test**), the permittee may also request a site-specific determination of best technology available for minimizing environmental impact. For the cost-benefit test, the permittee shall provide the information specified in paragraphs 1., 2., and 3. below.

1. Comprehensive Cost Evaluation Study.

The permittee must perform and submit the results of a Comprehensive Cost Evaluation Study, that includes:

- a. engineering cost estimates in sufficient detail to document the costs of implementing the most cost effective design and construction technologies, operational measures, and/or restoration measures at the facility that would be needed to meet the applicable performance standards of § 125.94(b);
- b. a demonstration that the costs documented above significantly exceed either those considered by the Administrator in establishing the applicable performance standards or the benefits of meeting the applicable performance standards. Calculation of total costs of compliance based upon the cost estimates considered by the Administrator must be based upon the methodology shown on pages 41644 through 41647 of the July 9, 2004 issue of the Federal Register. All calculations must be provided; and
- c. engineering cost estimates in sufficient detail to document the costs of implementing the design and construction technologies, operational measures, and/or restoration measures in permittee’s Site-Specific Technology Plan developed in accordance with paragraph F.3. below.

2. Benefits Valuation Study.

If the permittee is seeking a site-specific determination of best technology available for minimizing adverse environmental impact because of a belief that costs are significantly greater than the benefits of meeting the applicable performance standards of § 125.94(b) at the facility, the permittee must use a comprehensive methodology to fully value the impacts of impingement mortality and entrainment at the site and the benefits achievable by meeting the applicable performance standards. In addition to the valuation estimates, the benefits study shall include the following:

- a. a description of the methodology(ies) used to value commercial, recreational, and ecological benefits;
- b. documentation of the basis for any assumptions and quantitative estimates;
- c. an analysis of the effects of significant sources of uncertainty on the results of the study;
- d. if requested by the Director, a peer review of the items that the permittee submits in the Benefits Valuation Study; and
- e. a narrative description of any non-monetized benefits that would be realized at the site if the permittee were to meet the applicable performance standards and a qualitative assessment of their magnitude and significance.

3. Site-Specific Technology Plan.

Based on the results of the Comprehensive Cost Evaluation Study and the Benefits Valuation Study, if applicable, the permittee shall submit a Site-Specific Technology Plan to Ohio EPA for review and approval. The plan shall contain the following information:

- a. a narrative description of the design and operation of all existing and proposed design and construction technologies, operational measures, and/or restoration measures that have been selected to meet compliance alternative “F”;
- b. an engineering estimate of the efficacy of the proposed and/or implemented design and construction technologies or operational measures, and/or restoration measures;
- c. a demonstration that the proposed and/or implemented design and construction technologies, operational measures, and/or restoration measures achieve an efficacy that is as close as practicable to the applicable performance standards; and
- d. design and engineering calculations, drawings, and estimates prepared by a qualified professional to support the elements of the Site-Specific Technology Plan.

G. Verification Monitoring Plan.

** If the selected compliance alternative is “A”, the information requested in this section is not required. If the selected compliance alternative is “B”, the information requested in this section is not required, provided the facility is not subject to the performance standards for entrainment. **

If the permittee will meet the selected compliance alternative by using construction technologies and/or operational measures, a plan must be submitted for conducting, at a minimum, two years of monitoring to verify the full-scale performance of the proposed or already implemented technologies and/or operational measures. The verification study shall begin once the design and construction technologies and/or operational measures are installed and continue for a period of time that is sufficient to demonstrate to the Director whether the facility is meeting the applicable performance standards or site-specific requirements developed pursuant to compliance alternative “F”. The plan shall provide the following:

1. a description of the frequency and duration of monitoring, the parameters to be monitored, and the basis for determining the selection of parameters and the frequency and duration for monitoring.
2. a proposal on how naturally moribund fish and shellfish that enter the cooling water intake structure would be identified and taken into account in assessing success in meeting the performance standards.
3. a description of the information to be included in a bi-annual (once every two years) status report to the Director.

Table 2. Summary of Information Required for Each Compliance Alternative

- The numbering system in the table for each information category, plan or study corresponds to the numbering system found above on pages 6 - 14 in this guidance document.
- The definition of each compliance alternative, designated by letters “A” through “F”, is provided at the bottom of this table.

Information Category, Plan, or Study	Purpose of Information	Information Required for Compliance Alternative ? ^a					
		A	B	C	D	E	F
V. Source Water Physical Data	characterize facility, evaluate type of waterbody and species potentially affected	yes	yes	yes	yes	yes	yes
VI. Cooling Water Intake Structure Data	characterize cooling water intake structure	yes	yes	yes	yes	yes	yes
VII. Cooling Water System Data	characterize operation of cooling water systems	yes	yes	yes	yes	yes	yes
VIII. Comprehensive Demonstration Study (CDS) ^b	characterize impingement mortality and entrainment, and demonstrate that selected technologies, operational measures, and/or restoration measures will meet requirements of selected compliance alternative	no	no	yes	yes	yes	yes
A. Proposal for Information Collection ^b	indicates the kinds of information which will be collected for the CDS	no	no	yes	yes	no	yes
B. Source Waterbody Flow Information ^b	provide flow information if waterbody is a stream; information on thermal stratification if waterbody is a lake; NOT required if waterbody is Lake Erie	no	no	yes	yes	no	yes

Information Category, Plan, or Study	Purpose of Information	Information Required for Compliance Alternative ? ^a					
		A	B	C	D	E	F
C. Impingement Mortality and/or Entrainment Characterization Study ^b	provide information for determining a calculation baseline for impingement and entrainment, and characterize current impingement and entrainment	no	no	yes	yes	no	yes
D. Technology and Compliance Assessment Information ^b							
1. Design and Construction Technology Plan	explain the technologies and/or operational measures which are in place and/or have been selected to meet requirements of selected compliance alternative	no	no	yes	yes	no	no
2. Technology Installation and Operation Plan	provide schedule for installation and maintenance of any new design and construction technologies	no	no	yes	yes	yes	yes
E. Restoration Plan ^{b, c}	provide information showing how restoration measures (in whole or in part) will meet compliance alternative selected	no	no	yes	yes	no	yes
F. Information to Support Site-specific Determination ^b							
1. Comprehensive Cost Evaluation Study	provide information demonstrating that actual costs of complying with performance standards are significantly greater than costs considered by U.S. EPA	no	no	no	no	no	yes

Information Category, Plan, or Study	Purpose of Information	Information Required for Compliance Alternative ? ^a					
		A	B	C	D	E	F
2. Benefits Valuation Study	provide information demonstrating that actual costs of complying with performance standards are significantly greater than benefits	no	no	no	no	no	yes -
3. Site-Specific Technology Plan	provide information regarding the design and construction technologies, operational measures, and/or restoration measures comprising the site-specific option	no	no	no	no	no	yes
G. Verification Monitoring Plan ^b	provide monitoring data for the full-scale performance of technologies and/or operational measures	no	no	yes	yes	yes	yes

^a Compliance alternatives are designated by letters “A” through “F” as follows:

- “A” - Flow of cooling water intake structure commensurate to closed-cycle system to meet the performance standards for impingement and entrainment.
- “B” - Intake flow rate reduced to 0.5 ft/sec to meet requirements for impingement only. Compliance alternative “C”, “D”, “E”, or “F” must be selected to meet performance standards for entrainment.
- “C” - Existing design and construction technologies, operational measures, and/or restoration measures meet the performance standards for impingement and entrainment.
- “D” - Permittee will implement design and construction technologies, operational measures, and/or restoration measures that will meet the performance standards for impingement and entrainment.
- “E” - Permittee will implement a previously-approved technology to meet the performance standards for impingement and entrainment.
- “F” - Permittee will implement best technology available based upon a site-specific determination to meet the performance standards for impingement and entrainment.

- ^b Entrainment data and/or measures to address entrainment are required only if the facility is subject to the performance standards for entrainment. See Part IV of this guidance document to determine applicability.
- ^c Information pertaining to restoration is required only if the permittee has chosen to meet the selected compliance alternative, in whole or in part, by implementing restoration measures.