INSTRUCTIONS FOR INDUSTRIAL WORKSHEET 11.0
COOLING WATER INTAKE INFORMATION

This worksheet **is required** for all new, renewal, and amendment TPDES permit applications that meet the conditions outlined in Technical Report 1.0, Item 12. Completion of this worksheet satisfies the application requirements in 40 CFR §§ 122.21(r)(2), (3), (5), and (8). Application waivers in accordance with 40 CFR § 125.95 will not be applied to Worksheet 11.0.

Indicate by checking yes or no if the facility withdraws or proposes to withdraw surface water for cooling purposes. If **yes**, complete this worksheet; otherwise, stop here.

1. COOLING WATER SYSTEM DATA

a. The Cooling Water System Data table must be completed with the following information regarding the facility cooling water system.

- Total DIF - Enter the total DIF for the cooling water system in MG. The total DIF is the value assigned to the maximum instantaneous rate of flow of water the cooling water intake system is capable of withdrawing from a source waterbody. The facility's cooling water system total DIF may be adjusted to reflect permanent changes to the maximum capabilities of the cooling water intake system to withdraw cooling water, including pumps permanently removed from service, flow limit devices, and physical limitations of the piping. The cooling water system's total DIF does not include values associated with emergency and fire suppression capacity or redundant pumps (e.g., back-up pumps).
- Total AIF - Enter the total AIF for the cooling water system in MG. The total AIF is the average volume of water withdrawn on an annual basis by all facility CWIS(s) over the past three years (a minimum of 36 months), measured at a location within the CWIS that the Director deems appropriate. The calculation of actual intake flow includes days of zero flow. The cooling water system total AIF does not include flows associated with emergency and fire suppression capacity.
- Intake Flow Uses - Enter the intake flow uses for the cooling water system. Provide the percent contribution of intake flow uses for contact cooling water, non-contact cooling water, process uses, and other uses. The percentages must total 100%.

b. Include the following information as an attachment to the application and provide the attachment number in the space provided in the application.

i. A narrative description of the design and operation of the facility's cooling water system and its relationship to the CWIS(s). This description must include seasonal changes in operation, if applicable, and information regarding reductions in total water withdrawals including cooling water intake flow reductions already achieved through minimization of process water withdrawals.

ii. A scaled map depicting the location of each CWIS, impoundment, intake pipe, and canals, pipes, or waterways used to convey cooling water to, or within, the cooling water system. Provide the latitude and longitude for each CWIS and any intake pipe(s) on the map. Indicate the position of the intake pipe within the water column.

iii. A description of water reuse activities, if applicable, which include any cooling water reused as process water, process water reused for cooling, and/or the use of gray water for cooling; a description of reductions in total water withdrawals including cooling water intake flow reductions already achieved through minimized process water withdrawals; a description of any cooling water that is used in a manufacturing process either before or after it is used for cooling, including other recycled process water flows; the proportion of the source waterbody withdrawn (on a monthly basis).

iv. Design and engineering calculations of the cooling water system prepared by a qualified professional, and data to support the information provided in above item a.

v. Previous year (a minimum of 12 months) of cooling water system total AIF data, measured at a frequency of 1/day, on days of operation. This data can be estimated.

vi. A narrative description of existing or proposed impingement and entrainment technologies or operation measures, and a summary of their performance, including, but not limited to, reductions in impingement mortality and entrainment due to intake location and reductions in total water withdrawals and usage. The description should also include discussion of impacts on impingement mortality and entrainment resulting from periods of unusually high or low flow, if any, during the years under consideration for mean annual flow.

2. COOLING WATER INTAKE STRUCTURE(S) DATA

a. The Cooling Water Intake Structure(s) Data table must be completed with the following information regarding each individual CWIS that provides cooling water to the facility's cooling water system (this includes primary and make-up CWIS(s))

- CWIS ID - Enter the CWIS ID number. The CWIS ID number should correspond to each CWIS identified on the USGS map provided for item 1.b.ii above.
- DIF - Provide the DIF for the CWIS(s) in MG. The CWIS DIF means the value assigned during the CWIS design to the maximum instantaneous rate of flow of water the cooling water intake system is capable of withdrawing from a source waterbody. The facility's CWIS DIF may be adjusted to reflect permanent changes to the maximum capabilities of the cooling water intake system to withdraw cooling water, including pumps permanently removed from service, flow limit devices, and physical limitations of the piping. CWIS DIF does not include values associated with emergency and fire suppression capacity or redundant pumps (i.e., back-up pumps).
- AIF - Provide the AIF for the CWIS(s) in MG. The CWIS AIF means average volume of water withdrawn on an annual basis by the CWIS over the past three years (a minimum of 36 months). The CWIS AIF is measured at a location within the CWIS that the Director deems appropriate. The calculation of actual intake flow includes days of zero flow. CWIS AIF does not include flows associated with emergency and fire suppression capacity.
- Intake Flow Uses - Enter the cooling water structure intake flow uses. Provide the percent contribution of intake flow uses for contact cooling water, non-contact cooling water, process uses, and other uses. The percentages must total 100%.
- Latitude - Provide the latitude of the CWIS's intake pipe in degrees, minutes, and seconds to the nearest second or decimal degrees to at least six places. Visit the TCEQ Website at https://www.tceq.texas.gov/gis/sqmaview.html for help obtaining the latitude.
- Longitude - Provide the longitude of the CWIS's intake pipe in degrees, minutes, and seconds to the nearest second or decimal degrees to at least six places. Visit the TCEQ Website at https://www.tceq.texas.gov/gis/sqmaview.html for help obtaining the longitude.

b. Include the following information as an attachment to the application and provide the attachment number in the space provided in the application.

i. A narrative description of the configuration and operation, including any seasonal changes, for each CWIS and where it is located in the waterbody and in the water column.

ii. Engineering calculations for each CWIS.

3. SOURCE WATER PHYSICAL DATA

a. The Source Waterbody Data table must be completed with the following information regarding the CWIS source waterbody (this includes primary and make-up CWIS(s))

- Source waterbody - Provide the name(s) of the source water for the CWIS(s).
- Mean annual flow - Enter the mean annual flow of the source waterbody(s), measured in the vicinity of the intake pipe.
- Determination source - Provide the data source used to determine the mean annual flow of the source waterbody(s).

b. Include the following information as an attachment to the application and provide the attachment number in the space provided in the application.

   i. A narrative description of the source water for each CWIS, including areal dimensions, depths, salinity and temperature regimes, and other documentation that supports your determination of the waterbody type where each cooling water intake structure is located.

   ii. A narrative description of the source waterbody's hydrological and geomorphological features.

   iii. Scaled drawings showing the physical configuration of all source water bodies used by the facility, including the source waterbody's hydrological and geomorphological features. Note: The source waterbody's hydrological and geomorphological features may be included on the map submitted for item 1.b.ii of this worksheet.

   iv. A description of the methods used to conduct any physical studies to determine your intake's area of influence within the waterbody and the results of such studies.

4. OPERATIONAL STATUS

a. Indicate by checking **yes** or **no** if this application is for a power production or steam generation facility.

   If you checked **yes**, include the following information as an attachment to the application, and provide the attachment number in the space provided in the application. Otherwise proceed to item b.

   i. A description of the operating status of each individual unit, including age of each unit, capacity utilization rate (or equivalent), for the previous five years (a minimum of 60 months)

   ii. A description of any extended or unusual outages that significantly affect current data for flow, impingement, entrainment, or other factors

   iii. Identify any operating unit with a capacity utilization rate of less than 8 percent averaged over a contiguous period of two-year (a minimum of 24 months)

   iv. Describe any major upgrades completed within the last 15 years, including but not limited to boiler replacement, condenser replacement, turbine replacement, or changes to fuel type

b. Process Units

   i. Indicate by checking **yes** or **no** if this application is for a facility which has process units that use cooling water other than for power production or steam generation.

   ii. If this is an application for a facility which has process units that use cooling water other than for power production or steam generation, indicate by checking **yes** or **no** if the facility uses or intends to use reductions in flow or changes in operations to meet the requirements of 40 CFR 125.94(c)?

      If **yes**, include the following information as an attachment to the application, provide the attachment number in the space provided in the application. Otherwise, proceed to item c.

      1. A description of individual production processes and product lines
      2. A description of the operating status, including age of each line and seasonal operation
      3. Describe any extended or unusual outages that significantly affect current data for flow, impingement, entrainment, or other factors

4. Describe any major upgrades completed within the last 15 years and plans or schedules for decommissioning or replacement of process units or production processes and product lines

c. Indicate by checking **yes** or **no** if this application is for a nuclear power production facility.

   If **yes**, include a description of completed, approved, or scheduled upgrades and Nuclear Regulatory Commission relicensing status of each unit at the facility as an attachment and provide the attachment number in the space provided in the application.

d. Indicate by checking **yes** or **no** if this application is for a manufacturing facility.

   If **yes**, include descriptions of current and future production schedules and any plans or schedules for any new units planned within the next five years (a minimum of 60 months) as an attachment and provide the attachment number in the space provided in the application.

INSTRUCTIONS FOR INDUSTRIAL WORKSHEET 11.1
IMPINGEMENT MORTALITY

This worksheet **is required** for all new, renewal, and amendment TPDES permit applications that meet the conditions outlined in Technical Report 1.0, Item 12.

Complete one copy of this worksheet for each individual CWIS the facility uses or proposes to use. Completion of this worksheet satisfies application requirements in 40 CFR § 122.21(r)(6).

Enter the CWIS ID No. into the space provided in the application. The CWIS ID number(s) should correspond to the CWIS(s) identified on the USGS topographic map provided for Worksheet 11.0, item 1.b.ii. If the facility does not withdraw or propose to withdraw surface water for cooling purposes through a CWIS, enter N/A and stop here.

1. IMPINGEMENT COMPLIANCE TECHNOLOGY OPTION SELECTION

Indicate with a checkmark the method of compliance with the Impingement Mortality Standard selected for the CWIS and continue.

If you selected 0.5 ft/s Through-Screen Design Velocity [40 CFR § 124.94(c)(2)] or existing offshore velocity cap [40 CFR § 124.94(c)(4)] as the method of compliance, proceed directly to Worksheet 11.2; otherwise, continue to item 2.

2. IMPINGEMENT COMPLIANCE TECHNOLOGY INFORMATION

Complete the following sections based on the selection made for item 1 above. Complete only the sections that apply to your facility CWIS.

a. CCRS [40 CFR § 124.94(c)(1)]

- Indicate with a checkmark if the CWS meets the definition of CCRS located at 40 CFR 125.91(c) and provide a response to the questions within this section.

  i. Indicate by checking **yes** or **no** if the facility uses or proposes to use a CWIS to replenish water losses to the CWS.

  If **no**, proceed to **item ii**. If **yes**, provide the following information as an attachment and continue

  Attachment:

  1. Provide the CWIS ID. The CWIS ID(s) should correspond to the CWIS(s) identified on the USGS map provided for Worksheet 11.0, item 1.b.ii.
  2. Previous year (a minimum of 12 months) of intake flow data, measured at a frequency of 1/day for any CWIS used for make-up intake flows to replenish cooling water losses, excluding intakes for losses due to blowdown, drift, or evaporation
  3. A detailed narrative description of any physical or operational measures taken to minimize make-up withdraws.

  Note: You do not need to complete a separate Worksheet 11.1 for each CWIS listed in this section.

  ii. Indicate by checking yes or no if the facility uses or proposes to use cooling towers.

  If **no**, proceed to Worksheet 11.2. If **yes**, complete the rest of the section and then proceed to Worksheet 11.2.

  1. Enter the average number of cycles of concentration (COCs) prior to blowdown for each cooling tower into Table 22. Additionally, provide COC monitoring data for the previous year (a minimum of 12 months) for each cooling tower, measured at a frequency of 1/day, as an

attachment to the application and include the attachment number in the space provided in the application.

2. Enter the maximum number of COCs that each cooling tower can accomplish based on the design of the system.
3. Describe conditions that may limit the number of COCs prior to blowdown, if any, including but not limited to permit conditions in the space provided.

b. 0.5 ft/s Through Screen Actual Velocity [40 CFR § 124.94(c)(3)]

Provide intake flow measurement monitoring data for the previous year (a minimum of 12 months), taken at a frequency of 1/day, as an attachment and include the attachment number in the space provided in the application. Proceed to Worksheet 11.2.

c. Modified traveling screens [40 CFR § 124.94(c)(5)]

Provide the following information as an attachment to the application and include the attachment number in the space provided in the application. Proceed to Worksheet 11.2.

i. A description of the modified traveling screens and associated equipment.

ii. A site-specific impingement technology performance optimization study that includes a narrative description of the biological data collection methods.

iii. Biological sampling data from the previous two years (a minimum of 24 months).

d. System of technologies [40 CFR § 124.94(c)(6)] or impingement mortality performance standard [40 CFR § 124.94(c)(7)]

Provide the following information as an attachment to the application and include the attachment number in the space provided in the application. Proceed to Worksheet 11.2.

i. A description of the system of technologies used or proposed for use by the facility to achieve compliance with the impingement mortality standard.

ii. A site-specific impingement technology performance optimization study that includes a narrative description of the biological data collection methods.

iii. Biological sampling data from the previous two years (a minimum of 24 months). Refer to 40 CFR § 122.21(r)(6) for a list of sampling requirements.

e. De minimis rate of impingement [40 CFR § 124.94(c)(11)]

Provide the following information and proceed to Worksheet 11.2.

i. Provide monitoring data from the previous year (a minimum of 12 months) of intake flow measured at a frequency of 1/day on days of operation as an attachment to the application and include the attachment number in the space provided in the application.

If the rate of impingement caused by the CWIS is extremely low (as an organism or age-one equivalent count), include supplemental information to Worksheet 11.0, item 2.b.vi. to support as an attachment to the application and provide the attachment number in the space provided in the application.

This information should take into account factors such as the CWIS screen mesh opening size*, data collection, the zone of influence of the CWIS for clearly defined life stages and taxa of impinge-able organisms, and population abundances within the zone of influence of the CWIS.

*To clarify, where a CWIS screen has an opening size greater than 0.56 inches, the susceptibility to impingement of certain life stages of fish and shellfish should be accounted for when reporting information required under 40 CFR § 122.21(r), and likewise where opening sizes are less than 0.56 inches. In no case should an entrainable life stage of fish or shellfish be represented as impingeable or vice versa.

f. Low capacity utilization power-generation facilities [40 CFR § 124.94(c)(12)]

Provide data for the previous two years (a minimum of 24 months) of monthly utilization data for each operating unit as an attachment and include the attachment number in the space provided in the application. Proceed to Worksheet 11.2.

INSTRUCTIONS FOR INDUSTRIAL WORKSHEET 11.2
SOURCE WATER BIOLOGICAL DATA

This worksheet **is required** for all new, renewal, and amendment TPDES permit applications that meet the conditions outlined in Technical Report 1.0, Item 12.

Complete one copy of this worksheet for each source waterbody of a CWIS that the facility has selected an Impingement Mortality Technology Option described at 40 CFR §§ 125.94(c)(1)-(7). Completion of this Worksheet satisfies the application requirements in 40 CFR § 122.21(r)(4).

Enter the full name of source waterbody. If the facility does not withdraw or propose to withdraw surface water for cooling purposes through a CWIS, enter N/A and stop here.

1. SPECIES MANAGEMENT

The following is required for new and existing facilities.

a. Indicate by checking **yes** or **no** if the facility has obtained an incidental take permit for its cooling water intake structure(s) from the U.S. Fish and Wildlife Service or the National Marine Fisheries Service.

   If **yes**, any information submitted in order to obtain that permit may be used to satisfy the permit application information requirement of paragraph 40 CFR § 125.95(f). Include this information as an attachment to the application and provide the attachment number in the space provided in the application.

b. Indicate by checking **yes** or **no** if the facility requesting a waiver from application requirements at 40 CFR § 122.21(r)(4) in accordance with40 CFR § 125.95 for any CWIS(s) that withdraw from a man-made reservoir that is stocked and managed by a state or federal natural resources agency or the equivalent.

   If **yes**, include a copy of the most recent managed fisheries report, completed within the last three years, submitted to TPWD, or equivalent, as an attachment to the application and provide the attachment number in the space provided in the application. If the most recent report is older than three years, provide a detailed justification for why the information contained within the report is still valid.

c. Indicate by checking **true** or **false** if the facility has knowledge of any federally listed threatened or endangered species or critical habitat designations for the source waterbody. If the facility has no knowledge of federally listed threatened or endangered species or critical habitat designations for the source waterbody check true. If the facility has knowledge of federally listed threatened or endangered species or critical habitat designations for the source waterbody check false.

2. SOURCE WATER BIOLOGICAL DATA

New Facilities (Phase I, Track I and II)

- Provide responses to all items in this section and stop.

Existing Facilities (Phase II)

- If the answer to **1.b.** above was **no**, provide responses to all the following items and proceed to Worksheet 11.3.
- If the answer to **1.b.** was **yes** and **1.c.** was **true**, proceed to Worksheet 11.3.
- If the answer to **1.b**. was **yes** and **1.c.** was **false**, provide a response for any item below that is not contained within the most recent TPWD, or equivalent, report as an attachment to the application and enter the attachment number in the space provided. Proceed to Worksheet 11.3.

a. A list of the data requested at 40 CFR 122.21(r)(4)(ii) through (vi) that are not available and efforts made to identify sources of the data.

b. A list of species (or relevant taxa) in the vicinity of the CWIS and identify the following information regarding each species listed.

   i. all life stages and their relative abundance,

   ii. identification of all species and life stages that would be most susceptible to impingement and entrainment,

   iii. forage base,

   iv. significance to commercial fisheries,

   v. significance to recreational fisheries,

   vi. primary period of reproduction,

   vii. larval recruitment, and

   viii. period of peak abundance for relevant taxa.

c. Data representative of the seasonal and daily activities (e.g., feeding and water column migration) of biological organisms in the vicinity of the cooling water intake structure.

d. Identify and list all threatened, endangered, and other protected species that might be susceptible to impingement and entrainment at your cooling water intake structures.

e. Documentation of any public participation or consultation with federal or state agencies undertaken and provide an attachment number.

The following is required for existing facilities only:

f. Identify any protective measures and stabilization activities that have been implemented, and provide a description of how these measures and activities affected the baseline water condition in the vicinity of the intake.

g. A list of fragile species, as defined at 40 CFR 125.92(m), at the facility. The applicant need only identify those species not already identified as fragile at 40 CFR 125.92(m).

   Note: New units at an existing facility are not required to resubmit this information if the cooling water withdrawals for the operation of the new unit are from an existing intake.

INSTRUCTIONS FOR INDUSTRIAL WORKSHEET 11.3
COMPLIANCE WITH ENTRAINMENT MORTALITY STANDARD

This worksheet **is required** for all new, renewal, and amendment TPDES permit applications that meet the conditions outlined in Technical Report 1.0, Item 12.

Complete one copy of this worksheet for each individual CWIS the facility uses or proposes to use. Completion of this Worksheet satisfies the application requirements in 40 CFR § 122.21(r)(7) and (9)-(13).

Enter the CWIS ID No. into the space provided in the application. The CWIS ID number(s) should correspond to the CWIS(s) identified on the USGS map provided for Worksheet 11.0, item 1.b. If the facility does not withdraw or propose to withdraw surface water for cooling purposes through a CWIS, enter N/A and stop here.

1. APPLICABILITY

Indicate by checking **yes** or **no** if the AIF of the CWIS is greater than, or equal to, 125 MGD.

- If no, complete item 2 and stop.
- If **yes** and the facility is **seeking a waiver** from application requirements in accordance with 40 CFR § 125.95 for any CWIS(s) that withdraw from a man-made reservoir that is stocked and managed by a state or federal natural resources agency or the equivalent, complete item 2 and stop.
- If **yes** and the facility is **not seeing a waiver** from application requirements in accordance with 40 CFR § 125.95, complete item 2 and provide any required studies listed in item 3. For any required studies in section 3 that are not complete, provide a detailed explanation for the delay and an anticipated schedule for completion and submittal.

2. EXISTING ENTRAINMENT PERFORMANCE STUDIES

Include any previously conducted studies or studies obtained from other facilities addressing technology efficacy, through-facility entrainment survival, and other entrainment studies with the application. This information must include a description of each study, together with underlying data, and a summary of any conclusions or results. Enter the attachment number in the space provided in the application. Completion of this section satisfies the application requirements in 40 CFR § 122.21(r)(7).

Note: Any studies conducted at other locations must include an explanation as to why the data from other locations are relevant and representative of conditions at your facility. In the case of studies more than 10 years old, the applicant must explain why the data are still relevant and representative of conditions at the facility and explain how the data should be interpreted using the definition of entrainment at 40 CFR 125.92(h). If no existing studies are available, the facility must provide an explanation of the measures taken located any existing studies or representative data.

3. FACILITY ENTRAINMENT PERFORMANCE STUDIES

Important: Before completing the items below, note that if a facility has requested an application requirements waiver under 40 CFR § 125.95, then the facility should consider whether initiation or completion of the following items is appropriate at this time. If a waiver has not been requested or is not applicable to the facility, then any CWIS withdrawing 125 MGD from a WOTUS on an AIF basis is required to complete the following items.

For additional information regarding applicability of entrainment studies, please contact a member of the Industrial Wastewater Permits Team at (512) 239-4671.

For additional information regarding entrainment study requirements, please contact a member of the Water Quality Standards and Implementation Team at (512) 239-4671.

a. Provide an entrainment characterization study, as described at 40 CFR § 122.21(r)(9), as an attachment to the application and enter the attachment number in the space provided in the application.

b. Provide a comprehensive feasibility study, as described as 40 CFR § 122.21(r)(10), as an attachment to the application and enter the attachment number in the space provided in the application.

c. Provide a benefits valuation study, as described as 40 CFR § 122.21(r)(11), as an attachment to the application and enter the attachment number in the space provided in the application.

d. Provide a non-water quality environmental and other impacts study, as described as 40 CFR § 122.21(r)(12), as an attachment to the application and enter the attachment number in the space provided in the application.

e. Provide a peer review analysis, as described as 40 CFR § 122.21(r)(13), as an attachment to the application and enter the attachment number in the space provided.