

**AUTHORIZATION TO DISCHARGE UNDER  
THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM**

In compliance with the provisions of the Federal Clean Water Act as amended, 33 U.S.C. §§ 1251 et seq. (the “CWA”),

**Sunrise Wind LLC**

is authorized to discharge from a facility located at

**Sunrise Wind Project  
BOEM Renewable Lease Area OCS-A0487**

to receiving water named

**Atlantic Ocean**

in accordance with effluent limitations, monitoring requirements and other conditions set forth herein.

This Permit shall become effective on the first day of the calendar month immediately following 60 days after signature.<sup>1</sup>

This Permit expires at midnight, five years from the last day of the month preceding the effective date.

This Permit consists of this **cover page, Part I, Attachment A** (Biological and Thermal Monitoring Requirements), and **Part II** (NPDES Part II Standard Conditions, April 2018).

Signed this       day of

\_\_\_\_\_  
Ken Moraff, Director  
Water Division  
Environmental Protection Agency  
Region 1  
Boston, MA

<sup>1</sup> Pursuant to 40 Code of Federal Regulations (CFR) § 124.15(b)(3), if no comments requesting a change to the Draft Permit are received, the Permit will become effective upon the date of signature. Procedures for appealing EPA’s Final Permit decision may be found at 40 CFR § 124.19.

**PART I****A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS**

- During the period beginning on the effective date and lasting through the expiration date, the Permittee is authorized to discharge non-contact cooling water and filter backwash from the offshore converter station through Outfall Serial Number 001 to the Atlantic Ocean. The intake and discharge shall be limited and monitored as specified below.

Effluent Characteristic	Effluent Limitations		Monitoring Requirements <sup>1,2,3</sup>	
	Average Monthly	Maximum Daily	Measurement Frequency <sup>4</sup>	Sample Type
Effluent Flow <sup>5</sup>	5.3 MGD	7.8 MGD	Continuous	Meter
Intake pH <sup>6</sup>	Report Minimum and Maximum S.U.		2/Week	Meter
Effluent pH <sup>6</sup>	Report Minimum and Maximum S.U.		2/Week	Meter
Total Residual Oxidants (TRO) <sup>7</sup>	7.5 µg/L	13 µg/L	Continuous	Meter
Temperature	86°F	90°F	Continuous	Meter
Through-screen Intake Velocity <sup>8</sup>	---	≤0.5 fps	Continuous	Meter

**Footnotes:**

- Effluent samples shall yield data representative of the discharge. A routine sampling program shall be developed in which samples are taken at the discharge point to the receiving water, prior to co-mingling with the receiving water. Changes in sampling location must be approved in writing by the Environmental Protection Agency Region 1 (EPA). The Permittee shall report the results to EPA of any additional testing above that required herein, if testing is done in accordance with 40 CFR Part 136.
- In accordance with 40 CFR § 122.44(i)(1)(iv), the Permittee shall monitor according to sufficiently sensitive test procedures (i.e., methods) approved under 40 CFR Part 136 or required under 40 CFR chapter I, subchapter N or O, for the analysis of pollutants or pollutant parameters. A method is “sufficiently sensitive” when: 1) the method minimum level (ML) is at or below the level of the effluent limitation established in the permit for the measured pollutant or pollutant parameter; or 2) the method has the lowest ML of the analytical methods approved under 40 CFR Part 136 or required under 40 CFR chapter I, subchapter N or O for the measured pollutant or pollutant parameter. The term “minimum level” refers to either the sample concentration equivalent to the lowest calibration point in a method or a multiple of the method detection limit (MDL), whichever is higher. Minimum levels may be obtained in several ways: They may be published in a method; they may be

based on the lowest acceptable calibration point used by a laboratory; or they may be calculated by multiplying the MDL in a method, or the MDL determined by a laboratory, by a factor.

3. When a parameter is not detected above the ML, the Permittee must report the data qualifier signifying less than the ML for that parameter (e.g., < 50 µg/L, if the ML for a parameter is 50 µg/L). For calculating and reporting the average monthly concentration when one or more values are not detected, assign a value of zero to all non-detects and report the average of all the results. The number of exceedances shall be enumerated for each parameter in the field provided on every Discharge Monitoring Report (DMR).
4. Measurement frequency of 2/week is defined as the sampling of two discharge events in each seven-day calendar week. A continuous measurement frequency must be continuously measured and recorded with a meter. If no sample is collected during the measurement frequencies defined above, the Permittee must report an appropriate No Data Indicator Code.
5. Effluent flow shall be reported in million gallons per day (MGD).
6. The minimum and maximum pH sample measurement values for the month shall be reported in standard units (S.U.).
7. For the purposes of this Permit, total residual oxidants (TRO) analysis must be completed using a test method in 40 CFR Part 136 that achieves a minimum level of detection no greater than 30 µg/L. The compliance level for TRO is 30 µg/L.
8. Through-screen velocity must be measured at each intake pipe and achieved under all conditions including during periods of maximum head loss across the screens during operation of the cooling water intake structure.

**Part I.A. continued.**

2. The discharge shall not cause a violation of the water quality standards of the receiving water.
3. All existing manufacturing, commercial, mining, and silvicultural dischargers must notify EPA as soon as they know or have reason to believe (40 CFR § 122.42):
  - a. That any activity has occurred or will occur which would result in the discharge, on a routine or frequent basis, of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following “notification levels”:
    - (1) 100 micrograms per liter ( $\mu\text{g/L}$ );
    - (2) 200  $\mu\text{g/L}$  for acrolein and acrylonitrile; 500  $\mu\text{g/L}$  for 2,4-dinitrophenol and for 2-methyl-4,6-dinitrophenol; and one milligram per liter ( $\text{mg/L}$ ) for antimony;
    - (3) Five times the maximum concentration value reported for that pollutant in the permit application in accordance with 40 CFR § 122.21(g)(7); or
    - (4) Any other notification level established by EPA in accordance with 40 CFR § 122.44(f).
  - b. That any activity has occurred or will occur which would result in the discharge, on a non-routine or infrequent basis, of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following “notification levels”:
    - (1) 500  $\mu\text{g/L}$ ;
    - (2) One  $\text{mg/L}$  for antimony;
    - (3) 10 times the maximum concentration value reported for that pollutant in the permit application in accordance with 40 CFR § 122.21(g)(7); or
    - (4) Any other notification level established by EPA in accordance with 40 CFR § 122.44(f).
  - c. That they have begun or expect to begin to use or manufacture as an intermediate or final product or byproduct any toxic pollutant which was not reported in the permit application.

**B. UNAUTHORIZED DISCHARGES**

1. This Permit authorizes discharges only from the outfall(s) listed in Part I.A.1, in accordance with the terms and conditions of this Permit. Discharges of wastewater from any other point sources are not authorized by this Permit and shall be reported in accordance with Part D.1.e.(1) of the Standard Conditions of this Permit (24-hour reporting).
2. The discharge of any stormwater exposed to industrial activity on the OCS-DC platform is prohibited.

## C. SPECIAL CONDITIONS

### 1. Discharges of Chemicals and Additives

The discharge of any chemical or additive, including chemical substitution that was not reported in the application submitted to EPA or provided through a subsequent written notification submitted to EPA is prohibited. Upon the effective date of this Permit, chemicals and/or additives that have been disclosed to EPA may be discharged up to the frequency and level disclosed, provided that such discharge does not violate §§ 307 or 311 of the CWA. Discharges of a new chemical or additive are authorized under this Permit 30 days following written notification to EPA unless otherwise notified by EPA. To request authorization to discharge a new chemical or additive, the Permittee must submit a written notification to EPA in accordance with Part I.D.3 of this Permit. The written notification must include the following information, at a minimum:

- a. The following information for each chemical and/or additive that will be discharged:
  - (1) Product name, chemical formula, general description, and manufacturer of the chemical/additive;
  - (2) Purpose or use of the chemical/additive;
  - (3) Safety Data Sheet (SDS) and Chemical Abstracts Service (CAS) Registry number for each chemical/additive;
  - (4) The frequency (e.g., hourly, daily), magnitude (i.e., maximum application concentration), duration (e.g., hours, days), and method of application for the chemical/additive;
  - (5) If available, the vendor's reported aquatic toxicity (i.e., NOAEL and/or LC<sub>50</sub> in percent for aquatic organism(s)).
- b. Written rationale that demonstrates that the discharge of such chemicals and/or additives as proposed: 1) will not add any pollutants in concentrations that exceed any permit effluent limitation; and 2) will not add any pollutants that would justify the application of permit conditions different from, or in addition to those currently in this Permit.

### 2. Cooling Water Intake Structure Requirements

The design, location, construction, and capacity of the cooling water intake structure (CWIS) shall reflect the best technology available (BTA) for minimizing adverse environmental impacts from the impingement and entrainment of all life stages of fish (e.g., eggs, larvae, juveniles, and adults) by the CWIS. Nothing in this permit authorizes take for the purposes of a facility's compliance with the Endangered Species Act. The following requirements have been determined to represent the BTA for minimizing impingement and entrainment at this facility:

- a. The Permittee must design, construct, and operate the CWIS with a design through-screen intake velocity no greater than 0.5 feet per second. The Permittee must monitor velocity at the point of entry through the CWIS and report the maximum actual through-screen velocity in the monthly discharge monitoring report. See Part I.A.1 of the Permit.

- b. The Permittee must operate variable frequency drives on the seawater lift pumps to achieve a maximum daily intake flow of 7.8 million gallons per day (MGD) and a maximum average monthly flow of 5.3 MGD.
- c. The CWIS must be located at a depth between 30 to 50 feet above pre-construction seafloor grade.
- d. The Permittee shall conduct weekly visual inspections or employ remote monitoring devices to ensure that any design and construction technologies required as the BTA for the CWIS are maintained and continue to function as designed.

### 3. Ambient Monitoring

#### a. Biological Monitoring

The Permittee must conduct biological monitoring in accordance with the study design specified in Attachment A to this Permit. At a minimum, biological monitoring must be conducted over a 48-hour period each quarter at two depth zones: within the estimated Hydraulic Zone of Influence of the CWIS and the full water column. Sampling must begin the first year of full-scale operation to verify the performance of the technologies and operational measures to minimize adverse environmental impact. After four years of monitoring the Permittee may request a reduction in monitoring frequency. Monitoring must continue as specified in the Permit until written authorization by EPA is received.

#### b. Thermal Monitoring

The Permittee must conduct an ambient thermal monitoring program in accordance with the study design specified in Attachment A to this Permit. Ambient thermal monitoring must be conducted during spring of the second year of full-scale operation to verify the assumptions of the thermal model and document the extent of the thermal plume.

#### c. Ambient Monitoring Reports

The Permittee shall submit an annual report summarizing the results of the ambient monitoring effort no later than March 15<sup>th</sup> of the following year. The report shall summarize the daily and monthly effluent flow at the offshore converter station, the results of the biological monitoring as required in (a), and, when applicable, the results of the thermal monitoring as required in (b). The Permittee must submit electronic copies of this report and provide the corresponding data in .csv or .xlsx format to the NPDES Applications Coordinator as provided in Part I.D.3.

## D. REPORTING REQUIREMENTS

Unless otherwise specified in this Permit, the Permittee shall submit reports, requests, and information and provide notices in the manner described in this section.

## 1. Submittal of DMRs Using NetDMR

The Permittee shall continue to submit its monthly monitoring data in discharge monitoring reports (DMRs) to EPA electronically using NetDMR no later than the 15<sup>th</sup> day of the month following the monitoring period. NetDMR is accessible through EPA's Central Data Exchange at <https://cdx.epa.gov/>.

## 2. Submittal of Reports as NetDMR Attachments

Unless otherwise specified in this Permit, the Permittee shall electronically submit all reports to EPA as NetDMR attachments rather than as hard copies. Because the due dates for reports described in this Permit may not coincide with the due date for submitting DMRs (which is no later than the 15<sup>th</sup> day of the month following the monitoring period), a report submitted electronically as a NetDMR attachment shall be considered timely if it is electronically submitted to EPA using NetDMR with the next DMR due following the particular report due date specified in this Permit.

## 3. Submittal of Requests and Reports to EPA Water Division (WD)

- a. The following requests, reports, and information described in this Permit shall be submitted to the NPDES Applications Coordinator in EPA WD:

- (1) Transfer of Permit notice;
- (2) Request for changes in sampling location;
- (3) Request to discharge new chemicals or additives; and
- (4) Ambient Monitoring Reports

- b. These reports, information, and requests shall be submitted to EPA WD electronically at [R1NPDESReporting@epa.gov](mailto:R1NPDESReporting@epa.gov) or, if electronic mail is unavailable, by hard copy mail to the following address:

**U.S. Environmental Protection Agency  
Water Division  
NPDES Applications Coordinator  
5 Post Office Square - Suite 100 (06-03)  
Boston, MA 02109-3912**

## 4. Submittal of Reports in Hard Copy Form

- a. The following notifications and reports shall be signed and dated originals, submitted in hard copy, with a cover letter describing the submission:

- (1) Written notifications required under Part II, Standard Conditions. Beginning December 21, 2025, such notifications must be done electronically using EPA's

NPDES Electronic Reporting Tool (“NeT”), or another approved EPA system, which will be accessible through EPA’s Central Data Exchange at <https://cdx.epa.gov/>.

- b. This information shall be submitted to EPA’s Enforcement and Compliance Assurance Division (ECAD) at the following address:

**U.S. Environmental Protection Agency  
Enforcement and Compliance Assurance Division  
Water Compliance Section  
5 Post Office Square, Suite 100 (04-SMR)  
Boston, MA 02109-3912**

5. Verbal Reports and Verbal Notifications

- a. Any verbal reports or verbal notifications, if required in Parts I and/or II of this Permit, shall be made to EPA. This includes verbal reports and notifications that require reporting within 24 hours (e.g., Part II.B.4.c. (2), Part II.B.5.c. (3), and Part II.D.1.e.).
- b. Verbal reports and verbal notifications shall be made to EPA’s Southeast Massachusetts ECAD contact at:

**617-918-1510**



## ATTACHMENT A BIOLOGICAL AND THERMAL MONITORING REQUIREMENTS

### 1. Ichthyoplankton Monitoring

Ichthyoplankton monitoring will be conducted as specified in Part I.C.3 of this Permit with the primary purpose of documenting the extent of adverse impacts from entrainment at the cooling water intake structure. The intake survey area must be within the hydraulic zone of influence of the cooling water intake structure as identified in the NPDES Permit Application and in Appendix BB of the Sunrise Wind Construction and Operation Plan available at <https://www.boem.gov/renewable-energy/state-activities/sunrise-wind-construction-and-operation-plan>.

#### 1.1 Field Methods

Ichthyoplankton monitoring must be conducted at the location of the CWIS (Latitude 40.993342, Longitude -71.121229) during one, 48-hour period in each quarter beginning in the first year of full-scale operation. Quarters are defined as winter (December, January, February), Spring (March, April, May), Summer (June, July, August) and Fall (September, October, November). Sampling may be coordinated with other fisheries and benthic research monitoring.

Sampling must be performed at two depth regimes: the intake zone within the hydraulic zone of influence of the CWIS described above and the full water column (within about 15 feet of the bottom). Collection gear will be a plankton net that can be opened or closed at depth, equipped with a 0.33 mm mesh net and a calibrated flowmeter. The full water column tow will be a 61-centimeter bongo net towed in an oblique manner through the depth zone. A discrete depth plankton sampling system must be used to collect data from the intake zone. This equipment must be capable of collecting organisms within a target depth (e.g., operated with a messenger activating a double trip release mechanism (DTRM)). At each depth regime, the Permittee will collect three pseudo-replicate (sequential) samples, each with a target volume of 300 m<sup>3</sup>. Sampling will be conducted during daylight hours as well as at night. Night is defined as the period from 2+ hours after sunset to 2+ hours before sunrise. Daylight is defined as 2+ hours after sunrise to 2+ hours before sunset. Pre- and post-deployment flowmeter readings will be recorded. The nets will be washed down using filtered seawater and the contents preserved in 5 to 10 percent buffered formalin. Preserved samples will be transported to the Biological Laboratory for analysis.

#### 1.2 Laboratory Methods

In the laboratory, all eggs and larvae will be identified to the lowest practical taxon. Subsampling will be allowed so that a minimum of 200 eggs and 100 larvae are identified. For eggs it may be necessary to group some taxa due to similarities in morphology and spawning season. Larvae are typically identified to the species level. For species that have clearly defined larval life stages (e.g., yolk sac, post-yolk sac, etc.), individuals will be assigned to the appropriate life stage.

Laboratory methods will employ a quality control (QC) program in which 10% of each sorter's samples (randomly selected out of batches of 10 samples) are reexamined by a qualified

supervisor to ensure a minimum of 95% of the ichthyoplankton individuals have been removed. In addition, a randomly selected 10% of each taxonomist's samples will be reanalyzed by a senior taxonomist to ensure a minimum taxonomic accuracy of 95%.

### 1.3 Entrainment Analysis

Quarterly mean abundances will be used to calculate the number of individuals (by species, life stage, and size class) that are vulnerable to entrainment by multiplying abundance by 1) maximum permitted intake volume, and 2) actual intake volume. Study parameters therefore include time of year and abundance by species of all identifiable finfish and lobster eggs and larvae. Densities of ichthyoplankton (no./100 m<sup>3</sup>) will be multiplied by estimated volume of water withdrawn (m<sup>3</sup>) to estimate the number of ichthyoplankton entrained at the OCS-DC. The analysis will include a discussion of the variability of entrainment losses in sampling depth and date and its potential effects on the estimates of entrainment losses for key species, including American sand lance and Atlantic cod.

In addition to the analysis described above, a random sample of a maximum of 100 eggs positively identified as Atlantic cod will be genetically identified using DNA sequencing. In addition, a random sample of a maximum of 500 eggs collected during each sampling event and identified as Atlantic cod/haddock and Atlantic cod/haddock/witch flounder will be genetically identified using DNA sequencing. The estimate of total entrainment of Atlantic cod will be adjusted based on the percentage of eggs in the random samples positively identified as Atlantic cod.

### 2.0 Thermal Monitoring

Water quality monitoring will be conducted as specified in Part I.C.3 of the Permit with the primary purpose of documenting the extent of the thermal plume and verifying the assumptions of the thermal model. Additional parameters that will be measured are salinity, dissolved oxygen, and current direction. Ambient temperature monitoring must be conducted during spring of the second year following the start of full-scale operation. Sampling must be conducted within 3.1 hours before or after slack tide.

### 2.1 Field Methods

At a distance of up to 15 meters (m) from Outfall 001, average current direction of the uppermost 15 m of the water column will be measured using an Acoustic Doppler Current Profiler (ADCP). This information will be used to determine the orientation of the sampling transect. Operating along a downcurrent transect, temperature, salinity, and dissolved oxygen profiles will be collected at 5 m intervals. The length of the transect will be a minimum of 30 m and extend until two adjacent sampling points have surface temperatures within 0.1°C of each other. At each sampling location, measurements will be made at 1 m intervals using appropriate probes along a vertical profile through the uppermost 15 m of the water column.

### 2.2 Data Analysis

Geo-referenced data from the quarterly water column sampling will be plotted to document the two-dimensional behavior of the discharge plume.

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(April 26, 2018)<sup>1</sup>

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<sup>1</sup> Updated July 17, 2018 to fix typographical errors.

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A. GENERAL REQUIREMENTS

1. Duty to Comply

The Permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Clean Water Act (CWA or Act) and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or denial of a permit renewal application.

- a. The Permittee shall comply with effluent standards or prohibitions established under Section 307(a) of the Clean Water Act for toxic pollutants and with standards for sewage sludge use or disposal established under Section 405(d) of the CWA within the time provided in the regulations that establish these standards or prohibitions, or standards for sewage sludge use or disposal, even if the permit has not yet been modified to incorporate the requirement.
- b. Penalties for Violations of Permit Conditions: The Director will adjust the civil and administrative penalties listed below in accordance with the Civil Monetary Penalty Inflation Adjustment Rule (83 Fed. Reg. 1190-1194 (January 10, 2018) and the 2015 amendments to the Federal Civil Penalties Inflation Adjustment Act of 1990, 28 U.S.C. § 2461 note. See Pub. L. 114-74, Section 701 (Nov. 2, 2015)). These requirements help ensure that EPA penalties keep pace with inflation. Under the above-cited 2015 amendments to inflationary adjustment law, EPA must review its statutory civil penalties each year and adjust them as necessary.

(1) Criminal Penalties

- (a) *Negligent Violations.* The CWA provides that any person who negligently violates permit conditions implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to criminal penalties of not less than \$2,500 nor more than \$25,000 per day of violation, or imprisonment of not more than 1 year, or both. In the case of a second or subsequent conviction for a negligent violation, a person shall be subject to criminal penalties of not more than \$50,000 per day of violation or by imprisonment of not more than 2 years, or both.
- (b) *Knowing Violations.* The CWA provides that any person who knowingly violates permit conditions implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to a fine of not less than \$5,000 nor more than \$50,000 per day of violation, or by imprisonment for not more than 3 years, or both. In the case of a second or subsequent conviction for a knowing violation, a person shall be subject to criminal penalties of not more than \$100,000 per day of violation, or imprisonment of not more than 6 years, or both.
- (c) *Knowing Endangerment.* The CWA provides that any person who knowingly violates permit conditions implementing Sections 301, 302, 303, 306, 307, 308, 318, or 405 of the Act and who knows at that time that he or she is placing another person in imminent danger of death or serious bodily injury shall upon conviction be subject to a fine of not more than \$250,000 or by imprisonment of not more than 15 years, or both. In the case of a second or subsequent conviction for a knowing

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endangerment violation, a person shall be subject to a fine of not more than \$500,000 or by imprisonment of not more than 30 years, or both. An organization, as defined in Section 309(c)(3)(B)(iii) of the Act, shall, upon conviction of violating the imminent danger provision, be subject to a fine of not more than \$1,000,000 and can be fined up to \$2,000,000 for second or subsequent convictions.

- (d) *False Statement.* The CWA provides that any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than \$10,000, or by imprisonment for not more than 2 years, or both. If a conviction of a person is for a violation committed after a first conviction of such person under this paragraph, punishment is a fine of not more than \$20,000 per day of violation, or by imprisonment of not more than 4 years, or both. The Act further provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or non-compliance shall, upon conviction, be punished by a fine of not more than \$10,000 per violation, or by imprisonment for not more than 6 months per violation, or by both.
- (2) *Civil Penalties.* The CWA provides that any person who violates a permit condition implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to a civil penalty not to exceed the maximum amounts authorized by Section 309(d) of the Act, the 2015 amendments to the Federal Civil Penalties Inflation Adjustment Act of 1990, 28 U.S.C. § 2461 note, and 40 C.F.R. Part 19. *See* Pub. L.114-74, Section 701 (Nov. 2, 2015); 83 Fed. Reg. 1190 (January 10, 2018).
- (3) *Administrative Penalties.* The CWA provides that any person who violates a permit condition implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to an administrative penalty as follows:
  - (a) *Class I Penalty.* Not to exceed the maximum amounts authorized by Section 309(g)(2)(A) of the Act, the 2015 amendments to the Federal Civil Penalties Inflation Adjustment Act of 1990, 28 U.S.C. § 2461 note, and 40 C.F.R. Part 19. *See* Pub. L.114-74, Section 701 (Nov. 2, 2015); 83 Fed. Reg. 1190 (January 10, 2018).
  - (b) *Class II Penalty.* Not to exceed the maximum amounts authorized by Section 309(g)(2)(B) of the Act the 2015 amendments to the Federal Civil Penalties Inflation Adjustment Act of 1990, 28 U.S.C. § 2461 note, and 40 C.F.R. Part 19. *See* Pub. L.114-74, Section 701 (Nov. 2, 2015); 83 Fed. Reg. 1190 (January 10, 2018).

### 2. Permit Actions

This permit may be modified, revoked and reissued, or terminated for cause. The filing of a request by the Permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any permit

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condition.

3. Duty to Provide Information

The Permittee shall furnish to the Director, within a reasonable time, any information which the Director may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The Permittee shall also furnish to the Director, upon request, copies of records required to be kept by this permit.

4. Oil and Hazardous Substance Liability

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the Permittee from responsibilities, liabilities or penalties to which the Permittee is or may be subject under Section 311 of the CWA, or Section 106 of the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA).

5. Property Rights

This permit does not convey any property rights of any sort, or any exclusive privilege.

6. Confidentiality of Information

a. In accordance with 40 C.F.R. Part 2, any information submitted to EPA pursuant to these regulations may be claimed as confidential by the submitter. Any such claim must be asserted at the time of submission in the manner prescribed on the application form or instructions or, in the case of other submissions, by stamping the words "confidential business information" on each page containing such information. If no claim is made at the time of submission, EPA may make the information available to the public without further notice. If a claim is asserted, the information will be treated in accordance with the procedures in 40 C.F.R. Part 2 (Public Information).

b. Claims of confidentiality for the following information will be denied:

- (1) The name and address of any permit applicant or Permittee;
- (2) Permit applications, permits, and effluent data.

c. Information required by NPDES application forms provided by the Director under 40 C.F.R. § 122.21 may not be claimed confidential. This includes information submitted on the forms themselves and any attachments used to supply information required by the forms.

7. Duty to Reapply

If the Permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the Permittee must apply for and obtain a new permit. The Permittee shall submit a new application at least 180 days before the expiration date of the existing permit, unless permission for a later date has been granted by the Director. (The Director shall not grant permission for applications to be submitted later than the expiration date of the existing permit.)

8. State Authorities

Nothing in Parts 122, 123, or 124 precludes more stringent State regulation of any activity

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covered by the regulations in 40 C.F.R. Parts 122, 123, and 124, whether or not under an approved State program.

### 9. Other Laws

The issuance of a permit does not authorize any injury to persons or property or invasion of other private rights, or any infringement of State or local law or regulations.

## B. OPERATION AND MAINTENANCE OF POLLUTION CONTROLS

### 1. Proper Operation and Maintenance

The Permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the Permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems which are installed by a Permittee only when the operation is necessary to achieve compliance with the conditions of the permit.

### 2. Need to Halt or Reduce Not a Defense

It shall not be a defense for a Permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

### 3. Duty to Mitigate

The Permittee shall take all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

### 4. Bypass

#### a. Definitions

- (1) *Bypass* means the intentional diversion of waste streams from any portion of a treatment facility.
- (2) *Severe property damage* means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

- b. *Bypass not exceeding limitations.* The Permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions of paragraphs (c) and (d) of this Section.

#### c. Notice

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- (1) *Anticipated bypass.* If the Permittee knows in advance of the need for a bypass, it shall submit prior notice, if possible at least ten days before the date of the bypass. As of December 21, 2020 all notices submitted in compliance with this Section must be submitted electronically by the Permittee to the Director or initial recipient, as defined in 40 C.F.R. § 127.2(b), in compliance with this Section and 40 C.F.R. Part 3 (including, in all cases, Subpart D to Part 3), § 122.22, and 40 C.F.R. Part 127. Part 127 is not intended to undo existing requirements for electronic reporting. Prior to this date, and independent of Part 127, Permittees may be required to report electronically if specified by a particular permit or if required to do so by state law.
- (2) *Unanticipated bypass.* The Permittee shall submit notice of an unanticipated bypass as required in paragraph D.1.e. of this part (24-hour notice). As of December 21, 2020 all notices submitted in compliance with this Section must be submitted electronically by the Permittee to the Director or initial recipient, as defined in 40 C.F.R. § 127.2(b), in compliance with this Section and 40 C.F.R. Part 3 (including, in all cases, Subpart D to Part 3), § 122.22, and 40 C.F.R. Part 127. Part 127 is not intended to undo existing requirements for electronic reporting. Prior to this date, and independent of Part 127, Permittees may be required to report electronically if specified by a particular permit or required to do so by law.

### d. *Prohibition of bypass.*

- (1) Bypass is prohibited, and the Director may take enforcement action against a Permittee for bypass, unless:
  - (a) Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;
  - (b) There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventative maintenance; and
  - (c) The Permittee submitted notices as required under paragraph 4.c of this Section.
- (2) The Director may approve an anticipated bypass, after considering its adverse effects, if the Director determines that it will meet the three conditions listed above in paragraph 4.d of this Section.

## 5. Upset

- a. *Definition.* *Upset* means an exceptional incident in which there is an unintentional and temporary noncompliance with technology based permit effluent limitations because of factors beyond the reasonable control of the Permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or



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improper operation.

- b. *Effect of an upset.* An upset constitutes an affirmative defense to an action brought for noncompliance with such technology based permit effluent limitations if the requirements of paragraph B.5.c. of this Section are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.
- c. *Conditions necessary for a demonstration of upset.* A Permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:
  - (1) An upset occurred and that the Permittee can identify the cause(s) of the upset;
  - (2) The permitted facility was at the time being properly operated; and
  - (3) The Permittee submitted notice of the upset as required in paragraph D.1.e.2.b. (24-hour notice).
  - (4) The Permittee complied with any remedial measures required under B.3. above.
- d. *Burden of proof.* In any enforcement proceeding the Permittee seeking to establish the occurrence of an upset has the burden of proof.

### C. MONITORING REQUIREMENTS

#### 1. Monitoring and Records

- a. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.
- b. Except for records of monitoring information required by this permit related to the Permittee's sewage sludge use and disposal activities, which shall be retained for a period of at least 5 years (or longer as required by 40 C.F.R. § 503), the Permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least 3 years from the date of the sample, measurement, report or application. This period may be extended by request of the Director at any time.
- c. Records of monitoring information shall include:
  - (1) The date, exact place, and time of sampling or measurements;
  - (2) The individual(s) who performed the sampling or measurements;
  - (3) The date(s) analyses were performed;
  - (4) The individual(s) who performed the analyses;
  - (5) The analytical techniques or methods used; and
  - (6) The results of such analyses.
- d. Monitoring must be conducted according to test procedures approved under 40 C.F.R. § 136 unless another method is required under 40 C.F.R. Subchapters N or O.
- e. The Clean Water Act provides that any person who falsifies, tampers with, or

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knowingly renders inaccurate any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than \$10,000, or by imprisonment for not more than 2 years, or both. If a conviction of a person is for a violation committed after a first conviction of such person under this paragraph, punishment is a fine of not more than \$20,000 per day of violation, or by imprisonment of not more than 4 years, or both.

### 2. Inspection and Entry

The Permittee shall allow the Director, or an authorized representative (including an authorized contractor acting as a representative of the Administrator), upon presentation of credentials and other documents as may be required by law, to:

- a. Enter upon the Permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;
- b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;
- c. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and
- d. Sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the Clean Water Act, any substances or parameters at any location.

## D. REPORTING REQUIREMENTS

### 1. Reporting Requirements

- a. *Planned Changes.* The Permittee shall give notice to the Director as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is required only when:
  - (1) The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in 40 C.F.R. § 122.29(b); or
  - (2) The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants which are subject neither to effluent limitations in the permit, nor to notification requirements at 40 C.F.R. § 122.42(a)(1).
  - (3) The alteration or addition results in a significant change in the Permittee's sludge use or disposal practices, and such alteration, addition, or change may justify the application of permit conditions that are different from or absent in the existing permit, including notification of additional use or disposal sites not reported during the permit application process or not reported pursuant to an approved land application plan.
- b. *Anticipated noncompliance.* The Permittee shall give advance notice to the Director of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

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- c. *Transfers.* This permit is not transferable to any person except after notice to the Director. The Director may require modification or revocation and reissuance of the permit to change the name of the Permittee and incorporate such other requirements as may be necessary under the Clean Water Act. *See* 40 C.F.R. § 122.61; in some cases, modification or revocation and reissuance is mandatory.
- d. *Monitoring reports.* Monitoring results shall be reported at the intervals specified elsewhere in this permit.
  - (1) Monitoring results must be reported on a Discharge Monitoring Report (DMR) or forms provided or specified by the Director for reporting results of monitoring of sludge use or disposal practices. As of December 21, 2016 all reports and forms submitted in compliance with this Section must be submitted electronically by the Permittee to the Director or initial recipient, as defined in 40 C.F.R. § 127.2(b), in compliance with this Section and 40 C.F.R. Part 3 (including, in all cases, Subpart D to Part 3), § 122.22, and 40 C.F.R. Part 127. Part 127 is not intended to undo existing requirements for electronic reporting. Prior to this date, and independent of Part 127, Permittees may be required to report electronically if specified by a particular permit or if required to do so by State law.
  - (2) If the Permittee monitors any pollutant more frequently than required by the permit using test procedures approved under 40 C.F.R. § 136, or another method required for an industry-specific waste stream under 40 C.F.R. Subchapters N or O, the results of such monitoring shall be included in the calculation and reporting of the data submitted in the DMR or sludge reporting form specified by the Director.
  - (3) Calculations for all limitations which require averaging or measurements shall utilize an arithmetic mean unless otherwise specified by the Director in the permit.
- e. *Twenty-four hour reporting.*
  - (1) The Permittee shall report any noncompliance which may endanger health or the environment. Any information shall be provided orally within 24 hours from the time the Permittee becomes aware of the circumstances. A written report shall also be provided within 5 days of the time the Permittee becomes aware of the circumstances. The written report shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance. For noncompliance events related to combined sewer overflows, sanitary sewer overflows, or bypass events, these reports must include the data described above (with the exception of time of discovery) as well as the type of event (combined sewer overflows, sanitary sewer overflows, or bypass events), type of sewer overflow structure (e.g., manhole, combined sewer overflow outfall), discharge volumes untreated by the treatment works treating domestic sewage, types of human health and environmental impacts of the sewer overflow event, and whether the noncompliance was related to wet weather. As of December 21, 2020 all

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reports related to combined sewer overflows, sanitary sewer overflows, or bypass events submitted in compliance with this section must be submitted electronically by the Permittee to the Director or initial recipient, as defined in 40 C.F.R. § 127.2(b), in compliance with this Section and 40 C.F.R. Part 3 (including, in all cases Subpart D to Part 3), § 122.22, and 40 C.F.R. Part 127. Part 127 is not intended to undo existing requirements for electronic reporting. Prior to this date, and independent of Part 127, Permittees may be required to electronically submit reports related to combined sewer overflows, sanitary sewer overflows, or bypass events under this section by a particular permit or if required to do so by state law. The Director may also require Permittees to electronically submit reports not related to combined sewer overflows, sanitary sewer overflows, or bypass events under this section.

- (2) The following shall be included as information which must be reported within 24 hours under this paragraph.
    - (a) Any unanticipated bypass which exceeds any effluent limitation in the permit. *See* 40 C.F.R. § 122.41(g).
    - (b) Any upset which exceeds any effluent limitation in the permit.
    - (c) Violation of a maximum daily discharge limitation for any of the pollutants listed by the Director in the permit to be reported within 24 hours. *See* 40 C.F.R. § 122.44(g).
  - (3) The Director may waive the written report on a case-by-case basis for reports under paragraph D.1.e. of this Section if the oral report has been received within 24 hours.
- f. *Compliance Schedules.* Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit shall be submitted no later than 14 days following each schedule date.
  - g. *Other noncompliance.* The Permittee shall report all instances of noncompliance not reported under paragraphs D.1.d., D.1.e., and D.1.f. of this Section, at the time monitoring reports are submitted. The reports shall contain the information listed in paragraph D.1.e. of this Section. For noncompliance events related to combined sewer overflows, sanitary sewer overflows, or bypass events, these reports shall contain the information described in paragraph D.1.e. and the applicable required data in Appendix A to 40 C.F.R. Part 127. As of December 21, 2020 all reports related to combined sewer overflows, sanitary sewer overflows, or bypass events submitted in compliance with this section must be submitted electronically by the Permittee to the Director or initial recipient, as defined in 40 C.F.R. § 127.2(b), in compliance with this Section and 40 C.F.R. Part 3 (including, in all cases, Subpart D to Part 3), § 122.22, and 40 C.F.R. Part 127. Part 127 is not intended to undo existing requirements for electronic reporting. Prior to this date, and independent of Part 127, Permittees may be required to electronically submit reports related to combined sewer overflows, sanitary sewer overflows, or bypass events under this section by a particular permit or if required to do so by state law. The Director may also require Permittees to electronically submit reports not related to combined sewer overflows, sanitary sewer overflows, or bypass events under this Section.
  - h. *Other information.* Where the Permittee becomes aware that it failed to submit any

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relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Director, it shall promptly submit such facts or information.

- i. *Identification of the initial recipient for NPDES electronic reporting data.* The owner, operator, or the duly authorized representative of an NPDES-regulated entity is required to electronically submit the required NPDES information (as specified in Appendix A to 40 C.F.R. Part 127) to the appropriate initial recipient, as determined by EPA, and as defined in 40 C.F.R. § 127.2(b). EPA will identify and publish the list of initial recipients on its Web site and in the FEDERAL REGISTER, by state and by NPDES data group (see 40 C.F.R. § 127.2(c) of this Chapter). EPA will update and maintain this listing.

### 2. Signatory Requirement

- a. All applications, reports, or information submitted to the Director shall be signed and certified. *See* 40 C.F.R. §122.22.
- b. The CWA provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or non-compliance shall, upon conviction, be punished by a fine of not more than \$10,000 per violation, or by imprisonment for not more than 6 months per violation, or by both.

### 3. Availability of Reports.

Except for data determined to be confidential under paragraph A.6. above, all reports prepared in accordance with the terms of this permit shall be available for public inspection at the offices of the State water pollution control agency and the Director. As required by the CWA, effluent data shall not be considered confidential. Knowingly making any false statements on any such report may result in the imposition of criminal penalties as provided for in Section 309 of the CWA.

## E. DEFINITIONS AND ABBREVIATIONS

### 1. General Definitions

For more definitions related to sludge use and disposal requirements, see EPA Region 1's NPDES Permit Sludge Compliance Guidance document (4 November 1999, modified to add regulatory definitions, April 2018).

*Administrator* means the Administrator of the United States Environmental Protection Agency, or an authorized representative.

*Applicable standards and limitations* means all, State, interstate, and federal standards and limitations to which a "discharge," a "sewage sludge use or disposal practice," or a related activity is subject under the CWA, including "effluent limitations," water quality standards, standards of performance, toxic effluent standards or prohibitions, "best management practices," pretreatment standards, and "standards for sewage sludge use or disposal" under Sections 301, 302, 303, 304, 306, 307, 308, 403 and 405 of the CWA.

*Application* means the EPA standard national forms for applying for a permit, including any additions, revisions, or modifications to the forms; or forms approved by EPA for use in

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“approved States,” including any approved modifications or revisions.

*Approved program* or *approved State* means a State or interstate program which has been approved or authorized by EPA under Part 123.

*Average monthly discharge limitation* means the highest allowable average of “daily discharges” over a calendar month, calculated as the sum of all “daily discharges” measured during a calendar month divided by the number of “daily discharges” measured during that month.

*Average weekly discharge limitation* means the highest allowable average of “daily discharges” over a calendar week, calculated as the sum of all “daily discharges” measured during a calendar week divided by the number of “daily discharges” measured during that week.

*Best Management Practices* (“BMPs”) means schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of “waters of the United States.” BMPs also include treatment requirements, operating procedures, and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

*Bypass* see B.4.a.1 above.

*C-NOEC* or “*Chronic (Long-term Exposure Test) – No Observed Effect Concentration*” means the highest tested concentration of an effluent or a toxicant at which no adverse effects are observed on the aquatic test organisms at a specified time of observation.

*Class I sludge management facility* is any publicly owned treatment works (POTW), as defined in 40 C.F.R. § 501.2, required to have an approved pretreatment program under 40 C.F.R. § 403.8 (a) (including any POTW located in a State that has elected to assume local program responsibilities pursuant to 40 C.F.R. § 403.10 (e)) and any treatment works treating domestic sewage, as defined in 40 C.F.R. § 122.2, classified as a Class I sludge management facility by the EPA Regional Administrator, or, in the case of approved State programs, the Regional Administrator in conjunction with the State Director, because of the potential for its sewage sludge use or disposal practice to affect public health and the environment adversely.

*Contiguous zone* means the entire zone established by the United States under Article 24 of the Convention on the Territorial Sea and the Contiguous Zone.

*Continuous discharge* means a “discharge” which occurs without interruption throughout the operating hours of the facility, except for infrequent shutdowns for maintenance, process changes, or similar activities.

*CWA* means the Clean Water Act (formerly referred to as the Federal Water Pollution Control Act or Federal Water Pollution Control Act Amendments of 1972) Public Law 92-500, as amended by Public Law 95-217, Public Law 95-576, Public Law 96-483 and Public Law 97-117, 33 U.S.C. 1251 *et seq.*

*CWA and regulations* means the Clean Water Act (CWA) and applicable regulations promulgated thereunder. In the case of an approved State program, it includes State program requirements.

*Daily Discharge* means the “discharge of a pollutant” measured during a calendar day or any

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other 24-hour period that reasonably represents the calendar day for purposes of sampling. For pollutants with limitations expressed in units of mass, the “daily discharge” is calculated as the total mass of the pollutant discharged over the day. For pollutants with limitations expressed in other units of measurements, the “daily discharge” is calculated as the average measurement of the pollutant over the day.

*Direct Discharge* means the “discharge of a pollutant.”

*Director* means the Regional Administrator or an authorized representative. In the case of a permit also issued under Massachusetts’ authority, it also refers to the Director of the Division of Watershed Management, Department of Environmental Protection, Commonwealth of Massachusetts.

*Discharge*

- (a) When used without qualification, *discharge* means the “discharge of a pollutant.”
- (b) As used in the definitions for “interference” and “pass through,” *discharge* means the introduction of pollutants into a POTW from any non-domestic source regulated under Section 307(b), (c) or (d) of the Act.

*Discharge Monitoring Report* (“DMR”) means the EPA uniform national form, including any subsequent additions, revisions, or modifications for the reporting of self-monitoring results by Permittees. DMRs must be used by “approved States” as well as by EPA. EPA will supply DMRs to any approved State upon request. The EPA national forms may be modified to substitute the State Agency name, address, logo, and other similar information, as appropriate, in place of EPA’s.

*Discharge of a pollutant* means:

- (a) Any addition of any “pollutant” or combination of pollutants to “waters of the United States” from any “point source,” or
- (b) Any addition of any pollutant or combination of pollutants to the waters of the “contiguous zone” or the ocean from any point source other than a vessel or other floating craft which is being used as a means of transportation.

This definition includes additions of pollutants into waters of the United States from: surface runoff which is collected or channeled by man; discharges through pipes, sewers, or other conveyances owned by a State, municipality, or other person which do not lead to a treatment works; and discharges through pipes, sewers, or other conveyances, leading into privately owned treatment works. This term does not include an addition of pollutants by any “indirect discharger.”

*Effluent limitation* means any restriction imposed by the Director on quantities, discharge rates, and concentrations of “pollutants” which are “discharged” from “point sources” into “waters of the United States,” the waters of the “contiguous zone,” or the ocean.

*Effluent limitation guidelines* means a regulation published by the Administrator under section 304(b) of CWA to adopt or revise “effluent limitations.”

*Environmental Protection Agency* (“EPA”) means the United States Environmental Protection

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Agency.

*Grab Sample* means an individual sample collected in a period of less than 15 minutes.

*Hazardous substance* means any substance designated under 40 C.F.R. Part 116 pursuant to Section 311 of CWA.

*Incineration* is the combustion of organic matter and inorganic matter in sewage sludge by high temperatures in an enclosed device.

*Indirect discharger* means a nondomestic discharger introducing “pollutants” to a “publicly owned treatment works.”

*Interference* means a discharge (see definition above) which, alone or in conjunction with a discharge or discharges from other sources, both:

- (a) Inhibits or disrupts the POTW, its treatment processes or operations, or its sludge processes, use or disposal; and
- (b) Therefore is a cause of a violation of any requirement of the POTW’s NPDES permit (including an increase in the magnitude or duration of a violation) or of the prevention of sewage sludge use or disposal in compliance with the following statutory provisions and regulations or permits issued thereunder (or more stringent State or local regulations): Section 405 of the Clean Water Act, the Solid Waste Disposal Act (SWDA) (including title II, more commonly referred to as the Resources Conservation and Recovery Act (RCRA), and including State regulations contained in any State sludge management plan prepared pursuant to Subtitle D of the SDWA), the Clean Air Act, the Toxic Substances Control Act, and the Marine Protection, Research and Sanctuaries Act.

*Landfill* means an area of land or an excavation in which wastes are placed for permanent disposal, and that is not a land application unit, surface impoundment, injection well, or waste pile.

*Land application* is the spraying or spreading of sewage sludge onto the land surface; the injection of sewage sludge below the land surface; or the incorporation of sewage sludge into the soil so that the sewage sludge can either condition the soil or fertilize crops or vegetation grown in the soil.

*Land application unit* means an area where wastes are applied onto or incorporated into the soil surface (excluding manure spreading operations) for agricultural purposes or for treatment and disposal.

*LC<sub>50</sub>* means the concentration of a sample that causes mortality of 50% of the test population at a specific time of observation. The *LC<sub>50</sub>* = 100% is defined as a sample of undiluted effluent.

*Maximum daily discharge limitation* means the highest allowable “daily discharge.”

*Municipal solid waste landfill (MSWLF) unit* means a discrete area of land or an excavation that receives household waste, and that is not a land application unit, surface impoundment, injection well, or waste pile, as those terms are defined under 40 C.F.R. § 257.2. A MSWLF unit also may receive other types of RCRA Subtitle D wastes, such as commercial solid waste, nonhazardous sludge, very small quantity generator waste and industrial solid waste. Such a landfill may be



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publicly or privately owned. A MSWLF unit may be a new MSWLF unit, an existing MSWLF unit or a lateral expansion. A construction and demolition landfill that receives residential lead-based paint waste and does not receive any other household waste is not a MSWLF unit.

### *Municipality*

- (a) When used without qualification *municipality* means a city, town, borough, county, parish, district, association, or other public body created by or under State law and having jurisdiction over disposal of sewage, industrial wastes, or other wastes, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under Section 208 of CWA.
- (b) As related to sludge use and disposal, *municipality* means a city, town, borough, county, parish, district, association, or other public body (including an intermunicipal Agency of two or more of the foregoing entities) created by or under State law; an Indian tribe or an authorized Indian tribal organization having jurisdiction over sewage sludge management; or a designated and approved management Agency under Section 208 of the CWA, as amended. The definition includes a special district created under State law, such as a water district, sewer district, sanitary district, utility district, drainage district, or similar entity, or an integrated waste management facility as defined in Section 201 (e) of the CWA, as amended, that has as one of its principal responsibilities the treatment, transport, use or disposal of sewage sludge.

*National Pollutant Discharge Elimination System* means the national program for issuing, modifying, revoking and reissuing, terminating, monitoring and enforcing permits, and imposing and enforcing pretreatment requirements, under Sections 307, 402, 318, and 405 of the CWA. The term includes an “approved program.”

*New Discharger* means any building, structure, facility, or installation:

- (a) From which there is or may be a “discharge of pollutants;”
- (b) That did not commence the “discharge of pollutants” at a particular “site” prior to August 13, 1979;
- (c) Which is not a “new source;” and
- (d) Which has never received a finally effective NPDES permit for discharges at that “site.”

This definition includes an “indirect discharger” which commences discharging into “waters of the United States” after August 13, 1979. It also includes any existing mobile point source (other than an offshore or coastal oil and gas exploratory drilling rig or a coastal oil and gas exploratory drilling rig or a coastal oil and gas exploratory drilling rig or a coastal oil and gas developmental drilling rig) such as a seafood processing rig, seafood processing vessel, or aggregate plant, that begins discharging at a “site” for which it does not have a permit; and any offshore or coastal mobile oil and gas exploratory drilling rig or coastal mobile oil and gas developmental drilling rig that commences the discharge of pollutants after August 13, 1979, at a “site” under EPA’s permitting jurisdiction for which it is not covered by an individual or general permit and which is located in an area determined by the Director in the issuance of a final permit to be in an area of biological concern. In determining whether an area is an area of biological concern, the Director shall consider the factors specified in 40 C.F.R. §§ 125.122 (a) (1) through (10).

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An offshore or coastal mobile exploratory drilling rig or coastal mobile developmental drilling rig will be considered a “new discharger” only for the duration of its discharge in an area of biological concern.

*New source* means any building, structure, facility, or installation from which there is or may be a “discharge of pollutants,” the construction of which commenced:

- (a) After promulgation of standards of performance under Section 306 of CWA which are applicable to such source, or
- (b) After proposal of standards of performance in accordance with Section 306 of CWA which are applicable to such source, but only if the standards are promulgated in accordance with Section 306 within 120 days of their proposal.

*NPDES* means “National Pollutant Discharge Elimination System.”

*Owner or operator* means the owner or operator of any “facility or activity” subject to regulation under the NPDES programs.

*Pass through* means a Discharge (see definition above) which exits the POTW into waters of the United States in quantities or concentrations which, alone or in conjunction with a discharge or discharges from other sources, is a cause of a violation of any requirement of the POTW’s NPDES permit (including an increase in the magnitude or duration of a violation).

*Pathogenic organisms* are disease-causing organisms. These include, but are not limited to, certain bacteria, protozoa, viruses, and viable helminth ova.

*Permit* means an authorization, license, or equivalent control document issued by EPA or an “approved State” to implement the requirements of Parts 122, 123, and 124. “Permit” includes an NPDES “general permit” (40 C.F.R. § 122.28). “Permit” does not include any permit which has not yet been the subject of final agency action, such as a “draft permit” or “proposed permit.”

*Person* means an individual, association, partnership, corporation, municipality, State or Federal agency, or an agent or employee thereof.

*Person who prepares sewage sludge* is either the person who generates sewage sludge during the treatment of domestic sewage in a treatment works or the person who derives a material from sewage sludge.

*pH* means the logarithm of the reciprocal of the hydrogen ion concentration measured at 25° Centigrade or measured at another temperature and then converted to an equivalent value at 25° Centigrade.

*Point Source* means any discernible, confined, and discrete conveyance, including but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, landfill leachate collection system, vessel or other floating craft from which pollutants are or may be discharged. This term does not include return flows from irrigated agriculture or agricultural storm water runoff (see 40 C.F.R. § 122.3).

*Pollutant* means dredged spoil, solid waste, incinerator residue, filter backwash, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials

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(except those regulated under the Atomic Energy Act of 1954, as amended (42 U.S.C. 2011 *et seq.*)), heat, wrecked or discarded equipment, rock, sand, cellar dirt and industrial, municipal, and agricultural waste discharged into water. It does not mean:

- (a) Sewage from vessels; or
- (b) Water, gas, or other material which is injected into a well to facilitate production of oil or gas, or water derived in association with oil and gas production and disposed of in a well, if the well is used either to facilitate production or for disposal purposes is approved by the authority of the State in which the well is located, and if the State determines that the injection or disposal will not result in the degradation of ground or surface water resources.

*Primary industry category* means any industry category listed in the NRDC settlement agreement (*Natural Resources Defense Council et al. v. Train*, 8 E.R.C. 2120 (D.D.C. 1976), *modified* 12 E.R.C. 1833 (D.D.C. 1979)); also listed in Appendix A of 40 C.F.R. Part 122.

*Privately owned treatment works* means any device or system which is (a) used to treat wastes from any facility whose operator is not the operator of the treatment works and (b) not a “POTW.”

*Process wastewater* means any water which, during manufacturing or processing, comes into direct contact with or results from the production or use of any raw material, intermediate product, finished product, byproduct, or waste product.

*Publicly owned treatment works (POTW)* means a treatment works as defined by Section 212 of the Act, which is owned by a State or municipality (as defined by Section 504(4) of the Act). This definition includes any devices and systems used in the storage, treatment, recycling and reclamation of municipal sewage or industrial wastes of a liquid nature. It also includes sewers, pipes and other conveyances only if they convey wastewater to a POTW Treatment Plant. The term also means the municipality as defined in Section 502(4) of the Act, which has jurisdiction over the indirect discharges to and the discharges from such a treatment works.

*Regional Administrator* means the Regional Administrator, EPA, Region I, Boston, Massachusetts.

*Secondary industry category* means any industry which is not a “primary industry category.”

*Septage* means the liquid and solid material pumped from a septic tank, cesspool, or similar domestic sewage treatment system, or a holding tank when the system is cleaned or maintained.

*Sewage Sludge* means any solid, semi-solid, or liquid residue removed during the treatment of municipal waste water or domestic sewage. Sewage sludge includes, but is not limited to, solids removed during primary, secondary, or advanced waste water treatment, scum, septage, portable toilet pumpings, type III marine sanitation device pumpings (33 C.F.R. Part 159), and sewage sludge products. Sewage sludge does not include grit or screenings, or ash generated during the incineration of sewage sludge.

*Sewage sludge incinerator* is an enclosed device in which only sewage sludge and auxiliary fuel are fired.

*Sewage sludge unit* is land on which only sewage sludge is placed for final disposal. This does

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not include land on which sewage sludge is either stored or treated. Land does not include waters of the United States, as defined in 40 C.F.R. § 122.2.

*Sewage sludge use or disposal practice* means the collection, storage, treatment, transportation, processing, monitoring, use, or disposal of sewage sludge.

*Significant materials* includes, but is not limited to: raw materials; fuels; materials such as solvents, detergents, and plastic pellets; finished materials such as metallic products; raw materials used in food processing or production; hazardous substance designated under Section 101(14) of CERCLA; any chemical the facility is required to report pursuant to Section 313 of title III of SARA; fertilizers; pesticides; and waste products such as ashes, slag and sludge that have the potential to be released with storm water discharges.

*Significant spills* includes, but is not limited to, releases of oil or hazardous substances in excess of reportable quantities under Section 311 of the CWA (see 40 C.F.R. §§ 110.10 and 117.21) or Section 102 of CERCLA (see 40 C.F.R. § 302.4).

*Sludge-only facility* means any “treatment works treating domestic sewage” whose methods of sewage sludge use or disposal are subject to regulations promulgated pursuant to section 405(d) of the CWA, and is required to obtain a permit under 40 C.F.R. § 122.1(b)(2).

*State* means any of the 50 States, the District of Columbia, Guam, the Commonwealth of Puerto Rico, the Virgin Islands, American Samoa, the Commonwealth of the Northern Mariana Islands, the Trust Territory of the Pacific Islands, or an Indian Tribe as defined in the regulations which meets the requirements of 40 C.F.R. § 123.31.

*Store or storage of sewage sludge* is the placement of sewage sludge on land on which the sewage sludge remains for two years or less. This does not include the placement of sewage sludge on land for treatment.

*Storm water* means storm water runoff, snow melt runoff, and surface runoff and drainage.

*Storm water discharge associated with industrial activity* means the discharge from any conveyance that is used for collecting and conveying storm water and that is directly related to manufacturing, processing, or raw materials storage areas at an industrial plant.

*Surface disposal site* is an area of land that contains one or more active sewage sludge units.

*Toxic pollutant* means any pollutant listed as toxic under Section 307(a)(1) or, in the case of “sludge use or disposal practices,” any pollutant identified in regulations implementing Section 405(d) of the CWA.

*Treatment works treating domestic sewage* means a POTW or any other sewage sludge or waste water treatment devices or systems, regardless of ownership (including federal facilities), used in the storage, treatment, recycling, and reclamation of municipal or domestic sewage, including land dedicated for the disposal of sewage sludge. This definition does not include septic tanks or similar devices.

For purposes of this definition, “domestic sewage” includes waste and waste water from humans or household operations that are discharged to or otherwise enter a treatment works. In States where there is no approved State sludge management program under Section 405(f) of the CWA, the Director may designate any person subject to the standards for sewage sludge use and

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disposal in 40 C.F.R. Part 503 as a “treatment works treating domestic sewage,” where he or she finds that there is a potential for adverse effects on public health and the environment from poor sludge quality or poor sludge handling, use or disposal practices, or where he or she finds that such designation is necessary to ensure that such person is in compliance with 40 C.F.R. Part 503.

*Upset* see B.5.a. above.

*Vector attraction* is the characteristic of sewage sludge that attracts rodents, flies, mosquitoes, or other organisms capable of transporting infectious agents.

*Waste pile* or *pile* means any non-containerized accumulation of solid, non-flowing waste that is used for treatment or storage.

*Waters of the United States* or *waters of the U.S.* means:

- (a) All waters which are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;
- (b) All interstate waters, including interstate “wetlands;”
- (c) All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, “wetlands”, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds the use, degradation, or destruction of which would affect or could affect interstate or foreign commerce including any such waters:
  - (1) Which are or could be used by interstate or foreign travelers for recreational or other purpose;
  - (2) From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or
  - (3) Which are used or could be used for industrial purposes by industries in interstate commerce;
- (d) All impoundments of waters otherwise defined as waters of the United States under this definition;
- (e) Tributaries of waters identified in paragraphs (a) through (d) of this definition;
- (f) The territorial sea; and
- (g) “Wetlands” adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs (a) through (f) of this definition.

Waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of CWA (other than cooling ponds as defined in 40 C.F.R. § 423.11(m) which also meet the criteria of this definition) are not waters of the United States. This exclusion applies only to manmade bodies of water which neither were originally created in waters of the United States (such as disposal area in wetlands) nor resulted from the impoundment of waters of the United States. Waters of the United States do not include prior converted cropland.

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Notwithstanding the determination of an area's status as prior converted cropland by any other federal agency, for the purposes of the Clean Water Act, the final authority regarding Clean Water Act jurisdiction remains with EPA.

*Wetlands* means those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.

*Whole Effluent Toxicity (WET)* means the aggregate toxic effect of an effluent measured directly by a toxicity test.

*Zone of Initial Dilution (ZID)* means the region of initial mixing surrounding or adjacent to the end of the outfall pipe or diffuser ports, provided that the ZID may not be larger than allowed by mixing zone restrictions in applicable water quality standards.

### 2. Commonly Used Abbreviations

BOD	Five-day biochemical oxygen demand unless otherwise specified
CBOD	Carbonaceous BOD
CFS	Cubic feet per second
COD	Chemical oxygen demand
Chlorine	
Cl <sub>2</sub>	Total residual chlorine
TRC	Total residual chlorine which is a combination of free available chlorine (FAC, see below) and combined chlorine (chloramines, etc.)
TRO	Total residual chlorine in marine waters where halogen compounds are present
FAC	Free available chlorine (aqueous molecular chlorine, hypochlorous acid, and hypochlorite ion)
Coliform	
Coliform, Fecal	Total fecal coliform bacteria
Coliform, Total	Total coliform bacteria
Cont.	Continuous recording of the parameter being monitored, i.e. flow, temperature, pH, etc.
Cu. M/day or M <sup>3</sup> /day	Cubic meters per day
DO	Dissolved oxygen

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kg/day	Kilograms per day
lbs/day	Pounds per day
mg/L	Milligram(s) per liter
mL/L	Milliliters per liter
MGD	Million gallons per day
Nitrogen	
Total N	Total nitrogen
NH <sub>3</sub> -N	Ammonia nitrogen as nitrogen
NO <sub>3</sub> -N	Nitrate as nitrogen
NO <sub>2</sub> -N	Nitrite as nitrogen
NO <sub>3</sub> -NO <sub>2</sub>	Combined nitrate and nitrite nitrogen as nitrogen
TKN	Total Kjeldahl nitrogen as nitrogen
Oil & Grease	Freon extractable material
PCB	Polychlorinated biphenyl
Surfactant	Surface-active agent
Temp. °C	Temperature in degrees Centigrade
Temp. °F	Temperature in degrees Fahrenheit
TOC	Total organic carbon
Total P	Total phosphorus
TSS or NFR	Total suspended solids or total nonfilterable residue
Turb. or Turbidity	Turbidity measured by the Nephelometric Method (NTU)
µg/L	Microgram(s) per liter
WET	“Whole effluent toxicity”
ZID	Zone of Initial Dilution

**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
NEW ENGLAND - REGION 1  
5 POST OFFICE SQUARE, SUITE 100  
BOSTON, MASSACHUSETTS 02109-3912**

**FACT SHEET**

**DRAFT NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)  
PERMIT TO DISCHARGE TO WATERS OF THE UNITED STATES PURSUANT TO  
THE CLEAN WATER ACT (CWA)**

**NPDES PERMIT NUMBER:** MA0004940

**PUBLIC NOTICE START AND END DATES:** May 18, 2023 – June 16, 2023

**NAME AND MAILING ADDRESS OF APPLICANT:**

Sunrise Wind, LLC  
437 Madison Avenue, Suite 1903  
New York, NY 10022

**NAME AND ADDRESS OF FACILITY WHERE DISCHARGE OCCURS:**

Sunrise Wind Farm Offshore Converter Station  
BOEM Renewable Energy Lease Area OCS-A0487

**RECEIVING WATER AND CLASSIFICATION:**

Atlantic Ocean (OCS-A0487)

**SIC CODE:** 4911 (Generation, Transmission, and/or Distribution of Electric Energy)

**NAICS CODE:** 22115 (Wind electric power generation)



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## 1.0 Proposed Action

Sunrise Wind LLC (Sunrise Wind or the “Applicant”) has applied to the U.S. Environmental Protection Agency (EPA or the “Agency”) for issuance of a new National Pollutant Discharge Elimination System (NPDES) permit to authorize pollutant discharges and cooling water withdrawals at the offshore converter station-direct current (OCS-DC) component (the “Facility”) of Sunrise Wind’s proposed offshore wind farm. Specifically, Sunrise Wind proposes that the OCS-DC would discharge pollutants to, and withdraw water for cooling from, federal waters in the Atlantic Ocean.

The new OCS-DC will support operation of Sunrise Wind’s proposed wind farm, which will be located in the federal Bureau of Ocean Energy Management’s (BOEM) Renewable Lease Area OCS-A0487. The Applicant filed an application seeking an NPDES permit for the Facility from EPA dated November 22, 2021 (“NPDES Application”). EPA deemed the NPDES Application complete on January 3, 2022. This permit would authorize only the intake and discharge of non-contact cooling water (NCCW) at the OCS-DC as identified in the NPDES Application. Any other point source discharges associated with the construction or operation of Wind Farm must be authorized by a separate individual or general permit (e.g., the Vessel General Permit, if applicable).

## 2.0 Statutory and Regulatory Authority for Setting NPDES Permit Requirements

Congress enacted the Federal Water Pollution Control Act, codified at 33 U.S.C. §§ 1251 – 1387 and commonly known as the Clean Water Act (CWA), “to restore and maintain the chemical, physical, and biological integrity of the Nation’s waters.” CWA § 101(a). To achieve this objective, the CWA makes it unlawful for any person to discharge any pollutant into the waters of the United States from any point source, except to the extent authorized under specific provisions of the CWA, including § 402. *See* CWA §§ 301(a), 402(a). Section 402(a) establishes the CWA’s NPDES permit program. Under this section, EPA may “issue a permit for the discharge of any pollutant or combination of pollutants” on the condition that the discharge will comply with the standards specified in certain other provisions of the statute (e.g., CWA §§ 301, 306 and 403). CWA § 402(a)(1). NPDES permits generally contain pollutant discharge limitations and establish related monitoring and reporting requirements. *See* CWA § 402(a)(1) and (2). When applicable, NPDES permits also set cooling water intake structure (CWIS) requirements under CWA § 316(b). *See* 40 CFR §§ 122.44(a)(1) and (b)(3), and 401.14. The regulations governing EPA’s NPDES permit program are generally found in 40 CFR Parts 122, 124, 125, and 136.

“Congress has vested in the Administrator [of EPA] broad discretion to establish conditions for NPDES permits” in order to achieve the statutory mandates of Sections 301 and 402 of the CWA. *Arkansas v. Oklahoma*, 503 U.S. 91, 105 (1992). Technology-based effluent limitations (TBELs) represent the minimum level of pollutant discharge control that must be satisfied under Sections 301(b) and 402(a)(1) of the CWA. *See also* 40 CFR § 125.3(a). When limits more stringent than TBELs are needed to maintain or achieve compliance with state water quality standards (WQS), then NPDES permits must include water quality-based effluent limits

(WQBELs). *See* CWA §§ 301(b)(1)(C) and 401; 40 CFR §§ 122.4(d), 122.44(d)(1) and (5), 124.53, and 124.55.

In addition, point source dischargers subject to Sections 301 or 306 that have CWISs must also meet the CWIS requirements of CWA § 316(b), 33 U.S.C. § 1326(b), which dictates that “the location, design, construction, and capacity of cooling water intake structures reflect the best technology available for minimizing adverse environmental impact” (BTA). *See also* 40 CFR § 122.44(b)(3). Federal standards for CWISs are specified in 40 CFR Part 125, subparts I (for new facilities), J (for existing facilities), and N (for new offshore oil and gas extraction facilities). In addition, NPDES permits must also include any more stringent permit conditions needed for CWISs to satisfy any applicable state law requirements, including state WQS. *See* 40 CFR §§ 125.84(e) and 125.94(i).

## 2.1 Technology-Based Requirements

NPDES permit limits must, at a minimum, satisfy applicable federal technology standards under the CWA. *See* CWA §§ 301(b), 304(b) and 402(a); 40 CFR § 125.3(a). The statute specifies several different narrative technology standards that apply to different types of pollutants. Technology-based effluent limitations are set to reflect the degree of pollution control that can be achieved by using a technology that satisfies the applicable technology standard. Effluent limitations based on the “best practicable control technology currently available” (BPT) standard apply to “conventional pollutants” under certain circumstances, while effluent limitations applied to conventional pollutants are otherwise based on the “best conventional pollutant control technology” (BCT) standard. *See* CWA §§ 301(b)(2)(E) and 304(a)(4), (b)(1) and (b)(4). *See also* 40 CFR §§ 125.3(a)(2)(i) and (ii). Effluent limitations based on the “best available technology economically achievable” (BAT) standard apply to toxic and non-conventional pollutants. *See* CWA §§ 301(b)(1)(A) and (b)(2)(A) – (D) and (F), and 304(b)(2); 40 CFR §§ 125.3(a)(iii) and (iv); and 401.12. If a discharger is a “new source” under Section 306 of the CWA, 33 U.S.C. § 1316, however, then it must meet new source standards based on the “best available demonstrated technology” (BADT). *See also* 40 CFR §§ 122.2 (definition of “new source”) and 122.29.

Subpart A of 40 CFR Part 125 establishes criteria and standards for developing and applying technology-based requirements in permits under §§ 301(b) and 402(a) of the CWA. Where EPA has established national effluent limitation guidelines (ELGs) for an industrial category or subcategory, permit *limits* for a facility within that category are set by applying the limits from the ELGs. 40 CFR § 125.3(c)(1). *See also* CWA § 402(a)(1)(A). Where EPA has not yet promulgated an applicable national ELG, however, then the permitting authority develops permit limits based on a facility-specific, Best Professional Judgment (BPJ) application of the relevant technology standard. 40 CFR § 125.3(c)(2). *See also* CWA § 402(a)(1)(B). Where national ELGs have been promulgated for some, but not all, of the pollutants regulated by the permit, limits are set using the appropriate approach for each pollutant. 40 CFR § 125.3(c)(3).

EPA has not yet promulgated ELGs for wind-based electric power generation facilities, whether located on land or at sea, or for any converter stations that they might use. Although EPA has promulgated technology-based ELGs for Steam Electric Power Generating facilities (SIC 4911)

in 40 CFR Part 423, these ELGs apply to fossil fuel and nuclear power plants and do not apply to wind-based electric power generation (NAICS 221115). *See* 40 CFR § 423.10. Therefore, in accordance with CWA § 402(a)(1)(B) and 40 CFR § 125.3(c)(2), EPA may establish technology-based effluent limitations for wind farms and associated converter stations on a case-by-case, BPJ basis.

EPA's NPDES permitting regulations at 40 CFR § 125.3(c)(2) state that for permits developed on a case-by-case basis under Section 402(a)(1)(B) of the CWA, EPA shall consider the appropriate factors listed in 40 CFR § 125.3(d) and (1) the appropriate technology for the category or class of point sources of which the applicant is a member, based on available information, and (2) any unique factors relating to the applicant.

Discharges from facilities other than publicly owned sewage treatment plants must generally comply with technology standards as expeditiously as practicable but in no case later than either three years after the date that technology-based limitations are established or March 31, 1989, whichever comes first. *See* 40 CFR § 125.3(a)(2). NPDES permits may not include compliance schedules inconsistent with a CWA statutory compliance deadline. 40 CFR § 122.47(a)(1).

With regard to CWISs regulated under CWA § 316(b), technology-based CWIS requirements for many types of *new facilities* are determined in accordance with EPA regulations promulgated at 40 CFR Part 125, Subpart I (the New Facilities Rule), but certain other types of new facilities are determined on a case-by-case, BPJ basis. *See* 40 CFR §§ 125.80(c), 125.81(d) and 125.90(b). Furthermore, CWIS requirements for new offshore oil and gas extraction facilities are determined in accordance with 40 CFR Part 125, Subpart N (the New Offshore Oil and Gas Facilities Rule). CWIS requirements for many types of *existing facilities* are developed in accordance with 40 CFR Part 125, Subpart J (the Existing Facilities Rule), whereas the requirements for other types of existing facilities are developed on a BPJ basis. *See* 40 CFR §§ 122.44(b)(3) and 125.90(b).<sup>1</sup> EPA explains the statutory and regulatory authority for the CWIS at the OCS-DC in Section 2.3 of this Fact Sheet.

## 2.2 Water Quality-Based Requirements

The CWA requires that each state develop WQSs for all water bodies in the state. *See* CWA § 303 and 40 CFR §§ 131.10 - 131.12. As a matter of state law, state WQSs specify different water body classifications, each of which is associated with certain designated uses and particular numeric and narrative water quality criteria. The water quality criteria for each classification are intended to help the water bodies in that classification to attain the designated uses assigned to that classification. The state then assigns one of the water body classifications to each water body in the state.

The CWA and EPA regulations require that NPDES permits include limits based on water quality considerations when such limits are necessary to meet state WQS that apply to the body

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<sup>1</sup> *See also* July 6, 2022, Transmittal of Revised Framework for Best Professional Judgement for Cooling Water Intake Structures at Hydroelectric Facilities. [https://www.epa.gov/sites/default/files/2021-01/documents/transmittal\\_of\\_framework\\_for\\_bpj\\_for\\_cwis\\_at\\_hydroelectric\\_facilities\\_final\\_memo.pdf](https://www.epa.gov/sites/default/files/2021-01/documents/transmittal_of_framework_for_bpj_for_cwis_at_hydroelectric_facilities_final_memo.pdf)

of water receiving the discharge. Such water quality-based limits are necessary when TBELs would be less stringent than limits needed to attain or maintain compliance with WQS in the receiving water. *See* CWA § 301(b)(1)(C) and 40 CFR §§ 122.44(d)(1), 122.44(d)(5), 125.84(e) and 125.94(i).

Because the proposed Facility is located in federal waters, well outside of state waters, however, federal water quality criteria and Ocean Discharge Criteria (ODC) regulations apply to the receiving water, but state WQS do not.

### **2.2.1 CWA § 403 Ocean Discharge Criteria**

As stated above, Sunrise Wind's wind farm, including the OCS-DC is proposed to be located in federal waters, *well outside* of state waters. Thus, the OCS-DC's pollutant discharges and cooling water withdrawals will occur in offshore waters of the Atlantic Ocean that are solely subject to federal jurisdiction. More specifically, these discharges and cooling water withdrawals are proposed to occur in the "ocean," as defined in CWA § 502(10) (i.e., waters lying seaward of the "contiguous zone," which is, in turn, comprised of the nine-mile band lying seaward of the seaward edge of the territorial sea). *See also* CWA §§ 502(8) and (9) (definitions of "territorial seas" and "contiguous zone," respectively).

Point source pollutant discharges to the waters of the territorial seas, the contiguous zone, and the ocean, *see* CWA §§ 502(8), (9) and (10), are subject to the federal ODC under Section 403(a) of the CWA. 33 U.S.C. § 1343(a). Therefore, the NPDES permit proposed for the Facility is subject to the ODC.

Pursuant to CWA § 403(c), EPA has promulgated regulations that include guidelines for regulating discharges to satisfy CWA § 403 and give effect to the ODC. *See* 40 CFR Part 125, Subpart M. According to the ODC, EPA may not issue an NPDES permit to authorize any pollutant discharge to waters of the territorial sea, the contiguous zone, or the ocean, that the Agency determines will cause "unreasonable degradation of the marine environment." 40 CFR § 125.123(b). For permits subject to the ODC, EPA conducts an Ocean Discharge Criteria Evaluation (ODCE) using the guidelines in 40 CFR Part 125, Subpart M, to determine the extent to which the discharge will degrade the marine environment. 40 CFR § 125.122. The requirements of the ODC guidelines and the details of the ODCE for this NPDES permit are discussed in more detail in Section 5.1.5 of this Fact Sheet.

### **2.2.2 State Certification**

EPA may not issue a permit unless the state from which the discharge originates either certifies that the effluent limitations contained in the permit are stringent enough to assure that the discharge will not cause the receiving water to violate the State's WQSs, or the State waives, or is deemed to have waived, its right to certify. *See* 33 U.S.C. § 1341(a)(1). Regulations governing state certification are set forth in 40 CFR § 124.53 and § 124.55. If EPA determines that a discharge from one state will affect the waters of another state, then EPA must notify that other state and the procedures detailed in CWA § 401(a)(2) must be followed.

For this permit, however, based on the location of the Facility in federal waters (specifically, in the “ocean,” CWA § 502(10)), the proposed discharge will not affect the water quality of state or tribal waters and a Section 401 certification is not required. That said, EPA has provided copies of the Draft Permit and Fact Sheet to the state agencies of the two closest states, Massachusetts and Rhode Island, for their review.

### 2.3 Cooling Water Intake Structure Requirements

The CWA largely focuses on controlling pollutant *discharges* to waters of the United States, but Section 316(b) of the statute addresses the adverse environmental impacts that may be caused by the *withdrawal* of water from waters of the United States for cooling uses. Specifically, CWA § 316(b) provides that:

[a]ny standard established pursuant to [CWA sections 301 or 306] and applicable to a point source shall require that the location, design, construction, and capacity of cooling water intake structures reflect the best technology available for minimizing adverse environmental impact.

33 U.S.C. § 1326(b). Thus, Section 316(b) applies to facilities that are point source dischargers subject to an NPDES permit that also withdraw water for cooling from a water of the U.S. through a cooling water intake structure (CWIS). The plain meaning of CWA § 316(b) is that Congress wanted EPA to ensure that the CWISs at such facilities would use the best technology available (BTA) for minimizing adverse environmental impacts. Section 316(b) applies to the Sunrise Wind OCS-DC because it will have point source discharges of pollutants to waters of the United States that are subject to NPDES permit requirements and effluent standards under CWA § 301, and it also will withdraw water from a water of the U.S. through a CWIS to use for cooling.

The legislative history for CWA § 316(b) is relatively sparse, but what exists reinforces the plain meaning of the statutory language. In the House Consideration of the Report of the Conference Committee (October 4, 1972) on the final version of the 1972 CWA Amendments, Representative Clausen stated that “[s]ection 316(b) requires the location, design, construction and capacity of cooling water intake structures of steam-electric generating plants to reflect the best technology available for minimizing any adverse environmental impact.” 1972 Legislative History, p. 264. The impetus for enacting CWA § 316(b) seems to have been congressional awareness of the problem of fish being harmed by power plant CWISs, as evidenced by the Senate Consideration of the Report of the Conference Committee (October 4, 1972) for the final 1972 CWA Amendments. *Id.* at 196–99, 202.<sup>2</sup>

EPA has promulgated three different sets of regulations to implement CWA § 316(b). First, on December 18, 2001, EPA promulgated regulations specifying requirements to satisfy the BTA standard for CWISs at *new facilities* that withdraw at least 2 million gallons per day (MGD) and use at least 25 percent of the water they withdraw for cooling purposes (the New Facilities Rule).

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<sup>2</sup> See also *In re Pub. Serv. Co. of New Hampshire (Seabrook Station, Units 1 and 2)*, 1 E.A.D. 332 (Adm’r 1977), 1977 EPA App. LEXIS 16, \*19–\*20; *In re Brunswick Steam Elec. Plant*, Decision of the Gen. Counsel No. 41, at 200–01 (1976).

66 Fed. Reg. 65255. The New Facilities Rule regulations are codified at 40 CFR Part 125, Subpart I. Second, on June 16, 2006, EPA promulgated regulations at 40 CFR Part 125, Subpart N, to set standards under CWA § 316(b) for new offshore oil and gas extraction facilities (the New Offshore Oil and Gas Facilities Rule). 71 Fed. Reg. 35040. Finally, on August 15, 2014, EPA promulgated regulations at 40 CFR Part 125, Subpart J, that set standards under CWA § 316(b) for *existing facilities* (the Existing Facilities Rule). 79 Fed. Reg. 48430.

In light of these three different sets of regulations, the question becomes whether any of them apply to the Sunrise Wind Facility? First, the Existing Facilities Rule does not apply because the proposed Sunrise Wind OCS-DC is not an existing facility. *See* 40 CFR §§ 125.91, 125.92(k). Second, the New Offshore Oil and Gas Facilities Rule also does not apply because the proposed OCS-DC is not a new offshore oil and gas extraction facility as defined at 40 CFR § 125.131. *See also* 40 CFR §§ 125.130, 125.133 and 435.10.

Finally, EPA has also determined that Sunrise Wind’s proposed OCS-DC is not covered by the New Facilities Rule, but a more involved analysis was needed to reach this conclusion. The New Facilities Rule defines a “new facility,” in pertinent part, as:

any building, structure, facility, or installation that meets the definition of a “new source” or “new discharger” in 40 CFR 122.2 and 122.29(b)(1), (2), and (4) and is a greenfield or stand-alone facility; commences construction after January 17, 2002; and uses ... a newly constructed cooling water intake structure .... New facilities include only “greenfield” and “stand-alone” facilities. ....

40 CFR § 125.83 (definition of “new facility”). 40 CFR 125.81(a). The proposed Sunrise Wind OCS-DC satisfies this definition of new facility because it will be a “new discharger” that is also a “greenfield” facility with a newly constructed CWIS. *See* 40 CFR § 125.83 (definition of “new facility”).<sup>3</sup> In addition, as proposed, the Sunrise Wind OCS-DC meets the New Facilities Rule’s applicability criteria which specify that the Rule applies to new facilities with CWISs that withdraw at least 2 MGD and use at least 25 percent of the water they withdraw for cooling purposes. 40 CFR § 125.81(a).

Despite satisfying these basic terms of the New Facilities Rule, EPA has determined that the proposed Sunrise Wind OCS-DC is not covered by the New Facilities Rule and therefore, CWIS requirements for the Facility should be developed based on a case-by-case, BPJ application of CWA § 316(b). *See* 40 CFR § 125.90(b). As explained in more detail below, EPA reaches this conclusion because siting a CWIS in offshore ocean waters, as will be necessary for the Sunrise Wind OCS-DC, poses distinct issues that were not considered by EPA when it developed and promulgated the New Facilities Rule. EPA has consistently addressed offshore facilities differently from other facilities and takes the same approach for Sunrise Wind’s OCS-DC.

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<sup>3</sup> As defined in 40 CFR § 122.2, a “new discharger” means any building, structure, facility, or installation from which there is or may be a discharge of pollutants that did not commence the discharge of pollutants at a particular site prior to August 13, 1979, is not a new source, and has never received a finally effective NPDES permit for discharges at that site.



Sunrise Wind proposes to locate the wind farm's OCS-DC (and its CWIS) well offshore in relatively deep ocean waters. The potential use of various impingement and entrainment reduction technologies, such as traveling screens, barrier nets, and closed-cycle cooling, at this type of offshore location raises engineering challenges, environmental considerations, and economic effects that were not considered during EPA's development of the New Facilities Rule. Consistent with this fact, EPA explicitly excluded the offshore and coastal oil and gas extraction point source category from coverage under the New Facilities Rule. 40 CFR § 125.81(d). EPA explained that it was "deferring regulation of these facilities due to the unique engineering, cost, and economic issues associated with offshore and coastal drilling rigs, ships, and platforms." 66 Fed. Reg. 65311. EPA later addressed these facilities in the New Offshore Oil and Gas Facilities Rule, as mentioned above. 71 Fed. Reg. 35005.<sup>4</sup> In that rulemaking, EPA recognized that there are inherent differences in the design and operation of land-based and offshore facilities, and that these differences may limit the use of certain CWIS technologies in offshore settings. As a result, the Agency adopted a regulatory approach that provides new offshore oil and gas extraction facilities additional flexibilities in complying with the Rule.<sup>5</sup> See 71 Fed. Reg. 35019.

Based on its proposed offshore location, the CWIS for Sunrise Wind's OCS-DC will be more similar to the CWIS for an offshore oil and gas extraction facility than to a CWIS for a land-based facility. The OCS-DC's CWIS presents site-specific challenges for the application of available technologies that are similar to the challenges presented by the CWISs for offshore oil and gas facilities. Yet, as stated above, the New Offshore Oil and Gas Facilities Rule simply does not apply to Sunrise Wind because it is not a new oil and gas extraction facility. See 40 CFR §§ 125.131 and 125.133.

In addition, close examination of the New Facilities Rule confirms that EPA did not consider offshore high voltage direct current (HVDC) cooling systems or converter stations, or offshore wind farms, when establishing national requirements for new facilities. Instead, when developing the New Facilities Rule, EPA considered new facilities in two major industrial sectors: 1) steam electric generators (i.e., facilities using a steam electric prime mover); and (2) manufacturing facilities. See Technical Development Document (p. 1-1) and Economic Analysis (p. 1-1, 2-2). See also 65 Fed. Reg. 49061. The industry profile in the Economic Analysis supporting the Rule indicates that EPA focused on steam electric plants because these facilities use a substantial amount of cooling water. See Economic Analysis of the Final Regulations Addressing Cooling Water Intake Structures for New Facilities p. 3-3. The economic costs and impacts for electric

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<sup>4</sup> EPA also excluded *existing* offshore oil and gas extraction facilities, as well as existing offshore seafood processing vessels and existing offshore liquified natural gas terminals, from coverage by the Existing Facilities Rule and, instead, continued to address such facilities with a site-specific, BPJ approach. 40 CFR § 125.91(d). See also 79 Fed. Reg. 48310 (Aug. 14, 2014).

<sup>5</sup> Notably, EPA did not categorically exempt new facilities from any *land-based* industry segments, including land-based facilities in the oil and gas extraction point source category, from the New Facilities Rule. See 66 Fed. Reg. 65311. Rather, EPA concluded that land-based facilities meeting the in-scope requirements at 40 CFR § 125.81 must comply with the rule irrespective of whether the specific industry segment was explicitly analyzed for the Proposed Rule. See *Id.* EPA's decision to categorically exclude new offshore oil and gas extraction facilities from the New Facilities Rule, but not new land-based oil and gas facilities, indicates that this decision turned on the offshore location of the CWISs and the challenges posed by the offshore environment for selecting available CWIS technologies to minimize adverse environmental impacts, rather than turning on the point source category itself.

generators implementing the requirements of the New Facilities Rule were based on the projected addition of 83 new steam electric generators between 2001 and 2020, which were expected to be comprised of either combined-cycle gas or coal facilities. *See id.* at 5-1. The record indicates that EPA simply did not consider cooling water use associated with the production of renewable energy from offshore wind farms. Although neither the regulations nor the preamble for the New Facilities Rule explicitly exclude offshore converter stations like the one proposed by Sunrise Wind from coverage by the Rule, nothing in the analysis or record supporting the Rule indicates that EPA considered this type of facility or intended the Rule to apply to it. This is hardly surprising since the New Facilities Rule was promulgated in 2001 and an OCS-DC for an offshore wind farm is a relatively new type of facility. *See* Middleton and Barnhart 2022. Thus, EPA's conclusion that offshore converter stations associated with wind development are not covered by the New Facilities Rule is primarily based on the unique technical and economic challenges presented by the offshore location of these CWISs – Sunrise Wind's CWIS would lie more than 15 miles offshore – which were not considered in the development of the Rule.<sup>6</sup> Therefore, EPA has determined that CWIS requirements for an offshore converter station like Sunrise Wind's OCS-DC should be set on a case-by-case, BPJ basis. 40 CFR § 125.90(b).

EPA also notes that the potential for adverse environmental impacts from offshore CWISs is clearly demonstrated in Section 5.2 of this Fact Sheet. The determination that the Sunrise Wind OCS-DC is not subject to the New Facilities Rule does not reflect any presumption about the degree of adverse environmental impacts that may be caused by the Facility and does not change the fact that the CWIS is subject to the statutory requirements of CWA § 316(b).

For the reasons stated above, EPA concludes that offshore converter stations associated with wind farms are not subject to the requirements of the New Facilities Rule. Instead, and consistent with 40 CFR § 125.90(b), CWISs at offshore converter stations for wind farms must meet § 316(b) requirements established on a case-by-case, BPJ basis. EPA's case-specific evaluation of the location, design, construction, and capacity of Sunrise Wind's proposed CWIS is presented in Section 5.2 of this Fact Sheet.

## **2.4 Monitoring and Reporting Requirements**

### **2.4.1 Monitoring Requirements**

Sections 308(a) and 402(a)(2) of the CWA and the implementing regulations at 40 CFR Parts 122, 124, 125, and 136 authorize EPA to include monitoring and reporting requirements in NPDES permits.

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<sup>6</sup> EPA took a similar position regarding the possible application of the 2014 Final Existing Facilities Rule to existing hydroelectric facilities, concluding that the Existing Facilities Rule did not apply because hydroelectric facilities were not considered in the development of the Rule. As a result, requirements under CWA § 316(b) would be set on a site-specific, BPJ basis for such facilities. *See* July 6, 2022, Transmittal of Revised Framework for Best Professional Judgement for Cooling Water Intake Structures at Hydroelectric Facilities. [https://www.epa.gov/sites/default/files/2021-01/documents/transmittal\\_of\\_framework\\_for\\_bpj\\_for\\_cwis\\_at\\_hydroelectric\\_facilities\\_final\\_memo.pdf](https://www.epa.gov/sites/default/files/2021-01/documents/transmittal_of_framework_for_bpj_for_cwis_at_hydroelectric_facilities_final_memo.pdf)

The discharge-related monitoring requirements included in this permit have been established to yield data representative of the Facility's discharges in accordance with CWA §§ 308(a) and 402(a)(2), and consistent with 40 CFR §§ 122.41(h), (j) and (l)(9), 122.43(a), 122.44(i) and 122.48. The Draft Permit specifies routine sampling and analysis requirements to provide ongoing, representative information on the levels of regulated constituents in the OCS-DC's discharges. The monitoring program is needed to enable EPA to assess the characteristics of the Facility's effluent, whether Facility discharges are complying with permit limits and conditions, and whether different permit conditions might be necessary in the future to ensure compliance with CWA standards. EPA may use the results of the analyses conducted pursuant to this permit, as well as national water quality criteria developed pursuant to CWA § 304(a)(1), and any other appropriate information or data, to develop numeric effluent limitations for any pollutants, including, but not limited to, those pollutants listed in Appendix D of 40 CFR Part 122.

NPDES permits require that the approved analytical procedures found in 40 CFR Part 136 be used for sampling and analysis unless other procedures are explicitly specified. *See* 40 CFR § 122.41(j)(4). Permits also include requirements necessary to comply with the *National Pollutant Discharge Elimination System (NPDES): Use of Sufficiently Sensitive Test Methods for Permit Applications and Reporting Rule*.<sup>7</sup> This Rule requires that where EPA-approved methods exist, NPDES applicants must use sufficiently sensitive EPA-approved analytical methods when quantifying the presence of pollutants in a discharge. Further, the permitting authority must prescribe that only sufficiently sensitive EPA-approved methods be used for analyses of pollutants or pollutant parameters under the permit. The NPDES regulations at 40 CFR § 122.21(e)(3) (completeness), 40 CFR § 122.44(i)(1)(iv) (monitoring requirements) and/or as cross referenced at 40 CFR § 136.1(c) (applicability) indicate that an EPA-approved method is sufficiently sensitive where:

- The method minimum level (ML)<sup>8</sup> is at or below the level of the effluent limitation established in the permit for the measured pollutant or pollutant parameter; or
- In the case of permit applications, the ML is above the applicable water quality criterion, but the amount of the pollutant or pollutant parameter in a facility's discharge is high enough that the method detects and quantifies the level of the pollutant or parameter in the discharge; or
- The method has the lowest ML of the analytical methods approved under 40 CFR Part 136, or required under 40 CFR chapter I, subchapter N or O, for the measured pollutant or pollutant parameter.

The Draft Permit also proposes monitoring requirements related to the Facility's CWIS operations. These monitoring requirements are authorized by Sections 308 and 402(a)(2) of the CWA. *See also* 40 CFR §§ 122.48, 125.87 and 125.88. The required monitoring is intended to

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<sup>7</sup> 79 Fed. Reg. 49001 (Aug. 19, 2014).

<sup>8</sup> The term "minimum level" refers to either the sample concentration equivalent to the lowest calibration point in a method or a multiple of the method detection limit (MDL), whichever is higher. Minimum levels may be obtained in several ways: They may be published in a method; based on the lowest acceptable calibration point used by a laboratory; or calculated by multiplying the MDL in a method, or the MDL determined by a laboratory, by a factor. EPA regards the following terms related to analytical method sensitivity to be synonymous: "quantitation limit," "reporting limit," "level of quantitation," and "minimum level." *See* Fed. Reg. 49001 (Aug. 19, 2014).

provide data to help characterize the environmental effects of the Facility's CWIS operations and track compliance with the permit's CWIS-related requirements. This monitoring data may also be used to support future adjustments to the permit's CWIS-related requirements. The Permittee may seek a modification of the permit's monitoring requirements either when the permit is reissued or during the term of the permit if new information supports such modifications. *See* 40 CFR § 122.62(a)(2).

#### **2.4.2 Reporting Requirements**

The Draft Permit requires the Permittee to report monitoring results obtained during each calendar month to EPA and the State electronically using NetDMR. The Permittee must submit a Discharge Monitoring Report (DMR) for each calendar month no later than the 15<sup>th</sup> day of the month following the completed reporting period.

NetDMR is a national web-based tool enabling regulated CWA permittees to submit DMRs electronically via a secure internet application to EPA through the Environmental Information Exchange Network. NetDMR has eliminated the need for participants to mail in paper forms to EPA under 40 CFR §§ 122.41 and 403.12. NetDMR is accessible through EPA's Central Data Exchange at <https://cdx.epa.gov/>. Further information about NetDMR can be found on EPA's NetDMR support portal webpage.<sup>9</sup>

With the use of NetDMR, the Permittee is no longer required to submit hard copies of DMRs and reports to EPA unless otherwise specified in the Final Permit. In most cases, reports required under the permit shall be submitted to EPA as an electronic attachment through NetDMR, however certain reports, including the annual biological monitoring reports, must also be submitted to the NPDES Applications Coordinator via email. Certain exceptions are provided in the permit, such as for providing written notifications required under the Part II Standard Conditions.

#### **2.5 Standard Conditions**

The Standard Conditions, included as Part II of the Draft Permit, are based on applicable provisions of EPA's NPDES permitting regulations. *See* 40 CFR § 122.41. *See also, generally,* 40 CFR Part 122.

#### **2.6 Anti-backsliding**

The CWA's anti-backsliding requirements prohibit a permit from being renewed, reissued, or modified with conditions less stringent than the corresponding conditions in a previous permit issued to the same facility, unless doing so is authorized by one of the specified exceptions to the anti-backsliding requirements. *See* CWA §§ 402(o) and 303(d)(4) and 40 CFR § 122.44(l). Anti-backsliding provisions apply to limits based on technology, water quality, and/or State certification requirements.

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<sup>9</sup> <https://netdmr.zendesk.com/hc/en-us>

As this Permit will authorize discharges and cooling water withdrawals from the proposed, newly constructed Sunrise Wind OCS-DC, which has not previously been issued an NPDES permit, anti-backsliding requirements do not apply to this permit.

## 2.7 Environmental Review Under the National Environmental Policy Act

This NPDES permitting action for Sunrise Wind is not subject to the environmental review requirements of the National Environmental Policy Act of 1969 (NEPA), 42 U.S.C. §§ 4321, *et seq.* Section 511(c)(1) of the Clean Water Act (CWA), 33 U.S.C. § 1371(c)(1), expressly provides that only two types of EPA actions under the CWA are subject to the environmental review requirements of NEPA. The first is an EPA award of financial assistance for the construction of a publicly owned treatment works (POTW) under the CWA construction grants program, and the second is an EPA issuance of an NPDES permit under CWA § 402, 33 U.S.C. § 1342, to a facility that is a “new source” under CWA § 306, 33 U.S.C. § 1316. The current permitting action does not fall within either of these two categories of EPA actions, as described below, and, as a result, it is not subject to NEPA review by EPA.

First, the proposed permitting action obviously does not involve financial assistance for construction of a POTW. Second, neither Sunrise Wind nor its OCS-DC are new sources under CWA § 306. To be a new source under the CWA, a facility must satisfy several criteria, including that it must fall within an industrial category for which new source performance standards have been developed. *See* 33 U.S.C. § 1316(a)(2). *See also* 40 CFR §§ 122.2 (definition of “new source”) and 122.29(b)(2). EPA has not, however, promulgated new source performance standards for wind power facilities, generally, or for converter stations in particular, whether based on land or water. Therefore, neither the Sunrise Wind offshore wind farm nor its OCS-DC would be new sources under CWA Section 306. Accordingly, NEPA review is not required in connection with EPA’s proposed issuance of an NPDES permit to the Facility.

That said, the U.S. Department of Interior’s Bureau of Ocean Energy Management (BOEM) is preparing an environmental impact statement (EIS) under NEPA to support *its* review and potential approval of Sunrise Wind’s proposed Construction and Operations Plan (COP) for the Facility. *See* 86 Fed. Reg. 48763, 49563. EPA (and various other agencies) have assisted and cooperated with BOEM during its development of the Draft EIS. *See* BOEM’s Draft EIS for the Sunrise Wind Farm Project on the Northeast Atlantic Outer Continental Shelf.<sup>10</sup> *See also* 40 CFR § 1501.8. The Draft EIS includes detailed discussion of the proposed project and alternatives to it and their potential environmental effects. Many aspects of the project are discussed in the EIS, including its pollutant discharges and cooling water withdrawals. The discussion in this Fact Sheet focuses on aspects of the proposed facility regulated by the NPDES permit and the basis of the proposed permit conditions.

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<sup>10</sup> BOEM announced the availability of the Draft EIS on December 16, 2022. The Draft EIS and supporting documents are available at <https://www.boem.gov/renewable-energy/state-activities/sunrise-wind>.

### 3.0 Description of Facility

#### 3.1 Location and Type of Facility

Sunrise Wind is proposing to install and operate an offshore wind farm that will include a dedicated offshore converter station (OCS-DC). The Facility will be located on the outer continental shelf in BOEM Renewable Lease Area OCS-A0487. The lease area is located in federal waters (defined as waters seaward of the three-nautical mile (nm) territorial sea and extending out to 200 nm from the baseline from which the territorial sea is measured)<sup>11</sup> approximately 18.9 miles (16.4 nm) south of Martha's Vineyard, Massachusetts. 30.5 miles (26.5 nm) east of Montauk, New York, and 16.7 miles (14.5 nm) from Block Island, Rhode Island. A location map is provided in Figure 1.

Wind turbines generate medium voltage alternating current (AC) power, which is the type of current used in homes in the U.S. However, AC power does not travel as effectively as direct current (DC) power through underwater cables over long distances. Converting electricity from AC to DC for long-range bulk transmission from offshore wind farms would reduce power losses. *See* Middleton and Barnhart 2022. The Sunrise Wind offshore wind project is proposing to use a dedicated, stationary OCS-DC to collect the medium voltage AC power generated by the wind turbine generators, convert it to HVDC for transmission, and then transport the power to onshore electrical infrastructure in New York via the Sunrise Wind Export Cable.

Therefore, the OCS-DC will house equipment for converting electric power from AC to DC and for high-voltage power transmission. The main equipment to convert the power generated by wind turbines includes medium voltage AC (66 kV) gas-insulated switch gear, one or more converter transformers, converter reactors, converter valves, DC smoothing reactors, and supervisory control and data acquisition (SCADA) systems. The OCS-DC will also be equipped with emergency power generation, fire and safety equipment, first aid and lifesaving equipment, lighting, an uninterrupted power supply, an offshore crane, communications equipment, and sanitary facilities.

Significantly, from the perspective of NPDES permitting, converting power from AC to DC generates heat and requires the systems to be cooled when operating. Therefore, to cool the power components, the proposed OCS-DC includes a heat exchanger which requires the intake and discharge of NCCW operated in an open-loop system.

The proposed OCS-DC will be centrally located in the lease area. The proposed OCS-DC platform design is 328 feet (ft) x 262 ft (100 m x 80 m) and is to be placed on a steel jacket pile structure located approximately 78 feet (24 m) above mean high water elevation. The Applicant expects construction of the OCS-DC to begin in the third or fourth quarter of 2024 and the project to be operational by the end of 2025. The proposed operational life span of the Facility is 25 years.

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<sup>11</sup> The federal government and the adjacent state have concurrent jurisdiction over waters within or landward of the territorial sea, whereas only the federal government has jurisdiction over waters seaward of the territorial sea (i.e., federal waters).

### 3.2 Location and Type of Discharge

The Draft Permit proposes authorization for discharges of NCCW to the Atlantic Ocean via Outfall 001 (alternately referred to as the “dump caisson”). Outfall 001 will be located at Latitude 40° 59’ 36.03” (40.993342) Longitude -71° 7’ 16.42” (-71.121229) in the Atlantic Ocean. The OCS-DC will withdraw seawater for non-contact cooling of heat produced in the conversion of AC to DC. The waste heat will then be discharged as thermal effluent to the Atlantic Ocean. The effluent will also contain sodium hypochlorite (i.e., bleach), which will be used to prevent biological growth in the cooling system.

The Facility’s proposed NCCW includes intake pipes, seawater lift pumps, coarse filters, an electrochlorination system, a heat exchange system, and a discharge outfall. A site flow schematic is provided in Figure 2. The heat exchange system will be comprised of three parallel plate-and-frame heat exchangers. The NCCW will exchange heat with the closed-circuit, cooling medium coolant loop. Outfall 001 will be a single outlet, vertical pipe with the terminal end (5.4 ft<sup>2</sup> diameter) located approximately 40 ft (12 m) below mean sea level. Outfall 001 will discharge effluent from the heat exchange and electrochlorination systems, and backwash from the coarse filters.

The OCS-DC will also discharge stormwater from the platform that has not come into contact with any equipment or industrial material. This stormwater does not fall under any of the categories required to obtain a NPDES permit at 40 CFR § 122.26(a)(1). Conversely, a “process stormwater system” will collect and store the volume of stormwater directly related to processing or raw materials storage areas consistent with the definition of stormwater associated with industrial activity at 40 CFR § 122.26(b)(14). The system will collect and store stormwater associated with industrial activity in two open drain tanks, each sized to contain approximately 37,000 gallons of stormwater. The open drain tanks will be pumped to support vessels approximately every six months during routine operations and maintenance activities and transported to shore for treatment at authorized facilities. Thus, there will be no discharge of stormwater associated with industrial activity from the OCS-DC and this NPDES permitting action will not authorize discharges of stormwater associated with industrial activity.

### 4.0 Description of Receiving Water

The Facility will discharge from the OCS-DC, through Outfall 001 to the Atlantic Ocean. The lease area is located in federal ocean waters (i.e., waters lying up to 197 miles seaward of the seaward boundary of the three-mile-wide territorial sea, *see* CWA § 502(8) and (10)). More specifically, the lease area is located approximately 18.9 miles (16.4 nautical miles (nm)) south of Martha’s Vineyard, Massachusetts, 30.5 miles (26.5 nm) east of Montauk, New York, and 16.7 miles (14.5 nm) southeast of Block Island, Rhode Island.

Ocean depths in the vicinity of the proposed wind farm range between 115 and 180 ft. (35-55 m). The expected depth at the OCS-DC is 148 ft. (45 m) relative to local mean sea level (LMSL) with a mean tidal range of 3.05 ft. (0.93 m). Velocities in the water column are stratified with the highest velocities at the surface and lower velocities near the bottom. The average surface

velocity is 0.72 fps. Water temperatures vary seasonally with peak temperatures in late summer and early fall. In general, thermal stratification is present during this period with surface temperatures near 68°F (20°C) and bottom temperatures near 50°F (10°C). Generally, thermal stratification is less evident during winter with surface temperatures ranging between 39° and 41°F (4-5°C) and bottom temperatures near 41°F (5°C). Salinity ranges from about 32-33 parts per thousand (ppt). Sediment in the vicinity of the proposed OCS-DC generally consists of sand and mud (Sunrise Wind COP, Appendices M1 and M3; NPDES Application, p. 11 and Figure 2; Draft EIS Table 3.5.2-1, p. 3-70).

## **5.0 Proposed Permit Conditions**

The proposed permit conditions derived under the CWA are described below. These proposed permit conditions include, among other things, effluent limitations, CWIS requirements, and monitoring and reporting requirements. The proposed permit conditions may be found in Part I of the Draft Permit. The bases of the proposed permit conditions are discussed and explained throughout this Fact Sheet. In setting permit conditions for the Draft Permit, EPA used the maximum intake and discharge flow of 7.8 MGD and the highest estimated monthly average intake and discharge flow of 5.3 MGD, as projected by Sunrise Wind.

### **5.1 Effluent Limitations and Monitoring Requirements**

EPA based the Draft Permit's proposed effluent limitations on federal law and regulations, information regarding the Facility's projected discharge characteristics, and data regarding ambient conditions and characteristics, all as described above.

#### **5.1.1 Effluent Flow**

Setting limits on effluent flow volumes is within EPA's authority to condition a permit to carry out the objectives and satisfy the requirements of the CWA. *See* CWA §§ 402(a)(1) and (2) and 40 CFR §§ 122.4(a), and 122.43. Regulating the quantity of pollutants in the discharge through a restriction on the quantity of effluent is also consistent with EPA's authorities under the CWA. Moreover, permit requirements for monitoring and reporting of effluent flow volumes are authorized by CWA § 402(a)(2) and 40 CFR § 122.48.

The cooling water system for the proposed OCS-DC will have three seawater life pumps, each with a design capacity of 4,245 gpm or 6.1 MGD. The system is designed to operate with one or two pumps running simultaneously, while the third pump provides redundancy and will be kept on stand-by. The application states that the proposed design intake flow (DIF) of the non-contact cooling water system is 8.1 MGD. However, in a follow-up communication, Sunrise Wind also identified that, due to a physical constraint in the shared manifold, the maximum design flow of the CWIS is actually 7.8 MGD. *See* emails from M. Evans (Orsted) to D. Gaito (EPA) dated 11/10/22 and 12/7/22. As explained in Section 5.2.2 below, EPA accepted Sunrise Wind's impact analysis based on a DIF of 8.1 MGD as it is slightly conservative. However, the Draft Permit proposes a maximum daily effluent flow limit of 7.8 MGD.<sup>12</sup>

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<sup>12</sup> The effluent flow limit is determined by the influent flow volume to be drawn into the Facility by the CWISs.



Variable frequency drives (VFDs) on each pump will adjust cooling water flow to meet demand, resulting in estimated average daily flows ranging from 4.0 MGD to 5.3 MGD (Table 5-1). The highest monthly average flows are expected during the late summer and fall (August through November) when ambient temperatures are highest.

**Table 5-1. OCS-DC Average Daily Intake Flow (MGD) per Month. From NPDES Application, p. 16.**

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Average Daily Flow (MGD)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.3	4.6	5.3	4.9	4.1

The Draft Permit proposes an average monthly flow limit of 5.3 MGD. As discussed in Section 5.2.3 below, the Draft Permit also proposes a maximum through-screen velocity of 0.5 fps, which must be monitored and reported in the monthly DMR.

### 5.1.2 pH

The hydrogen-ion concentration in an aqueous solution is represented by the pH using a logarithmic scale of 0 to 14 standard units (S.U.). Solutions with pH 7.0 S.U. are neutral, while those with pH less than 7.0 S.U. are acidic and those with pH greater than 7.0 S.U. are basic. Discharges with pH values markedly different from the receiving water pH can have a detrimental effect on the environment. Not only can sudden pH changes kill aquatic life, but pH can also affect the toxicity of other pollutants in the water.

In open ocean environments with substantial water depth, a discharge should not change the receiving water pH by more than 0.2 S.U. outside of the naturally occurring variation or cause the pH to be outside of the range of 6.5 to 8.5 S.U. *See* EPA 1986 Quality Criteria for Water (“Gold Book”), p. 233.<sup>13</sup> As the Facility’s discharge will be primarily comprised of once-through cooling water, EPA does not expect the pH of the effluent to be altered by more than 0.2 S.U. from the pH of the influent. EPA proposes pH monitoring of the influent (representative of the natural range) and effluent at a frequency of twice per week to ensure that the pH of the effluent remains within the expected range of 6.5 to 8.5 S.U. and that the change in pH is not more than 0.2 S.U. outside of the naturally occurring variation.

### 5.1.3 Temperature

Section 502(6) of the Clean Water Act defines heat, among other things, as a “pollutant.” *See* 33 U.S.C. § 1362(6). Water temperature affects the metabolic and reproductive activities of aquatic organisms and can determine which fish and macroinvertebrate species can survive in a given water body. Certain cold-blooded species cannot regulate their body temperature through physiological means, so their body temperatures reflect the temperatures of the water they

<sup>13</sup> Gold Book available at <https://www.epa.gov/sites/default/files/2018-10/documents/quality-criteria-water-1986.pdf>.

inhabit. Rapid increases or decreases in ambient water temperature can directly affect aquatic life, particularly fish. Ambient water temperature can also indirectly affect aquatic life by influencing water quality parameters, such as dissolved oxygen, given that the solubility of oxygen decreases as water temperature increases.

EPA's current national recommended water quality criteria table indicates that temperature effects on aquatic life are species dependent and refers to the Gold Book.<sup>14</sup> To ensure protection of the marine community from adverse thermal effects, the Gold Book (p. 279) recommends (i) that discharges not cause a maximum increase of greater than 1°C (1.8°F) in the weekly average temperature during all seasons of the year, provided the summer maximum is not exceeded, and (ii) that discharges not alter the daily temperature cycles characteristic of the water body in either magnitude or frequency.

Sunrise Wind provided an assessment of the thermal impacts on the receiving water of heated effluent from the OCS-DC. *See* NPDES Application, pp. 51-55. The application summarizes the results of thermal modeling based on a projected maximum daily effluent temperature of 90°F and a daily average effluent temperature of 86°F.<sup>15</sup> The analysis used a temperature differential of 1°C (1.8°F) to determine the extent of the thermal plume, which is consistent with EPA's Gold Book.

Sunrise Wind used the Cornell Mixing Zone Expert System (CORMIX) to model dilution of the heated discharge and used the Northeast Coastal Forecast System (NECOFS) model to characterize hydrodynamics within the wind farm project area.<sup>16</sup> Ambient temperatures are highest in fall (19.6°C/67.3°F) and summer (19.1°C/64.6°F) and lowest in winter (8.1°C/46.6°F) and spring (11.0°C/51.8°F). Data used as representative of "average year" hydrodynamic conditions exhibit minimal variation in temperature between the surface and bottom, apart from storm events, and consistent current speeds throughout the water column (about 0.3 m/s, 0.98 fps). *See* Sunrise Wind COP Appendix BB pp. 4-6. The CORMIX analysis compared mixing of the thermal plume at three discharge locations (6 m, 12 m, and 30 m below lower mean sea level) and at ambient temperatures representative of the four seasons (fall, winter, spring, and summer). The scenarios were simulated for the periods between 3.1 hours before and after slack tide with a projected maximum daily effluent temperature of 90°F (32.2°C) and turbulent mixing as the dominant mechanism for dilution of the thermal effluent. The model assumed steady-state mixing with tidal simulation but did not include thermal stratification.

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<sup>14</sup> National Recommended Water Quality Criteria Table available at <https://www.epa.gov/wqc/national-recommended-water-quality-criteria-aquatic-life-criteria-table>.

<sup>15</sup> The complete thermal modeling analysis is provided in Appendix B of the NPDES Application: Sunrise Wind Farm Converter Station Intake Zone of Influence & Thermal Discharge, Preliminary Findings (Woods Hole Group, 2021). This document is also available as Appendix BB to the Sunrise Wind COP at [https://www.boem.gov/sites/default/files/documents/renewable-energy/state-activities/SRW01\\_COP\\_AppBB\\_HZI\\_Thermal%20Discharge\\_2022-04-08\\_508.pdf](https://www.boem.gov/sites/default/files/documents/renewable-energy/state-activities/SRW01_COP_AppBB_HZI_Thermal%20Discharge_2022-04-08_508.pdf).

<sup>16</sup> To model seasonal and spatial variations in temperature for the study, Woods Hole Group selected NECOFS model output from September 17, 1997, through September 16, 1998, to represent an average annual year of ocean climatology. *See* Sunrise Wind COP Appendix H for a description of how the representative year was selected.

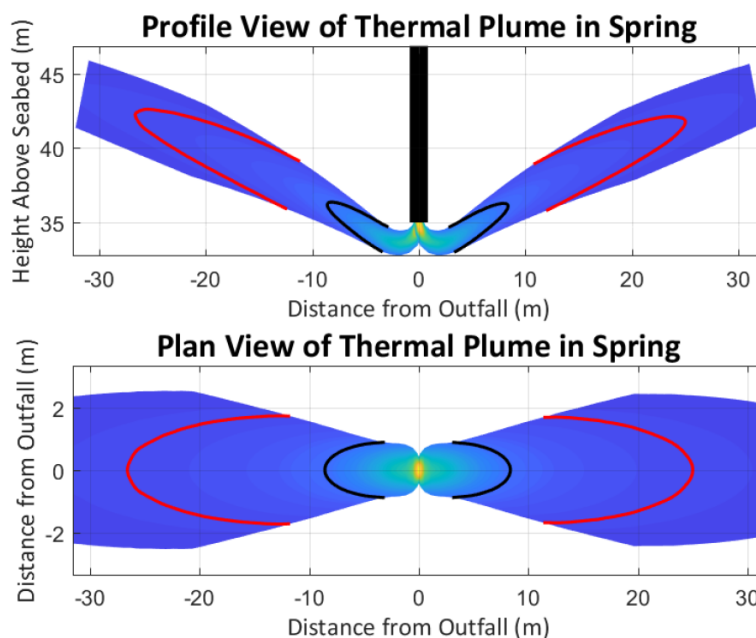
Based on the analysis of the CORMIX modeling results, Sunrise Wind selected 12 m as the depth for locating the discharge outfall. *See* NPDES Application p. 52. Table 5-2 provides the modeled extent of the thermal plume at a 12 m depth outfall location during slack tide for each season. The Applicant rejected the 6 m (18 ft) depth for the outfall location to avoid exposure during a 100-year wave event and because in this scenario the thermal plume reached the ocean surface. The Applicant also rejected the 30 m (100 ft) depth for the outfall location because of the potential for heated effluent to be subsequently withdrawn by the cooling water intake.

**Table 5-2. Seasonal Thermal Plume Model Results for Outfall Location at Depth of 12 Meters. Adapted from Sunrise Wind NPDES Application, Table 7.**

	3.1 Hours Before Slack Tide			3.1 Hours After Slack Tide		
	Length	Width	Area	Length	Width	Area
Fall	17.42 m	3.02 m	40.9 m <sup>2</sup>	15.32 m	3.29 m	38.63 m <sup>2</sup>
Winter	23.55 m	3.44 m	59.88 m <sup>2</sup>	24.76 m	3.51 m	65.17 m <sup>2</sup>
Spring	24.36 m	3.36 m	61.9 m <sup>2</sup>	26.32 m	3.44 m	67.9 m <sup>2</sup>
Summer	17.94 m	3.26 m	44.69 m <sup>2</sup>	18.96 m	3.33 m	48.11 m <sup>2</sup>

Model results suggest that the thermal plume (at a maximum discharge temperature of 90°F) is generally in the range of 15-25 m long and 3-3.5 m wide. The largest extent of the plume (about 68 m<sup>2</sup>) is expected to occur within 3 hours after slack tide during spring. Figure 5-1 illustrates the profile (top) and plan (bottom) view of the spring slack tide plume. Generally, the modeled plume is fully mixed (indicated by the red outline) within 25 m (about 86 ft) of either side of the outfall. The plume is slightly buoyant but becomes fully mixed within a depth of 10 m (about 30 ft) of the outfall. The plume is expected to mix relatively quickly and is less than 8°F warmer than ambient temperature (indicated by the black outline) within approximately 8 m (26 ft) of the outfall. For comparison, the expected area of the plume under worst-case conditions is about 1% of the area encompassed by the foundation of the OCS-DC (6,394 m<sup>2</sup> or 1.58 acres) and the length of the plume is about 1.4% of the expected distance between wind turbine generators (WTGs) (1,850 m or 1.15 miles). Mobile organisms are expected to be able to avoid adverse effects from the thermal plume by swimming around, above, or below the plume.

**Figure 5-1. Model Views of Spring Thermal Plumes. From Sunrise Wind NPDES Application Figure 8 (p. 55).**



Based on the results of the CORMIX modeling, a maximum daily temperature limit of 90°F will result in a relatively small thermal plume that, under worst-case conditions during spring slack tide, will be within 1.8°F of the ambient temperature (as recommended by the Gold Book) within 25 m of the outfall with a total mixing area of about 67 m<sup>2</sup>. In addition, based on the projected extent of the thermal plume, the daily temperature cycles characteristic of the water body will not be altered in either magnitude or frequency. As such, the proposed thermal discharge limits are expected to protect the marine community from adverse thermal effects.

The Draft Permit proposes a maximum daily effluent temperature limit of 90°F and average monthly temperature limit of 86°F. Temperature must be monitored using an automated meter on a continuous basis. In addition, the Draft Permit proposes that the Permittee complete an ambient thermal monitoring study to confirm that the extent and magnitude of the thermal plume is equal to or less than modeling results.

#### 5.1.4 Total Residual Oxidants

Chlorine and chlorine compounds are toxic to aquatic life. Free chlorine is directly toxic to aquatic organisms and can react with naturally occurring organic compounds in receiving waters to form toxic compounds such as trihalomethanes.

Sunrise Wind intends to prevent biofouling of the OCS-DC cooling assembly by using an electrochlorination system that will use electrolysis of seawater to produce sodium hypochlorite. The chlorinated seawater will be continuously injected via a valve within the intake pipes (upstream of the saltwater lift pumps) when the pumps are operating. The chlorinated seawater

will mix with raw seawater and be directed through the cooling water system, including the heat exchangers, and discharged through the outfall. The electrochlorination system will be operated continuously with a design flow of 0.07 MGD and a proposed actual flow of 0.04 MGD. *See* NPDES Application, p. 17.

Under typical operating conditions, Sunrise Wind expects a chlorine concentration of 0.5 milligrams per liter (mg/L) at each operating pump with a maximum concentration of 2 mg/L when the pumps require a shock dosage (expected infrequently). According to the Applicant, the dosage of chlorine will be automatically adjusted based on feedback provided by an analyzer located downstream of the heat exchangers to maintain a concentration near zero at the outfall. *See id.*, pp. 14, 18. EPA's National Recommended Water Quality Criteria for aquatic life in saltwater for total residual chlorine (TRC) are 7.5 micrograms per liter (µg/L) (0.0075 mg/L) (chronic) and 13 µg/L (0.013 mg/L) (acute). In this case, because the source water contains bromides (e.g., saltwater), chlorine is expressed as total residual oxidants (TRO) instead of TRC. *See* 40 CFR § 423.11(a). Considering that the electrochlorination system will be operated continuously and the dosage system can be automatically adjusted based on the concentration downstream of the heat exchangers, the Draft Permit proposes water quality-based TRO limits of 7.5 µg/L (0.0075 mg/L) as an average monthly value and 13 µg/L (0.013 mg/L) as a daily maximum value at the outfall. Compliance with these TRO limits is expected to be protective of aquatic life and is consistent with the proposed operation of the system to achieve chlorine concentrations near zero. *See* NPDES Application Form 2E Section 7.1 ("If the electrochlorination is operated at proper dosage, chlorine should be completely consumed by the process, making the discharge of chlorine minimal under normal operation.").

However, currently available analytical methods cannot detect TRO at the level of the water quality criteria. In accordance with the *National Pollutant Discharge Elimination System (NPDES): Use of Sufficiently Sensitive Test Methods for Permit Applications and Reporting Rule*, in situations where no EPA-approved methods for a pollutant can achieve the minimum levels necessary to assess reasonable potential or to monitor compliance with a permit limit, applicants must use the method with the lowest minimum level among the EPA-approved methods for the pollutant and this method would meet the definition of sufficiently sensitive. 40 CFR § 122.44(i)(1)(iv)(A)(2). *See also* 79 Fed. Reg. 49004 (August 14, 2014). As a result, EPA has set a compliance level of 30 µg/L for TRO in the Draft Permit, which is equivalent to the minimum level for the analytical method that has the lowest method detection limit of the methods approved under 40 CFR Part 136.

### 5.1.5 Ocean Discharge Criteria

#### *General Background*

As explained previously in Section 2.2.1 above, point source pollutant discharges to waters of the territorial sea, the contiguous zone, or the ocean, *see* 33 U.S.C. §§ 1562(8), (9) and (10) (definitions), are subject to the ODC under Section 403 of the CWA. 33 U.S.C. § 1343. Consistent with CWA §§ 403(a) and (c), EPA promulgated regulations to provide guidelines for application of the ODC (the ODC Regulations). 40 CFR § 125.120. These regulations are

promulgated at 40 CFR Part 125, Subpart M, and NPDES permits for discharges into the specified waters must comply with the ODC Regulations. CWA § 403(a).

Under the ODC Regulations, EPA may not issue an NPDES permit to authorize any pollutant discharge to waters of the territorial sea, the contiguous zone, or the ocean, that the Agency determines would cause “unreasonable degradation of the marine environment.” 40 CFR § 125.123(b). EPA defines “unreasonable degradation of the marine environment” to mean:

- Significant adverse changes in ecosystem diversity, productivity, and stability of the biological community within the area of the discharge and surrounding biological communities;
- Threat to human health through direct exposure to pollutants or through consumption of exposed aquatic organisms; or
- Loss of esthetic, recreational, scientific, or economic values which is unreasonable in relation to the benefit derived from the discharge.

*See* 40 CFR § 125.121(e). For permits subject to the ODC, EPA conducts an Ocean Discharge Criteria Evaluation (ODCE) using the guidelines in 40 CFR Part 125, Subpart M, to determine the extent to which the marine environment will be degraded by the proposed discharge. *See* 40 CFR §125.122(a). *See also* CWA § 403(c).

The ODC Regulations specify the factors to be considered in determining whether a discharge will cause unreasonable degradation of the marine environment. These factors include the following:

- (1) The quantities, composition and potential for bioaccumulation or persistence of the pollutants to be discharged;
- (2) The potential transport of such pollutants by biological, physical or chemical processes;
- (3) The composition and vulnerability of the biological communities which may be exposed to such pollutants, including the presence of unique species or communities of species, the presence of species identified as endangered or threatened pursuant to the Endangered Species Act, or the presence of those species critical to the structure or function of the ecosystem, such as those important for the food chain;
- (4) The importance of the receiving water area to the surrounding biological community, including the presence of spawning sites, nursery/forage areas, migratory pathways, or areas necessary for other functions or critical stages in the life cycle of an organism;
- (5) The existence of special aquatic sites including, but not limited to marine sanctuaries and refuges, parks, national and historic monuments, national seashores, wilderness areas and coral reefs;
- (6) The potential impacts on human health through direct and indirect pathways;
- (7) Existing or potential recreational and commercial fishing, including finfishing and shellfishing;
- (8) Any applicable requirements of an approved Coastal Zone Management plan;

(9) Such other factors relating to the effects of the discharge as may be appropriate; and

(10) Marine water quality criteria developed pursuant to section 304(a)(1).

40 CFR § 125.122(a)(1) – (10).

With regard to water quality criteria, CWA § 304(a)(1) requires EPA to develop criteria reflecting the latest scientific knowledge regarding the impact of pollutants on aquatic life, aquatic habitat, and aquatic recreation. Aquatic life criteria are designed to protect both freshwater and saltwater organisms from short-term (acute) and long-term (chronic) exposure and indicate the highest concentration of specific pollutants or pollutant parameters in water that are not expected to pose a significant risk to the majority of species in a given environment. Neither the CWA nor EPA regulations mandate compliance with EPA's recommended marine aquatic life criteria established under CWA § 304(a), but these criteria provide guidance for states and tribes to use when developing WQS and EPA considers them when applying the ODC. See 40 CFR § 125.122(a)(10).

When using chemical-specific numeric criteria to develop permit limitations, acute and chronic aquatic life criteria and human health criteria are used and expressed in terms of maximum allowable in-stream pollutant concentrations. In general, for NPDES permitting purposes, aquatic-life acute criteria are considered applicable to daily time periods (maximum daily limits) and aquatic-life chronic criteria are considered applicable to monthly time periods (average monthly limits). Chemical-specific human health criteria are typically based on lifetime chronic exposure and, therefore, are typically applicable to monthly average limits as well.

Based on its ODCE, EPA can include limits in NPDES permits to ensure that discharges will not result in unreasonable degradation of the marine environment and, as stated above, discharges that would cause such unreasonable degradation will not be permitted. 40 CFR §§ 125.123(a) and (b). Furthermore, if EPA has insufficient information to determine that the discharge will not result in unreasonable degradation of the marine environment, then the Agency may not issue the permit unless, among other things, it finds that such discharge will not cause irreparable harm and there are no reasonable alternatives to onsite disposal of the pollutants in question. 40 CFR § 125.123(c).

#### *Site-Specific ODCE*

For its ODCE, EPA evaluated the proposed operation of Sunrise Wind's OSC-DC based on information about the proposed project provided in NPDES Application submitted by Sunrise Wind as well as in documents prepared by the Applicant and others for the environmental review of the proposed project.<sup>17</sup> These materials and documents include, but are not limited to, the NPDES Application submitted by Sunrise Wind, the Construction and Operations Plan (COP) prepared by Sunrise Wind, and the Sunrise Wind Offshore Wind Project Draft Environmental Impact Statement (Draft EIS) prepared by BOEM. The information provided in these materials includes, among other things, an analysis of the chemical constituents in the OCS-DC's discharge and the extent to which these constituents might be toxic in the marine environment, an analysis of the dilution provided at the proposed discharge location, and an evaluation of the

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<sup>17</sup> Relevant documents available at <https://www.boem.gov/renewable-energy/state-activities/sunrise-wind>.

project location, including detailed descriptions of the physical resources, biological resources, and socioeconomic resources (including commercial and recreational fisheries) in the vicinity. *See* 40 CFR §§ 122.124(a), (b), (c), (d), and (e). In this regard, BOEM and Sunrise Wind have completed reviews of benthic resources, finfish (including a review of Essential Fish Habitat (EFH)), sea birds, sea turtles, and marine mammals, and they have also characterized commercial and recreational fishing in the project area.

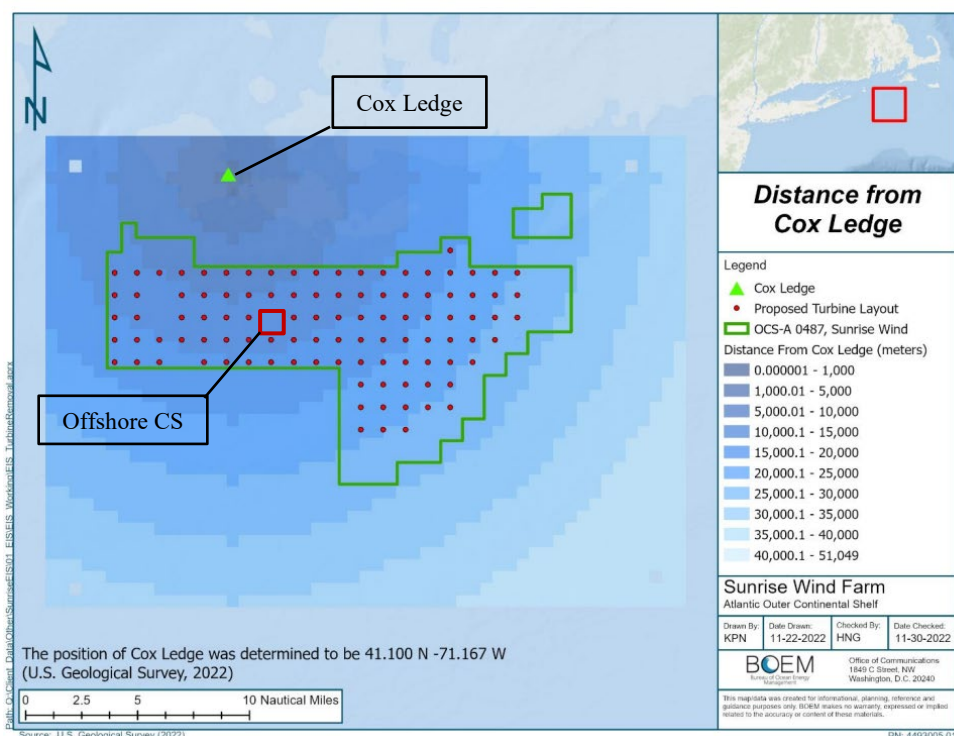
Sunrise Wind is proposing to discharge NCCW from the Facility's OCS-DC. EPA evaluated the potential impacts of the proposed discharge in accordance with the guidelines in 40 CFR Part 125, Subpart M, to determine whether the discharge will cause unreasonable degradation of the marine environment.

Sunrise Wind's wind farm, including the OCS-DC, is proposed to be located in federal waters offshore of the coast of Rhode Island and Massachusetts. A review of the benthic physical and biological resources was provided in Appendix M of the Facility's COP. Higher complexity habitat (cobble and/or boulders) occurs in the northwest region of the project boundary. This hard bottom habitat is ecologically important and serves as nursery habitat for lobster, feeding grounds for Atlantic cod and black sea bass, and spawning habitat for longfin squid. *See* Sunrise Wind COP, Appendix M, p. 81. Soft sediment fauna is the dominant biotic subclass (*e.g.*, burrowing polychaetes, amphipods, sand shrimp, sand dollars, and sea stars). Ecologically and/or economically important benthic species in soft bottom habitat include Atlantic sea scallop, Jonah crab, ocean quahog, Atlantic surfclam, and longfin squid. *See Id.* Table 5.2-3. *See* 40 CFR §§ 125.122(a)(3) and (7).

A number of species listed as threatened or endangered are known to be present or may be present in the project area, including certain types of finfish, marine mammals, sea turtles, and seabirds. *See* Section 6.1 of this Fact Sheet. *See also* 40 CFR § 125.122(a)(3). The project area is also important to the surrounding biological community, including spawning habitat, migratory pathways, EFH, and areas necessary for other functions or critical stages in the life cycle of aquatic life in the area. *See* 40 CFR § 125.122(a)(4). The OCS-DC is to be located 5 to 10 km south of Cox Ledge (Figure 5-2). *See* Draft EIS, p. 2-33. BOEM's Draft EIS recognizes the importance of the complex habitat on Cox Ledge to several ecologically and/or economically valuable species, including the area's importance for Atlantic cod spawning. *See* Draft EIS at Section 3.5.5.



**Figure 5-2. Location of Sunrise Wind OCS-DC Relative to Cox Ledge. Adapted from Draft EIS, Figure 2.1.3-1.**



In addition to its proximity to Cox Ledge, the entire area encompassed by the wind farm project is located within the area recommended by the New England Fishery Management Council as a Habitat Area of Particular Concern (HAPC) for cod spawning and complex habitats. *See* 40 CFR §§ 125.122(a)(3), (4) and (5). *See also* August 2022 Draft Southern New England Habitat Area of Particular Concern Framework; October 7, 2022, letter from NOAA Fisheries to BOEM. The project area is also a productive area for commercial and recreational fisheries.<sup>18</sup> *See* 40 CFR § 122.122(a)(6). The highest revenue commercial fisheries in the project area include monkfish, sea scallop, skates, and summer flounder/scup/black sea bass. Species with the highest economic importance in the area (total revenue independent of combined fishery management plans) include monkfish, sea scallop, skates, American lobster, summer flounder, and longfin squid. *See* 40 CFR § 125.122(a)(7).

The importance of key portions of the lease area to fisheries habitat prompted BOEM, in consultation with the National Marine Fisheries Service (NMFS), to include Alternative C in the Draft EIS. This alternative is intended to minimize impacts of the proposed project on fisheries habitat by identifying areas of complex bottom habitat that are most vulnerable to long-term impacts. *See* Draft EIS at 2.1.3. Alternative C identifies Priority Area 1, which includes the OCS-DC, as a higher priority habitat area based on proximity to Cox Ledge and documented cod

<sup>18</sup> A summary of commercial and recreational fisheries in the area encompassed by Atlantic offshore windfarm development, including Sunrise Wind, was prepared by NMFS and is available at: <https://www.fisheries.noaa.gov/resource/data/socioeconomic-impacts-atlantic-offshore-wind-development>.

spawning activity and recommends shifting 16 WTG positions from this area.<sup>19</sup>

The primary pollutants that will be discharged from the OCS-DC are heated effluent from the heat exchangers and TRO from the electrochlorination system. The Draft Permit establishes effluent limits for temperature and TRO concentration that are protective of marine life and will not cause unreasonable degradation of the marine environment in consideration of the factors at 40 CFR § 122.125(a). EPA explained in Sections 5.1.3 and 5.1.4, as summarized below, that the Draft Permit's effluent limits for these pollutants are set at levels that will meet marine water quality criteria and will ensure protection of the surrounding biological community, including any complex habitat areas of particular importance and/or any areas of importance for recreational and commercial fishing.

In this case, EPA considered the nationally recommended saltwater aquatic life criteria in evaluating potential impacts from the Facility and in developing appropriate permit conditions. EPA's analysis in this regard is analogous to its consideration of a pollutant discharge's "reasonable potential" to cause or contribute to an exceedance of state WQS under 40 CFR § 122.44(d)(1). CWA § 301(b)(1)(C), 33 U.S.C. § 1311(b)(1)(C). To determine if a discharge causes, or has the reasonable potential to cause, or contribute to an excursion above any WQS, EPA considers: 1) existing controls on point and non-point sources of pollution; 2) the variability of the pollutant or pollutant parameter in the effluent; 3) the sensitivity of the species to toxicity testing (when evaluating whole effluent toxicity); and 4) where appropriate, the dilution of the effluent by the receiving water. *See* 40 CFR § 122.44(d)(1)(ii). EPA's analysis using the saltwater aquatic life criteria demonstrates that the proposed discharge will not cause unreasonable degradation of the marine environment and will comply with Section 403 of the CWA and 40 CFR Part 125, Subpart M.

The maximum daily and average monthly TRO limits in the Draft Permit are set at levels that should not result in acute or chronic toxicity at the outfall prior to mixing with surrounding ocean water. EPA has fully evaluated the quantity, composition, persistence, and transport of TRO and its potential impacts on the biological community in Section 5.1.4. *See* 40 CFR §§ 125.122(a)(1), (2), (3), (4), (7), (10). The TRO concentration limits that apply at the point of discharge are conservatively set to be applied prior to any mixing and should not impact the surrounding biological community, habitat areas, or species of ecological and/or economic importance. Based on the information provided, EPA concludes that the discharge, in compliance with the TRO limits in the Draft Permit, will not cause unreasonable degradation of the marine environment, and EPA has included monitoring requirements in the Draft Permit to verify that these limits are being met.

Compliance with the maximum daily thermal limit in the Draft Permit will result in minimal increases in temperature within a relatively small mixing zone based on the thermal model

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<sup>19</sup> Since publication of the Draft EIS for Sunrise Wind, the applicant and BOEM have further assessed the presence of glauconite sands in the Lease Area and the potential constraints that these sands present for installation of WTG foundations. *See* BOEM's May 2023 Sunrise Wind EFH Assessment, Section 6.3.3. Several of the relocation positions in NOAA Fisheries' priority habitat area alternatives may not be suitable for WTG foundations due to presence of sands. Sunrise Wind and BOEM have not proposed relocating the OCS-DC in any of the habitat alternatives and the location of the OCS-DC is not impacted by presence of glauconite sands.

provided by the Applicant. In Section 5.1.3 of this Fact Sheet, EPA evaluates the quantity, composition, persistence, and transport of heated effluent to be discharged by the OCS-DC's cooling system, as well as its potential impacts on the biological community in the area of the discharge. *See* 40 CFR § 125.122(a)(1), (2), (3), (4), (7), (10).

At the maximum discharge temperature of 90°F during the period surrounding slack tide (representative of worst-case conditions), the model predicts that the plume is fully mixed within a zone of initial dilution extending laterally 25 m (about 86 ft) of either side of the outfall and within a depth of 10 m (about 30 ft) of the outfall. In comparison, the mixing zone defined under the ODC (40 CFR § 125.121(c)) means “the zone extending from the sea’s surface to seabed and extending laterally to a distance of 100 meters in all directions from the discharge point(s) or to the boundary of the zone of initial dilution as calculated by a plume model approved by the director, *whichever is greater...*” (emphasis added). The predicted zone of initial dilution from the Sunrise Wind thermal model is substantially smaller than the 100 m mixing zone defined in the ODC and encompasses only a fraction of the total water column depth rather than extending from sea surface to seafloor. The zone of initial dilution for the OCS-DC discharge is expected to provide sufficient passage for mobile organisms above, below, and around the plume. The size of the plume is also small relative to the size of the OCS-DC foundation, which minimizes the potential for floating, non-motile organisms to pass through it. Finally, the model projects that the thermal plume would result in an instantaneous temperature increase of no greater than 1°C (1.8°F) over ambient under worst-case conditions within the zone of initial dilution. Moreover, the CORMIX results are likely to be conservative relative to an observed plume because the Gold Book criterion is based on an increase in the weekly average temperature and the CORMIX projects an instantaneous value under worst-case conditions. The projected size of the zone of initial dilution also indicates that the thermal plume will not alter the amplitude or frequency of the daily temperature cycles characteristic of the waterbody. The monitoring requirements in the Draft Permit will generate data to confirm whether the predictive model accurately represented the extent of the thermal plume. Based on the information provided, EPA concludes that the discharge, in compliance with the thermal limits in the Draft Permit, will not cause unreasonable degradation of the marine environment.

The NCCW discharge does not contain pollutants with potential for bioaccumulation or persistence. As a result, there will be no unreasonable degradation due to bioaccumulation or persistence of pollutants to be discharged. *See* 40 CFR § 125.122(a)(1). In addition, the discharge of heated effluent and chlorine at the OCS-DC does not have the potential to impact human health through direct or indirect pathways. *See* 40 CFR § 125.122(a)(6).

The OCS-DC requires oils, fuels, and lubricants to support operations but, with the exception of limited glycol discharges during pump start-ups, the Draft Permit does not authorize discharge of these oils, fuels, or lubricants. Moreover, the spill containment strategy for the OCS-DC is designed with a minimum of 110 percent secondary containment of the total volume of oils, fuels, and lubricants onsite. *See* Draft EIS p. 2-31 and COP Appendix E-1.

Finally, EPA notes that the wind farm, and in particular the OCS-DC, are located in federal ocean waters well outside of the coastal zone of any state. Accordingly, the OCS-DC's discharges and water withdrawals will all take place well outside the coastal zone of any state

and should not affect the resources or use of the coastal zone of any state. That said, during environmental review of the project, Sunrise Wind has been in communication with the Coastal Zone Management Programs in New York, Massachusetts, and Rhode Island to ensure compliance with any applicable requirements of the states' coastal zone management programs. *See* 40 CFR § 125.122(a)(8). *See* Section 7.0 of this Fact Sheet.

### *Conclusion*

For the reasons described above, EPA concludes that the discharge of non-contact cooling water from the OCS-DC, in compliance with the effluent limits and conditions of the Draft Permit, will not cause unreasonable degradation of the marine environment either through significant changes to the ecosystem or biological community within the area of the discharge, threats to human health, or loss of esthetic, recreational, scientific, or economic value. *See* 40 CFR § 125.121(e).

## **5.2 Cooling Water Intake Structure Requirements**

Under Section 316(b) of the CWA, NPDES permit requirements for point source dischargers that operate a CWIS must require that the location, design, construction, and capacity of the CWIS reflect the “best technology available for minimizing adverse environmental impact” (BTA). 33 U.S.C. § 1326(b). The key adverse environmental impacts of CWISs are the entrainment of aquatic organisms, particularly early life stages of fish and shellfish, and the impingement of aquatic life against intake screens or other barriers at the entrance to the CWIS that is caused by the force of the water being drawn into the intake. *See* 66 Fed. Reg. 65263. Although EPA is not aware of any studies that directly examine impingement mortality or entrainment at offshore converter stations associated with wind farms, numerous studies demonstrate that offshore environments provide habitat for fish, shellfish, and other aquatic organisms that may be susceptible to impingement, and that many species present in offshore waters have early pelagic life stages that are vulnerable to entrainment. *See* 70 Fed. Reg. 71059.

As explained in Section 2.3 of this Fact Sheet, although the proposed wind farm (and its OCS-DC) is a new facility,<sup>20</sup> EPA has determined that the New Facilities Rule under CWA § 316(b), 40 CFR Part 125, Subpart I, does not apply. Instead, and consistent with 40 CFR § 125.90(b), EPA has established § 316(b) requirements on a case-by-case, BPJ basis for the proposed Sunrise Wind OCS-DC. EPA's case-by-case, BPJ determination was informed by requirements promulgated in both the New Facilities Rule and the New Offshore Oil and Gas Facilities Rule.

### **5.2.1 Source Waterbody Characterization**

Sunrise Wind proposes to locate its wind farm in federal ocean waters off the coast of Rhode Island and Martha's Vineyard, Massachusetts. *See* CWA § 502(10) (definition of “ocean”). A description of the benthic physical and biological resources in the vicinity of the proposed wind

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<sup>20</sup> The OCS-DC is not a “new source” under Section 306 of the CWA but meets the definition of “new discharger” at 40 CFR § 122.2, as it will commence construction after January 17, 2002, and it will use a newly constructed CWIS. The OCS-DC is also considered a “greenfield” facility in that it is constructed at a site at which no other source is located. *See* 66 Fed. Reg. 65258.

farm site was provided in Sunrise Wind's NPDES Application and its COP (and Appendices M, N and O to the COP), and in BOEM's Draft EIS.<sup>21</sup>

Soft sediment fauna is the dominant biotic subclass at the wind farm location (e.g., burrowing polychaetes, amphipods, sand shrimp, sand dollars, and sea stars). Ecologically and/or economically important benthic species in soft bottom habitat include Atlantic sea scallop, Jonah crab, ocean quahog, Atlantic surfclam, and longfin squid. *See* COP Appendix M, Table 5.2-3. At the proposed site of the OCS-DC, the benthic substrate is composed of sand with ripples, sand and mud with ripples, and sand and mud. *See* COP p. 4-188. Higher complexity habitat (cobble and/or boulders) occurs in the northwest region of the project boundary. This hard bottom habitat is ecologically important and serves as nursery habitat for lobster, feeding grounds for Atlantic cod and black sea bass, and spawning habitat for longfin squid. *See* COP, Appendix M, p. 81.

Finfish in the area of the wind farm include pelagic, demersal, and highly migratory species. NOAA's Northeast Fisheries Science Center (NEFSC) seasonal trawl surveys in the vicinity of the wind farm lease area between 2003 and 2016 observed 45 species during the warm and cold seasons. *See* Guida et al. 2017. Catches were dominated by Atlantic herring, skates, longhorn sculpin, ocean pout, and flounders during the cold season and butterfish, longfin squid, scup, and sea scallops in the warm season. *See id.* As discussed in Sections 5.2.4 and 6 of this Fact Sheet, numerous finfish species, including early life stages that could be subject to entrainment, will potentially be present in the vicinity of the OCS-DC. EFH has been designated for a number of these species. *See id.* *See also* COP, Appendix N. The entire area encompassed by the wind farm project is located within the area recommended by the New England Fishery Management Council as a Habitat Area of Particular Concern (HAPC) for cod spawning and complex habitats. *See* August 2022 Draft Southern New England Habitat Area of Particular Concern Framework; October 7, 2022, letter from NOAA Fisheries to BOEM. This broad area, including Cox Ledge and the area surrounding it, has been observed to support Atlantic cod spawning. *See* Zemeckis et al. 2014. The presence of life stages of finfish and invertebrates that may be impacted by impingement and entrainment at the CWIS is well documented in this area. *See, e.g.,* COP Tables 4.4.3-1 and 4.4.3-2.

EPA notes that benthic and pelagic biological resources in the area of the wind farm and the OCS-DC may change over time as the habitat changes with the introduction of the foundations for the WTGs and OCS-DC and their associated scour protection measures.<sup>22</sup> WTG structures have been observed to act as artificial reefs, introducing new, complex hard substrate habitat on the seafloor in the vicinity of the wind farm. Thus, the Sunrise Wind project could create new habitat for Atlantic cod, lobster, and squid. *See* COP, p. 4-208. *See also* Langhamer 2012; Glarou et al. 2020; Degraer et al. 2020. In addition, ongoing changes in ocean temperature associated with climate change may also result in changes to the biological and benthic resources of the project area. As ocean temperatures increase, benthic and pelagic species may shift their ranges

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<sup>21</sup> Relevant documents available at <https://www.boem.gov/renewable-energy/state-activities/sunrise-wind>.

<sup>22</sup> Scour protection is a measure used to prevent the erosion of seabed sediment around foundations of offshore wind turbines. *See* Glarou et al. 2020. Different types of scour protection are available with crushed rock being the most common solution. The final decision on the scour protection approach to be implemented for this project will be made after design of the foundation structure based on additional site-specific data, agency coordination, and public comment. *See* Sunrise Wind COP Section 3.3.5.2.

northward, altering the diversity and distribution of species in the vicinity of the OCS-DC. *See* Sunrise Wind COP p. 4-178. *See also* Walsh et al. 2015, Staudinger et al. 2019.

### 5.2.2 Intake Description

The openings of the three cooling water intake pipes will be located approximately 30 ft (10 m) above the pre-installation seafloor grade, each having a diameter of 2.01 m<sup>2</sup> (21.6 ft<sup>2</sup>), and fitted with steel “crash” bars with 61 x 20 mm spacing (2.4 x 0.8 inch). Each intake pipe will have a dedicated seawater lift pump equipped with a variable frequency drive located within the intake pipe approximately 12 m (39 ft) below the ocean surface. The three intake pipes will combine into a single, shared manifold upstream of two coarse filters. A flow schematic is provided in Figure 2 and an Engineering Drawing of the CWIS is provided in Figure 3. The three sets of intake pipes and pumps will not operate simultaneously; only two sets of seawater pumps and intake pipes will operate at any one time, while the third set will provide backup (or “redundant”) capacity. Pumps will be rotated through service and stand-by weekly to prolong pump lifespan.

According to the Applicant, the total DIF of the OCS-DC is 8.1 MGD. The design capacity of each seawater pump is 6.1 MGD (4,245 gallons per minute (gpm)). The Applicant indicates that the pumps are designed to operate at 66% capacity, with a flow of 4.03 MGD (2,802 gpm) per intake pump, and with two pumps operating at any one time.<sup>23</sup> Total average monthly actual intake flows (AIF) are likely to range from 4.0 to 5.3 MGD based on seasonal changes in water temperature and electrical demand. Pump seals for each seawater pump will be maintained continuously during operation with a seal fluid consisting of 65% water and 35% glycol. The seal fluid will not be discharged, except for potential leakage of up to 3 liters during the initial commissioning start-up of each pump (i.e., a one-time event).

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<sup>23</sup> The Applicant calculated the DIF based on its planned operational scheme (i.e., 2 pumps @ 4.03 MGD each = 8.1 MGD). Design intake flow is defined at 40 CFR § 125.83 as “the value assigned (during the facility’s design) to the total volume of water withdrawn from a source water body over a specific time period” and at 40 CFR § 125.92(g) as “the value assigned during the cooling water intake structure 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 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. DIF does not include values associated with emergency and fire suppression capacity or redundant pumps (i.e., back up pumps).” As discussed above, the regulations at 40 CFR Part 125 Subparts I and J do not strictly apply to this Facility; at the same time, EPA’s application of CWA § 316(b) is informed by these definitions from the regulations under CWA § 316(b). While DIF is defined not to include flows from a back-up pump, it is intended to reflect the maximum volume that the primary intake pumps are capable of withdrawing. In the present case, the Facility’s pumps can withdraw up to 6.1 MGD even if the applicant anticipates that they will operate at only 66% capacity and withdraw 4.03 MGD. In follow up communications, EPA confirmed that, as the OCS-DC design progressed, Sunrise Wind identified the physical limitation of the shared manifold limited the maximum intake flow to 7.8 MGD. Based on EPA’s definitions of DIF for the 316(b) rulemakings, which indicate that the DIF may be based on “flow limit devices ... and physical limitations of the piping,” such as the physical limitations of the OCS-DC’s manifold, EPA concludes that the DIF for this CWIS is 7.8 MGD. The Applicant, however, has used a DIF of 8.1 MGD for its evaluation of the impacts of the intake and discharge at the Facility. EPA has accepted this analysis because the Applicant’s DIF slightly overestimates the intake and discharge as compared to the actual DIF and, as such, the Applicant’s analysis of the effects of the intake will be conservative (i.e., will somewhat tend to overstate the adverse effects).

Cooling water withdrawn will flow through two coarse filters operating in parallel to filter seawater prior to the heat exchange system. The coarse filters will consist of a stainless-steel vertical housing encasing a series of three banks of 500-micron (0.5 mm) wedgewire screens. The through-screen velocity at the coarse filters is estimated to be 2 fps. A backwash system will operate at least once per day (or more frequently when increased pressure differential is detected) to remove buildup from the wedgewire screens. Backwash will be directed to the dump caisson.

After the coarse filters, a relatively small portion (about 1% of flow) will be diverted to the electrochlorination system. The electrochlorination system uses electrolysis of seawater to produce sodium hypochlorite, which is directed to the intake pipes (upstream of the lift pumps) to reduce biofouling. A valve within the intake pipe before each seawater pump controls the hypochlorite injection. The chlorinated water combines with the seawater in the intake pipe and proceeds through the heat exchange system to the outfall. See Figure 2.

### 5.2.3 BTA for Minimizing Impingement Mortality

In the immediate area of a CWIS, the velocity of water entering the intake exerts a direct physical force against which aquatic organisms must act to avoid being trapped or drawn into the cooling system. Reducing the rate of flow of cooling water (or the intake velocity) reduces impingement because a low enough intake velocity will allow motile organisms to swim away and avoid becoming trapped against the intake screens. *See* 66 Fed. Reg. 65274. Maintaining a through-screen design intake velocity limit of 0.5 fps or less is well-supported by existing literature as an appropriately protective measure to minimize impingement at cooling water intake structures.<sup>24</sup> *See* 40 CFR § 125.84(c)(1), 40 CFR § 125.94(c)(2) and (3), and 40 CFR § 125.134(b)(2). The through-screen design intake velocity is calculated based on the design intake flow of the cooling water intake system.<sup>25</sup>

Each of the three seawater pumps is rated for a capacity of 6.1 MGD. In its application, however, Sunrise Wind identified a design intake flow of 8.1 MGD based on simultaneous operation of two pumps at 66 percent of their capacity. *See* NPDES Application, p. 16. In addition, in communications with the Applicant following submission of the application, Sunrise Wind confirmed that the maximum flow to the shared manifold is limited to 7.8 MGD and that the stated design flow of 8.1 MGD reflects this physical constraint plus a margin of safety of 5%. *See* emails from M. Evans (Orsted) to D. Gaito (EPA) dated 11/10/22 and 12/7/22. EPA agrees

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<sup>24</sup> EPA's evaluation of intake velocity to establish CWIS requirements under the New Facilities Rule suggested, on the basis of swim speed and endurance, that most fish could endure a velocity threshold of 1.0 fps. EPA applied a safety factor of two to this threshold to derive an intake velocity limit of 0.5 fps and determined that a safety factor is appropriate to ensure protection when screens become partly occluded by debris and/or biofouling during operation (thus increasing the velocity through portions of the screens that remain open). *See* 66 Fed. Reg. 65274 and 65302. Data compiled from fish swim speed studies suggest that an intake velocity of 0.5 fps would protect 96 percent of tested species. *Id.* *See also* 79 Fed. Reg. at 48337 and DCN 2-028A, EPRI's "Technical Evaluation of the Utility of Intake Approach Velocity as an Indicator of Potential Adverse Environmental Impact Under Clean Water Act 316(b)."

<sup>25</sup> Design intake *velocity* is the value assigned (during the design of a cooling water intake structure) to the average speed at which intake water passes through the open area of the intake screen (or other device) against which organisms might be impinged or through which they might be entrained. Design intake *flow* is the value assigned (during the facility's design) to the total volume of water withdrawn from a source water body over a specific period of time. *See* 40 CFR § 125.83.

that the physical constraint of the shared manifold limits the design flow to less than the maximum rated capacity of the pumps (not including flow from the redundant third pump) which would be  $6.1 \text{ MGD} * 2 = 12.2 \text{ MGD}$ . Based on a DIF of 8.1 distributed over two pumps (4.1 MGD each) and assuming 33% occlusion of the combined open area due to debris (28%) and fouling (5%), Sunrise Wind estimated a design through-screen velocity of 0.43 fps at each intake pipe.

That said, the 11/10/22 email from M. Evans (Orsted) to D. Gaito (EPA) also clarifies that each sea water lift pump can operate at 75% of its full capacity ( $6.1 * 0.75 = 4.58 \text{ MGD}$ ), which would enable the OCS-DC to continue to operate in the event that two seawater pumps are offline at the same time. Therefore, under worst-case conditions (two pumps offline), with a design flow of 4.58 MGD at a single intake pipe, and assuming 33% occlusion, the estimated design through-screen velocity is 0.49 fps. This design intake velocity would still be regarded to minimize impacts from impingement because it is less than the 0.5 fps standard discussed above.

In addition, the OCS-DC is designed with VFD pumps to enable the Facility to limit the volume of water it withdraws to the amount actually required to meet cooling water needs. The Facility's application proposes that the actual intake flow will vary between 4.0 and 5.3 MGD as compared to the design flow of 8.1 MGD. *See* NPDES Application, p. 16. At the proposed average monthly intake flows (4.0-5.3 MGD) distributed over two intake pipes, the estimated actual through-screen velocity at the intake is expected to be 0.21 – 0.28 fps. This through-screen velocity is lower than the EPA's threshold described above, which was set at a level that allows a majority of fish to swim away and avoid becoming impinged on the trash racks or entrapped within the intake pipes.

The Draft Permit requires that the design through-screen velocity of the CWIS is no greater than 0.5 fps as one component of BTA. The Draft Permit also requires monitoring and reporting of the through-screen velocity to verify that it does not exceed 0.5 fps.

#### **5.2.4 BTA for Minimizing Entrainment Mortality**

##### *Potential for Entrainment*

In its NPDES Application, Sunrise Wind identifies 42 species of fish and invertebrates with designated Essential Fish Habitat (EFH) in the vicinity of the OCS-DC. *See* NPDES Application, p. 23, and COP, Appendix N. All of these finfish species have early life stages that may be subject to entrainment. To estimate entrainment at the OCS-DC, Sunrise Wind used ichthyoplankton data collected by NOAA's Marine Resource Monitoring, Assessment, and Prediction (MARMAP) program and NOAA's Ecosystem Monitoring (EcoMon) program, which conducted ichthyoplankton tows between North Carolina and Nova Scotia during the years 1977 through 2019.<sup>26</sup> NPDES Application, p. 26. Sunrise Wind used data from tows conducted in the geographic region shown in Figure 5-3 (Sunrise Wind Farm boundary shown in red), which encompassed 1,859 individual tows. The database includes densities only for larval life stages

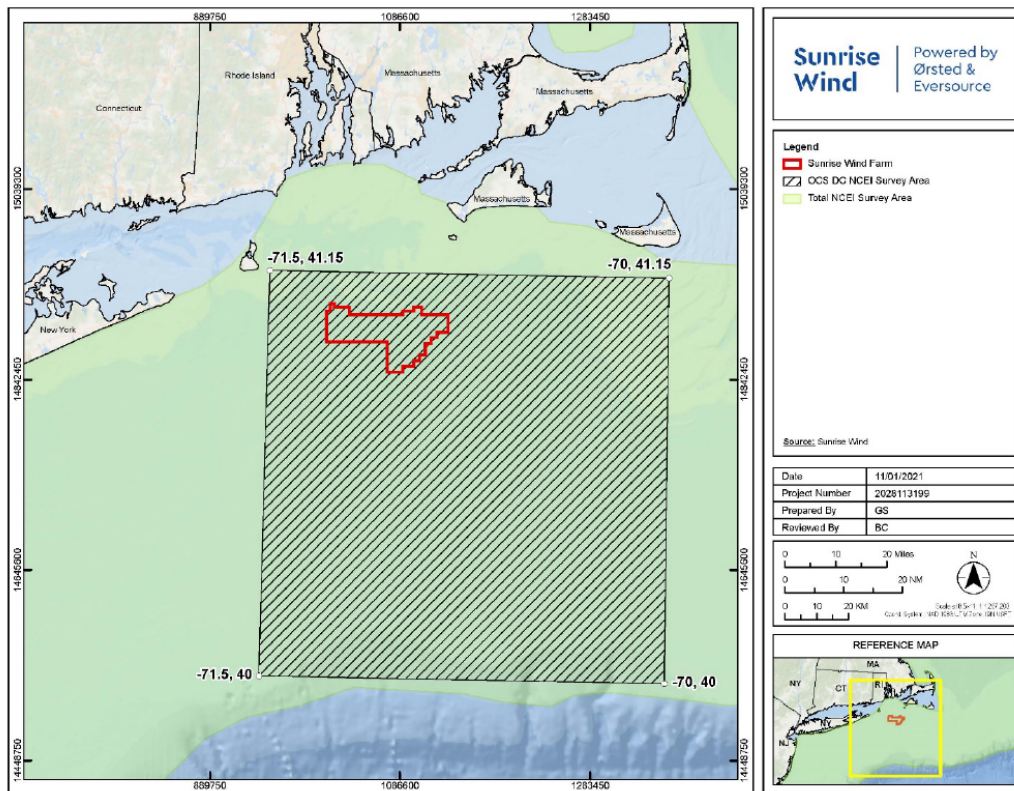
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<sup>26</sup> The MARMAP and EcoMon data were obtained from the NOAA National Centers for Environmental Information (NCEI) electronic database.



(i.e., neither for eggs nor post-larval life stages).

**Figure 5-3. Larval Tow Data Area Considered by Sunrise Wind for Entrainment Analysis. NPDES Application p. 27.**



Sunrise Wind assessed entrainment for a subset of species: only finfish with designated EFH and early life stages present in the vicinity of the OCS-DC.<sup>27</sup> Sunrise Wind estimated annual entrainment based on the average monthly larval density in the designated study area<sup>28</sup> for each of the 16 species evaluated and the average monthly intake flow at the OCS-DC. Sunrise Wind estimates a total of 2,941,824 larvae entrained each year. About 83% of the total estimated entrainment is comprised of 4 species: Atlantic herring (35%), red hake (28%), Atlantic mackerel (11%), and silver hake (9%).<sup>29</sup> Sunrise Wind estimates that the CWIS could entrain

<sup>27</sup> Sunrise Wind identifies 42 species of fish and invertebrates with designated EFH in the vicinity of the OCS-DC. See NPDES Application, Table 3. See also Sunrise Wind COP, Appendix N. For the entrainment analysis, Sunrise Wind excluded three finfish species that are not identified as having eggs or larvae in the vicinity of the OCS-DC, as well as invertebrates and sharks.

<sup>28</sup> The MARMAP and EcoMon data used for this analysis only quantified larval density. The NPDES Application does not include an estimate of eggs entrained at the OCS-DC.

<sup>29</sup> The summary of entrainment impacts in the NPDES Application (Tables 4 and 5) is not consistent with the data provided to EPA as an Excel spreadsheet. The spreadsheet indicates that 69 Atlantic wolffish larvae would be entrained annually, which is the lowest annual entrainment of the species Sunrise Wind evaluated. Table 5 indicates that 13,007 Atlantic wolffish would be entrained annually, which is listed as the annual entrainment for haddock in the Excel spreadsheet. EPA reviewed the NOAA database and confirmed that the spreadsheet provides the correct monthly densities and annual totals and has used the Excel spreadsheet data in its analysis. In Tables 4 and 5, all of

34,239 Atlantic cod larvae (about 1.2% of the total entrainment). Sunrise Wind also evaluated entrainment of the copepod *Calanus finmarchicus* because of the importance of this species as prey, including for the North Atlantic right whale. Sunrise Wind estimates entrainment of over 1.1 billion *C. finmarchicus* annually, which, according to the NPDES Application, represents about 0.1% of the local population in the lease area (assuming an even distribution of organisms and average depth of 45 m).

However, Sunrise Wind only evaluated data for a subset of EFH species for which eggs and larvae are present in the vicinity of the wind farm. EFH is only designated for species for which federal fisheries management plans exist, *see* 16 U.S.C. § 1855(b)(1)(A), but EFH species are not the only species with eggs and larvae present in the vicinity of the OCS-DC. Therefore, limiting the analysis to EFH species ignores entrainment losses of other species, including ecologically important forage species. The EcoMon and MARMAP programs collected larvae from 45 finfish species, including forage species and species that are commonly entrained in high numbers at other facilities with cooling water intakes such as sand lance (*Ammodytes spp.*), grubby (*Myoxocephalus aeneus*), cunner (*Tautoglabrus adspersus*), and Atlantic menhaden (*Brevoortia tyrannus*). By limiting its analysis to only EFH species, Sunrise Wind's predictions underestimate the total number of larvae that could be entrained.

EPA reassessed the same MARMAP and EcoMon data from Sunrise Wind's analysis to estimate densities for *all* species collected. When Sunrise Wind's analysis is repeated for all species collected, the number of larvae entrained per year based on projected average monthly intake flows almost doubles from 2,941,824 larvae to 5,632,408 larvae. Sand lance is present in the highest densities and accounts for about 30% of total larvae entrained. Gulfstream flounder (*Citharichthys arctifrons*) was also present in relatively high densities and accounts for about 10% of the total larvae entrained. These and other species represent an important prey base in the offshore system and their loss should be included in the evaluation of adverse environmental impacts from entrainment.

In addition, Sunrise Wind quantified entrainment at the OCS-DC based on the average larval densities across the geographic area shown in cross-hatch in Figure 5-3, but this area is *far larger* than the geographic boundary of the wind farm. According to Sunrise Wind, this larger area was evaluated to "extend to the edge of the continental shelf, and to encompass a large number of samples to help offset the natural variability inherent in marine systems." NPDES Application, p. 27. Averaging larval densities across a large number of geographic positions and years could, however, potentially result in artificially *low* values if, for instance, an individual species was present in higher densities in the specific area of the wind farm. Alternatively, if an individual species is present outside the windfarm in higher densities, averaging the density over a large geographic area could overestimate entrainment for that species.

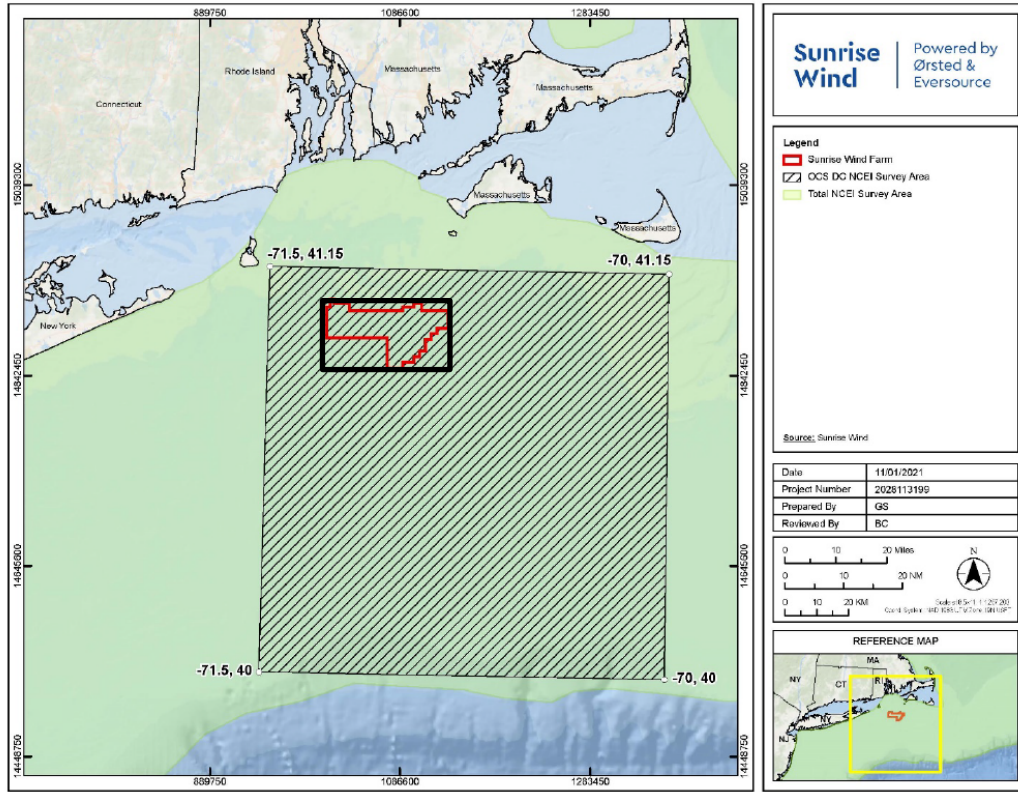
Because Sunrise Wind's entrainment estimates are based on data collected over a much larger geographic area than the area within the proposed windfarm boundary, EPA re-examined the data and calculated entrainment estimates based on larval densities in the general area of the windfarm boundary shown in Figure 5-4. EPA compared average larval densities from this

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the species from haddock to summer flounder should be moved up one row and Atlantic wolffish should replace summer flounder in the last row.

smaller geographic area to Sunrise Wind's estimates to determine if there is likely to be any difference in average densities in the vicinity of the OCS-DC. EPA trimmed the dataset for all species collected within an area bounded by the maximum and minimum latitude and longitude positions of the wind farm shown in Figure 5-4. The resulting area includes 197 individual tows, or about 10% of the original area in Sunrise Wind's analysis.

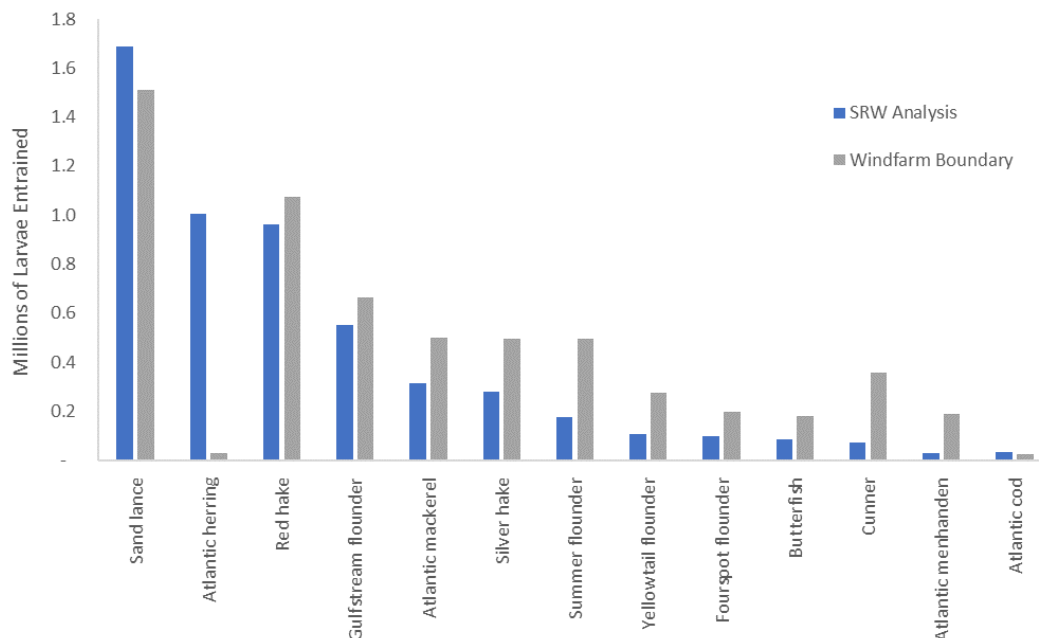
**Figure 5-4. Area Considered by EPA for Additional Entrainment Analysis. Adapted from NPDES Application, p. 26.**



When the analysis is repeated using the larval EcoMon and MARMAP data for all species within the general vicinity of the wind farm, the estimated number of larvae entrained per year based on projected average monthly intake flows increases from 5,632,408 larvae to 6,345,726 larvae. In the larger geographic region assessed by Sunrise Wind, four species, (sand lance, Atlantic herring, red hake, and gulfstream flounder) account for about 75% of the catch. Within the general vicinity of the windfarm assessed by EPA, sand lance remains the most abundant species (at 24% of the catch). EPA compares the entrainment estimates for certain species in both geographic boundaries in Figure 5-5. The estimated entrainment among the most abundant species is generally the same or higher within the windfarm area as compared to the larger geographic region that Sunrise Wind assessed, with the exception of Atlantic herring, which was substantially more abundant across the larger area than within the wind farm boundary. Densities of Atlantic cod larvae were similar within the wind farm area and the larger geographic area, which is of particular importance because Atlantic cod populations are in decline and because a

valuable cod spawning area associated with Cox Ledge is located near the wind farm.<sup>30</sup>

**Figure 5-5. Estimated Annual Entrainment of Selected Species in Sunrise Wind Study Region vs. Wind Farm Project Boundary**



Based on analyses performed by EPA and by the Applicant, operation of the OCS-DC at the proposed location at projected monthly average operation flows may result in annual entrainment in the range of 5.5 to 6.5 million larvae per year. This value likely underestimates total entrainment because data was only available to estimate larval density and no estimate of the entrainment of eggs is provided. Including eggs in the estimation of annual entrainment would increase the overall impact. Eggs typically occur at higher densities than larvae and annual entrainment could be expected to increase by a factor of two or more.<sup>31</sup> The relative proportion of eggs in the overall entrainment totals at the OCS-DC, however, is less certain, in part because the eggs of most offshore species are buoyant (Sundby and Kristiansen 2015), and it is possible that the location of the intake (at a depth of more than 100 ft) may minimize entrainment of eggs as well as larvae. Site-specific biological monitoring at the intake, as proposed in the Draft Permit, is necessary to quantify the densities of eggs and larvae entrained by the OCS-DC to compare to EPA's estimates of annual entrainment based on EcoMon larval density data

<sup>30</sup> As EPA discussed in Section 5.1.5 of this Fact Sheet, the New England Fishery Management Council recently proposed and approved a Habitat Area of Particular Concern for cod spawning and complex habitats that overlaps with the area of the OCS-DC. See August 2022 Draft Southern New England Habitat Area of Particular Concern Framework. See also October 7, 2022, letter from NOAA Fisheries to BOEM.

<sup>31</sup> EPA was unable to find an estimate of egg density in the geographic area of the windfarm. However, egg densities were available from biological monitoring for an offshore liquified natural gas facility in the Gulf of Maine. EPA reviewed estimates of eggs and larvae at this location and found that the density of eggs is typically 1.5 to 3 times higher than larvae during the same sampling period and can be as much as 5 to 15 times higher than larval densities. Northeast Gateway Biological Monitoring Reports 2008 through 2019.

presented above.

*Best Technology Available to Minimize Entrainment*

A. Variable Frequency Drives

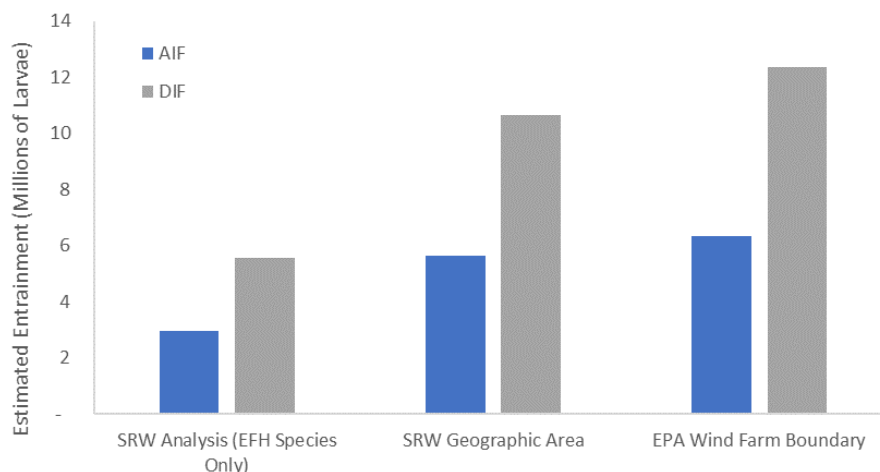
As stated above, Sunrise Wind proposes using pumps with VFDs to minimize cooling water volumes withdrawn for the OCS-DC to the greatest extent practicable. The Applicant also proposes that VFDs are the BTA for minimizing entrainment at the OCS-DC. VFDs enable the facility to change the intake flow based on the Facility's cooling needs, as driven by seasonal changes in water temperature and electrical demand. The entrainment impacts of CWISs are closely linked to the amount of water passing through the intake structure. Since the eggs and larvae of some aquatic species are free-floating or weak swimmers, early life stages may be drawn into the CWIS along with the flow of cooling water. *See* 66 Fed. Reg. 65277. The estimated maximum daily design flow of the Facility is 8.1 MGD, but the predicted actual intake flow based on projected operations using VFDs is presented in Table 5-3.

**Table 5-3. OCS-DC Average and Maximum Daily Intake Flow (MGD) per Month Predicted by Sunrise Wind. NPDES Application, p. 16.**

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Max Daily (MGD)	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1
Average Daily (MGD)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.3	4.6	5.3	4.9	4.1

EPA assessed the effectiveness of the proposed technology for minimizing entrainment (i.e., VFDs) by comparing estimated entrainment at maximum design intake flow (8.1 MGD) to the estimated entrainment at average monthly intake flows. EPA conducted these comparisons using Sunrise Wind's estimates based on species with designated EFH that are expected to be present in the larger study area delineated by the Applicant, EPA's estimates based on all larval finfish species expected to be in the larger area delineated by Sunrise Wind, and EPA's estimates of all larval finfish species expected to be present within the wind farm boundary. *See* Figure 5-6. Compared to Sunrise Wind's design intake flow of 8.1 MGD, the use of VFDs to achieve projected actual intake flows will result in an estimated 47% reduction in entrainment based on larval estimates for the larger geographic region assessed by Sunrise Wind and an estimated 49% reduction in entrainment based on EPA's calculations for the smaller region in the vicinity of the wind farm boundary.



**Figure 5-6. Estimated Annual Entrainment Reduction Achieved by VFDs at the OCS-DC.**

## B. Design Intake Flow

In oceans, near-shore coastal waters are typically the most biologically productive areas. The euphotic zone (zone of light available for photosynthesis) typically does not extend beyond the first 100 meters (328 feet) of depth. Therefore, inshore waters are generally more productive due to photosynthetic activity and due to the input from estuaries and runoff of nutrients from land.<sup>32</sup>

Entrainment impacts of CWISs are closely linked to the amount of water passing through the intake structure, because the eggs and larvae of some aquatic species are free-floating or weak swimmers and may be drawn with the flow of cooling water into an intake structure. *See* 66 Fed. Reg. 65277. Flow limits are one way to protect aquatic life because larger proportionate withdrawals of water may result in commensurately greater levels of entrainment. *See id.* For example, the New Facilities Rule establishes capacity-based proportional intake flow limitations for certain waterbodies, including rivers and streams, lakes and reservoirs, and estuaries and tidal rivers, as one component of BTA to minimize adverse environmental impacts from CWISs. 40 CFR §§ 125.84(b)(3), (c)(2), and (d)(2). *See also* 40 CFR §§ 125.134(b)(3) and (c)(2). EPA has not established proportional flow requirements for offshore, open ocean CWISs in any of the regulations it has promulgated under CWA § 316(b). Nevertheless, quantifying the approximate proportional flow can be useful for evaluating the potential adverse environmental impacts of the proposed intake in this case-by-case, BPJ determination.

The Applicant completed an analysis to define the hydraulic zone of influence (HZI) of the intake to support an evaluation of the proportional flow of the intake. *See* NPDES Application, Appendix B. Sunrise Wind used the intake design specifications for the CWIS (total flow rate of 8.1 MGD and design intake through-screen velocity of 0.43 fps per intake unit) and a minimum depth-averaged ambient current to develop an ambient flow field for determining the HZI.<sup>33</sup>

<sup>32</sup> EPA's 2006 Technical Development Document for the Final Section 316(b) Phase III Rule, p. 8-25.

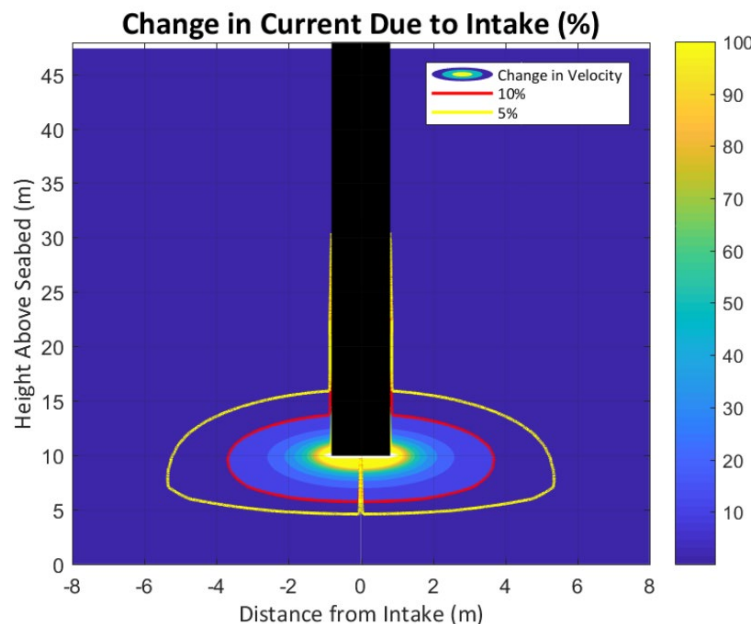
<sup>33</sup> The CWIS is designed with three intake pipes, each served by its own seawater lift pump, located in close

Ambient current at the depth of the intake opening (10 m (30 ft) above the bottom) on the date of the minimum depth averaged current was 0.02 m/s (0.66 fps). Sunrise Wind defined the HZI as the area in which the influence of the intake exceeds 10% of the ambient current. The 10% HZI (depicted in red in Figure 5-7) extends radially from the intake for a distance of 3.7 m (12.1 ft) and to a depth of 5.72 m (18.8 ft) above the ocean floor. See Table 5-4. In other words, organisms within this 43 m<sup>2</sup> area of the intake will experience a 10% increase in flow as compared to the estimated minimum current. A 5% HZI (i.e., a 5% increase in current compared to the estimated minimum current), shown in yellow in Figure 5-7, is detectable within an 87 m<sup>2</sup> area extending radially about 5.3 m and to depth within about 4.6 m from the bottom. Table 5-4. The low ambient current (0.02 m/s) results in a conservative analysis because the 10% increase (0.02 m/s) is also relatively low. At higher ambient flows, the 10% threshold would also increase and the resulting HZI would be smaller than is presented here.

**Table 5-4. Hydraulic Zone of Influence of the CWIS During Slack Tide Conditions. NPDES Application p. 41.**

	Radial distance from intake	Minimum height above bottom	Area
10%	3.7 m (12.13 ft)	5.72 m (18.76 ft)	43.03 m <sup>2</sup> (463.17 ft <sup>2</sup> )
5%	5.27 m (17.29 ft)	4.59 m (15.06 ft)	87.11 m <sup>2</sup> (937.64 ft <sup>2</sup> )

**Figure 5-7. Profile View of the Intake Hydraulic Zone of Influence. NPDES Application p. 41.**



proximity. Only two intake pipe/seawater pump units will operate at any given time. Due to the close proximity of the intake pipes, this analysis evaluated the three pipes as a single line sink with a maximum flow rate of 8.1 MGD.

The analysis provided by the Applicant indicates that the HZI of the intake does not extend more than 20 ft from the intake. Aquatic organisms would have to pass through this relatively small area in order to be exposed to the influence of the intake and to potentially become impinged or entrained.

EPA estimated the proportion of flow withdrawn by the cooling water intake relative to the HZI to evaluate the potential for adverse impacts from entrainment at the CWIS. Although it does not apply to the proposed OCS-DC, EPA looked to the proportional flow requirement from the New Facilities Rule for tidal waters for comparison. The New Facilities Rule requires that the design flow from all CWISs at new facilities withdrawing from estuaries or tidal rivers must be no greater than 1 percent of the volume of the water column in the area centered about the opening of the intake with a diameter defined by the distance of one tidal excursion at the mean low water level. 40 CFR § 125.84(c)(2)(iii). Tidal excursion is the horizontal distance that a particle moves during one tidal cycle of ebb and flow and can be calculated using a simple method based on the average current velocity. *See* 66 Fed. Reg. 65317.

Following the methodology described in the Preamble to the Final New Facilities Rule (66 Fed. Reg. 65317), EPA calculated the tidal excursion for the proposed intake using an average current velocity of 0.02 m/s, which is the ambient current at the intake depth used in the HZI analysis. *See* NPDES Application, Appendix B. *See also* Sunrise Wind COP Appendix BB.

Distance Tidal Excursion = Average current velocity (m/s) \* 6.2103 hours/tide \* 3600 sec/hour  
 Distance Tidal Excursion = 0.02 m/s \* 6.2103 hours/tide \* 3600 = 447.1 m

EPA calculated a volume using the tidal excursion distance from above as the radius of a circle (e.g., assuming the same tidal excursion distance at ebb and flood tides) centered on the intake and a depth based on the Applicant's estimated HZI (11.4 m).<sup>34</sup> *See id.*, pp. 41-42.

Volume =  $\pi r^2 d$

Volume of Tidal Excursion =  $\pi * (447.1 \text{ m})^2 * 11.4 \text{ m} = 7,163,173 \text{ m}^3$

Finally, EPA calculated the proportional flow of the intake (at DIF and AIF) as compared to the volume of the waterbody based on one tidal excursion and the depth of the HZI.

Design Intake Flow = 8.1 MGD = 7,934.1 m<sup>3</sup>/tidal cycle

DIF/Volume of Tidal Excursion = 7,934.1 m<sup>3</sup>/7,163,173 m<sup>3</sup> = 0.1%

Actual Intake Flow = 5.3 MGD = 5,191.5 m<sup>3</sup>/tidal cycle

AIF/Volume of Tidal Excursion = 5,191.5 m<sup>3</sup>/7,163,173 m<sup>3</sup> = 0.07%

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<sup>34</sup> Sunrise Wind estimated the maximum extent of the HZI at the proposed intake location (10 m above seafloor grade) and at DIF (8.1 MGD) as the three-dimensional space around the intake in which water velocity is altered by greater than 5 percent of ambient velocity at DIF (8.1 MGD) and minimum ambient velocity (i.e., slack tide). *See* NPDES Application, pp. 39-42. Figure 7, *id.*, p. 41, provides a profile of the HZI which shows that the depth of the HZI (at 5% change) extends from about 16 m above the seafloor to 4.59 m above the seafloor for a total depth of 11.4 m. EPA used 11.4 m as the depth for the purposes of calculating the affected volume of the waterbody.



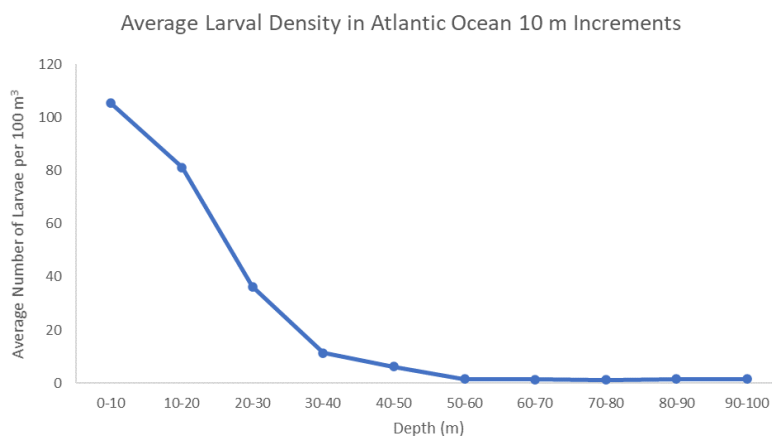
At design flow, EPA estimates that the OCS-DC will withdraw about 0.1% of the volume of water within an area centered about the opening of the intake over one tidal excursion. This value is conservative because EPA estimated volume based on depth of the estimated HZI, rather than using the full depth of the water column at the OCS-DC (45 m). For comparison, in the Phase I Rule, the 1 percent value for estuaries reflects that the area under influence of the intake will move back and forth near the intake and that withdrawing less than 1 percent of the volume of water surrounding the intake twice a day over time would not diminish the aquatic life surrounding the intake. *See* 66 Fed. Reg. 65301. Based on this evaluation, the low proportional flow of the OCS-DC is one component of BTA that will minimize entrainment.

### C. Intake Location

In addition to the use of VFDs, the terminus of the intake pipes will be located 10 m (30 ft) above the pre-installation seafloor grade, which, based on the average depth in the vicinity of the OCS-DC, is a depth of about 35 m (115 ft). NPDES Application, pp. 11, 13. Locating an intake structure within a waterbody in an area where densities of entrainable life stages are lower can help to minimize entrainment. *See* 65 Fed. Reg. 49084.

Water column depth can be a factor that affects the relative density of entrainable organisms. The entrainment estimates presented above assume that larval densities are consistent throughout the water column. In the Gulf of Mexico, however, EPA observed that, on average, ichthyoplankton densities are highest at shallower sampling stations and lowest at sampling stations in the deepest regions. *See* 2006 Phase III Rule; 70 Fed. Reg. 71059. For this analysis, Sunrise Wind and EPA conservatively estimated entrainment at the intakes based on larval densities in ichthyoplankton tows caught over all sampled depths. However, as shown in Figure 5-8, larval densities in the offshore environment of the Atlantic Ocean, like the Gulf of Mexico, decrease rapidly with descent to deeper waters.

**Figure 5-8. Average Larval Densities in the Atlantic Ocean in 10 m Depth Intervals. Average densities based on EcoMon data collected from all offshore Atlantic samples.**



Average larval density at a depth of 30-40 m (the intake will be located at a depth of 35 m) is about one-third the density of the next 10 m increment. Based on existing data, the deep location

of the intake relative to the total water depth will, in part, minimize entrainment of larvae (and also potentially of eggs) because fewer organisms will be exposed to the intake than would be if the intake was located closer to the surface. At the same time, numerous studies, including sampling in the vicinity of the OCS-DC, demonstrate that early life stages of aquatic life have been collected at depths of 100 m or less, including at the depth of the intake. In addition, the existing fine sand or sand/mud benthic habitat in the vicinity of the OCS-DC will likely be transformed into higher complexity habitat by the introduction of foundation structures and associated scour protection of the WTGs and OCS-DC, which will alter the diversity and density of the biological community in the project area similar to that of artificial reefs. *See* 71 Fed. Reg. 35014. *See also* Langhamer 2012; Glarou et al. 2020; Degraer et al. 2020. Post-construction ichthyoplankton monitoring is warranted to accurately characterize the entrainment impacts of the OCS-DC and to track potential changes in the densities of early life stages at the intake over time. *See* monitoring discussion in Fact Sheet Sections 2.4.1 and 5.2.5.

### *Alternative Entrainment Technologies*

In its application, Sunrise Wind evaluated but rejected several alternative technologies for minimizing entrainment by the OCS-DC, including wedgewire screens, aquatic filter barriers, sub-sea heat exchange, alternative water sources, water reuse, and closed-cycle cooling.<sup>35</sup>

#### A. Passive Intake Screens

In some cases, physical screening systems, such as wedgewire screens or aquatic filter barriers, can be designed with a mesh size small enough (e.g., 0.5 mm) to prevent entrainment of early life stages of aquatic organisms. Passive infiltration and porous intakes are designed to withdraw cooling water filtered through the substrate, which prevents passage of aquatic organisms, including early life stages. Sunrise Wind concluded, however, that passive screens would be infeasible for this CWIS due to limited access at the water depth of the intake inlets and the potential for marine biofouling and clogging. *See* NPDES Application, p. 47. Conditions at a depth of 35 m below the surface would likely make maintenance of physical screens difficult and would add additional challenges to the design of the OCS-DC. The difficulty of maintaining screens placed at a depth of 35 m could result in problems with screen clogging and biofouling that could significantly undermine their performance. At this time there is insufficient information to demonstrate the feasibility or effectiveness of passive screens to minimize entrainment at the OCS-DC but EPA invites comment on this technology.

#### B. Closed-cycle Cooling

Under CWA § 316(b), a CWIS's "capacity," as well as its location, construction, and design, must reflect the BTA for minimizing adverse environmental impacts (such as entrainment and impingement mortality). Capacity in this sense refers to the volume of water being withdrawn by a CWIS. Reduced CWIS capacity is considered to reduce entrainment and impingement by the

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<sup>35</sup> Sunrise Wind also presented several alternative technologies for minimizing impingement mortality, including physical and behavioral barriers. *See* NPDES Application, pp. 43-47. As explained above, the proposed design through-screen velocity of 0.5 fps is the impingement mortality BTA requirement because it allows the majority of finfish species that encounter the intake to avoid impingement. The additional use of VFDs to limit cooling water flows to levels needed to meet demand will result in an actual intake velocity lower than 0.5 fps.

same proportion that the flow is reduced. In other words, a 95 percent reduction in the volume of water withdrawn achieves a 95 percent reduction in entrainment and impingement. Therefore, intake capacity reductions are among the most effective means of reducing entrainment, especially for facilities located in biologically productive environments. *See* 66 Fed. Reg. 65273. Indeed, the VFDs proposed by Sunrise Wind reduce entrainment by enabling the Facility to modulate water withdrawal pumping rates so that, in essence, the capacity of the Facility's CWIS can be reduced whenever possible.

One of the most effective technological measures for reducing a facility's intake capacity (or water withdrawal volumes) is to use a closed-cycle cooling (CCC) system. Closed-cycle cooling systems reduce cooling water withdrawals because waste heat is transferred to the atmosphere so that most of the cooling water can be recycled and reused by the system. *See, e.g.,* Technical Development Document for the Final Regulations Addressing Cooling Water Intake Structures for New Facilities, p. 2-2. (Since the waste heat is transferred to the atmosphere instead of to the source water, closed-cycle cooling systems also reduce thermal discharges.)

According to Sunrise Wind, both mechanical and natural draft cooling systems would be large relative to the size of the OCS-DC platform and would likely require a second platform to house the towers, which would approximately double the foundation requirements and disturbance of the seafloor. *See* NPDES Application p. 49. *See also* email from M. Evans (Orsted) to D. Gaito dated 4/13/22. A recent review of cooling technologies for offshore wind projects prepared for BOEM indicates that the platform size, water weight, and cost limit the feasibility of closed-cycle cooling for offshore wind. *See* Middleton and Barnhardt 2022 p. 3. If closed-cycle cooling technology was to be used in offshore wind applications, it would likely involve "mechanical draft" systems that require fans to transfer waste heat to the atmosphere and reduce the temperature of the cooling water. According to the BOEM review, offshore platforms to house the number of fans required and the weight of the seawater for cooling would be prohibitive from a space and cost perspective. *See Id.* Neither Sunrise Wind nor BOEM, however, provided a specific estimate of the cost of cooling towers for the OCS-DC.

EPA cannot confirm that closed-cycle cooling is infeasible for the OCS-DC based on available information at this time; however, EPA also has not established that closed-cycle cooling represents the BTA for this facility on a case-by-case, BPJ basis. EPA is not aware of any examples of closed-cycle cooling being used in this type of offshore application. EPA also notes that it did not establish closed-cycle cooling as the BTA for new offshore oil and gas extraction facilities with CWISs in 40 CFR Part 125 Subpart N on the grounds that "available information indicates that it is not feasible for all new offshore oil and gas extraction facilities to employ close-cycle recirculating systems." 71 Fed. Reg. 35016 (June 16, 2006). In addition, the § 316(b) Rule for New Facilities does not require new facilities that withdraw less than 10 MGD to reduce their intake flow to a level commensurate with that which could be attained by using a closed-cycle recirculating cooling water system because the Agency determined that meeting this flow reduction standard was not economically practicable for such facilities. 40 CFR § 125.84(c). *See* 66 Fed. Reg. 65273-74. While neither of these two Rules applies to the Sunrise Wind Facility, EPA considered these national rulemakings in determining the BTA for the Sunrise Wind OCS-DC on a case-by-case, BPJ basis.

### C. Subsea Heat Exchange

A subsea heat exchanger is located directly on the seafloor and exchanges heat directly with the ocean water, relying on the natural convection of ocean currents to circulate the source water past the system. This technology would eliminate the intake and discharge of cooling water at the OCS-DC and provide cost savings for the Facility because there would be no need for seawater lift pumps or electrochlorination.<sup>36</sup> Sunrise Wind indicates that a subsea heat exchanger is not available for the OCS-DC, however, because no adequate location exists in close proximity to the jacket foundation that would not interfere with the optimal routing and design of inter-array cables to minimize seafloor disturbance during cable installation and to allow access for jack-up vessels during commissioning and operations and maintenance activities. *See* NPDES Application, p. 49. *See also* email from M. Evans (Orsted) to D. Gaito dated 4/13/22. BOEM's review of available cooling technologies for offshore wind suggests that subsea heat exchange is a developing technology currently being studied for this sector.<sup>37</sup> *See* Middleton and Barnhardt 2022 pp. 4-5. At this time, there is insufficient information to support use of a subsea heat exchanger for the OCS-DC, but EPA acknowledges that this may change in the future and invites comment on the availability of this technology for full-scale, commercial deployment.

### D. Alternative Water Source/Water Reuse

The OCS-DC intake will not be located in reasonable proximity to alternative water sources such as groundwater, grey water, a publicly owned treatment works, a desalination facility, or a source of potable water. There is also not a sufficient volume of water (e.g., process water) at the OCS-DC to meet the Facility's cooling demands. At this time, replacing the Facility's seawater withdrawals for cooling with water from alternative water sources, or by reusing water from other processes at the Facility, is not an available technology to minimize entrainment.

### E. Conclusion

Based on review of the existing availability of alternative cooling water technologies demonstrated for offshore wind HVDC transformer platforms, EPA determined that the proposed use of VFDs, the proportional intake volume, and the intake location are the BTA for minimizing entrainment by the OCS-DC's CWIS. BOEM's review of possible cooling technologies suggests that new and innovative closed-loop technologies are currently being explored that could become available for offshore systems in the future but concludes that open loop cooling is the only technology demonstrated to be commercially available at this time. *See* Middleton and Barnhardt, 2022 p. 5. EPA did not observe, based on the 2022 review funded by BOEM, information provided by the Applicant, review of available cooling water intake technologies for national § 316(b) rulemakings, and other available information, that a demonstrated, available

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<sup>36</sup> The subsea heat exchange technology is functionally similar to keel cooling, which is a common cooling water technology on vessels. EPA's review of this technology during rulemaking for new offshore oil and gas extraction facilities indicated that keel cooling is not limited to mobile vessels and could be used for cooling water systems of stationary offshore oil and gas extraction facilities. *See* Technical Development Document for the Final Section 316(b) Phase III Rule p. 8-34.

<sup>37</sup> The European Union is currently funding a study of the use of subsea cooling at offshore wind HVDC transformer platforms. The study, which began in 2019, is expected to be completed in September 2023. <https://cordis.europa.eu/project/id/873403>

technology would be more effective than the proposed combination of VFDs, proportional flow requirements, and CWIS location to minimize the adverse impacts from entrainment at the OCS-DC. At the same time, closed loop technologies may become available for offshore wind projects in the near term. The cooling water intake structure requirements are reviewed during each reissuance of a NPDES permit and EPA may consider the feasibility of alternative, closed-loop technologies at the Sunrise Wind OCS-DC in the future.

### 5.2.5 CWIS Requirements

In making this case-by-case, BPJ determination, EPA considered the projected adverse environmental effects from the proposed operation of the CWIS, and options for the location, design, construction, and capacity of the CWIS. EPA also considered the BTA standards established in EPA § 316(b) rulemakings, recognizing that those standards do not directly apply to the Facility. *See* 40 CFR §§ 125.84(c), 125.94(c), and 125.134(b). To minimize the adverse environmental impact associated with the operation of the OCS-DC's CWIS, the Draft Permit requires that:

- (1) the CWIS maintain a through-screen velocity of no greater than 0.5 fps;
- (2) VFDs are used to maintain a maximum CWIS intake flow of 7.8 MGD and an average CWIS monthly intake flow of 4.0 to 5.3 MGD in accordance with the flow limits described in Section 5.1.1; and
- (3) the CWIS's intake be located 10 m ( $\pm 3$  m) of the pre-construction depth of the seafloor.

#### *Impingement and Entrainment Monitoring*

Impingement and entrainment data is used to assess the presence, absence, and life stages of aquatic organisms impinged or entrained during operation of the CWIS. Site-specific monitoring will be required to determine whether the representative species list established in the Source Water Baseline Biological Characterization remains representative of the water body after the CWIS begins operation and will provide site-specific data to better characterize impingement and entrainment by the CWIS. The Draft Permit requires impingement and entrainment monitoring to estimate the site-specific impacts of the CWIS, verify compliance with permit requirements, and enable EPA to assess the BTA for future permit reissuance.

Continuous monitoring of the through-screen velocity at the entrance to the CWIS is required to confirm compliance with the permit limitation of 0.5 fps under all conditions and will be used to evaluate whether any fouling or obstructions at the intake results in exceedances of 0.5 fps. This monitoring may be achieved by employing a remote device such as a pressure differential at the sea water lift pump. The Facility must report its average and maximum through-screen velocity in its monthly DMR.

Entrainment monitoring requires sampling of organisms at the location of the intake to better characterize the number of organisms entering the CWIS and being drawn into the cooling water system. EPA has established a BTA for the OCS-DC to include the location of the intake and the low proportional volume withdrawn relative the source waterbody. Entrainment monitoring will enable EPA to evaluate the BTA for future permit reissuance based on site-specific, operational

data at the Facility's intake that will provide for a better estimate of the impacts of entrainment, including an estimate of the entrainment of eggs, for which there is currently no data available, and a comparison of ichthyoplankton abundance at the intake location as compared to the full water column. Moreover, because ambient water and biological conditions might change over time, biological monitoring is necessary to identify those species affected by the CWIS once operations have begun. 66 Fed. Reg. 49100. For example, as discussed above, the foundations and associated scour protection at the OCS-DC and each of the WTGs will transform the benthic structure of the project area and introduce complex hard substrate, providing new habitat. This new habitat, in turn, is expected to attract a different assemblage of aquatic life, which may alter the presence of early life stages at the OCS-DC. In addition, changing water temperatures associated with climate change could also lead to shifts in the assemblage of aquatic organisms in the area of the Facility, which could change the species being entrained. Entrainment monitoring over the permit term will also provide valuable information about any changes in the densities of early life stages at the OCS-DC over time.

The monitoring requirements proposed in the Draft Permit, and discussed above, are authorized by Sections 308 and 402(a)(2) of the CWA, *see also* 40 CFR §§ 122.48, 125.87 and 125.88. The Permittee may seek a modification of the monitoring program either when the permit is reissued or during the term of the permit based on changes in physical or biological conditions in the vicinity of the CWIS. *See* 40 CFR § 122.62(a)(2).

## **6.0 Federal Permitting Requirements**

### **6.1 Endangered Species Act**

Section 7(a) of the Endangered Species Act of 1973, as amended (ESA), grants authority and imposes requirements on Federal agencies regarding species of fish, wildlife, or plants that have been federally listed as endangered or threatened (listed species), and regarding habitat of such species that has been designated as critical (critical habitat).

Section 7(a)(2) of the ESA requires every federal agency, in consultation with and with the assistance of the Secretary of Interior, to ensure that any action it authorizes, funds, or carries out, in the United States or upon the high seas, is not likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of critical habitat. The United States Fish and Wildlife Service (USFWS) administers Section 7 consultations for birds (other than seabirds) and terrestrial and freshwater organisms, while the National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NOAA Fisheries) administers Section 7 consultations for listed species of marine organisms (including marine mammals and reptiles), as well as for anadromous fish and seabirds.

The federal action being considered in this case is EPA's proposed issuance of an NPDES permit for the Sunrise Wind OCS-DC. As the federal agency charged with authorizing the Facility's pollutant discharges and cooling water withdrawals, EPA assesses potential impacts to federally listed species and critical habitat and initiates consultation to the extent required under Section 7(a)(2) of the ESA. Protected species which occur or may occur in the vicinity of the OCS-DC

are listed in Table 6-1 and described in detail in the Draft EIS and in Appendix O1 of the Sunrise Wind COP.

**Table 6-1. Federally-listed ESA Species in the Vicinity of the OCS-DC.**

Name	Federal Agency with ESA Jurisdiction	Expected in Vicinity of OCS-DC?
Piping Plover <i>Charadrius melodus</i>	USFWS	Yes
Rufa Red Knot <i>Calidris canutus</i>	USFWS	Yes
Roseate tern <i>Sterna dougallii</i>	USFWS	Yes
Atlantic Sturgeon <i>Acipenser oxyrinchus oxyrinchus</i>	NOAA Fisheries	Yes
Giant Manta Ray <i>Manta birostris</i>	NOAA Fisheries	Uncommon
Oceanic Whitetip Shark <i>Carcharhinus longimanus</i>	NOAA Fisheries	Uncommon
Leatherback Sea Turtle <i>Dermochelys coriacea</i>	NOAA Fisheries	Yes
Loggerhead Sea Turtle <i>Caretta caretta</i>	NOAA Fisheries	Yes
Kemp's Ridley Sea Turtle <i>Lepidochelys kempii</i>	NOAA Fisheries	Uncommon
Green Sea Turtle <i>Chelonia mydas</i>	NOAA Fisheries	No
North Atlantic Right Whale <i>Eubalaena glacialis</i>	NOAA Fisheries	Yes
Fin Whale <i>Balaenoptera physalus</i>	NOAA Fisheries	Yes
Sei Whale <i>Balaenoptera borealis</i>	NOAA Fisheries	Yes
Sperm Whale <i>Physeter catodon</i>	NOAA Fisheries	Yes
Blue Whale <i>Balaenoptera musculus</i>	NOAA Fisheries	No

Federal agencies issuing permits and licenses for the Sunrise Wind project are currently engaged in ESA Section 7 consultations with both NOAA Fisheries and USFWS. These consultations will address the effects of all activities proposed for the construction, operation, maintenance, and decommissioning of the Sunrise Wind Farm and Export Cable projects on protected species in

the action area, including impacts from the Facility's water withdrawals and pollutant discharges, as authorized by this Draft Permit. BOEM is delegated responsibility for overseeing offshore renewable energy development in Federal waters (30 CFR 585) and is the lead agency for fulfilling the interagency consultations under Section 7 of the ESA. *See* 50 CFR § 402.07. EPA is a cooperating agency with BOEM on these consultations.

BOEM has initiated a Section 7 consultation with USFWS for the Sunrise Wind Farm and Sunrise Wind Export Cable, and on December 21, 2022, BOEM submitted a biological assessment (BA) to USFWS in connection with the consultation. *See* 12/21/22 Transmittal of BA from BOEM to USFWS; December 2022 Sunrise Wind USFWS BA. In addition to the USFWS species listed in Table 6-1 above, the BA for the USFWS also addresses several additional species that may occur in other areas of the project (e.g., near-shore facilities or facilities in areas associated with the export cable) but not in the offshore area associated with this NPDES permitting action. *See* Sunrise Wind December 2022 USFWS BA, Table 3. BOEM's assessment indicates that impacts from the offshore components of the proposed action on federally listed bird species include increase noise associated with construction and pile driving, lighting, collision with structures, decommissioning, and discharge of wastes. BOEM's assessment does not expect that the proposed project will impact availability of prey for federally-listed bird species, in part due to the distance of the offshore portions of the action area from nearshore foraging habitat. *See id.* p. 47-53. BOEM concludes that the effects of the proposed action within the offshore portions of the Action Area are insignificant and/or discountable and the proposed action would not be likely to adversely affect roseate terns or piping plovers but is likely to adversely affect red knots based on the non-zero change of fatalities due to collision with turbines. *See id.* p. 53, 60.

BOEM submitted a draft biological assessment to NOAA Fisheries on August 8, 2022. *See* 8/8/22 Transmittal Email, August 2022 Sunrise Wind NMFS Draft BA. In a memo to BOEM dated October 7, 2022, NOAA Fisheries summarized the findings from its review of the Draft BA and explained that it had determined that the Draft BA required substantial revision before initiation of the ESA Section 7 consultation. BOEM submitted revised Draft BAs on January 9, 2023, February 27, 2023, and April 24, 2023. On April 27, 2023, after following up with BOEM, NOAA Fisheries agreed that BOEM had submitted all of the information necessary to initiate consultation in the April 24, 2023 Revised BA. BOEM concludes that the direct effects of the operation of the OCS-DC on federally-listed species will be insignificant and/or discountable because the sizes and life stages present in the Action Area are not expected to be at risk for entrainment. *See* Sunrise Wind April 2023 NOAA Fisheries BA p. 167. For this reason, BOEM concludes that operation of the OCS-DC may affect, but is not likely to adversely affect, ESA-listed species. *See id.* In addition, BOEM also concluded that indirect impacts would be insignificant because entrainment would likely impact a small portion of the prey population and, as a result, the operation of the OCS-DC may affect, but is not likely to adversely affect, ESA-listed species. *See id.* p. 168.

EPA will not issue an NPDES permit for this facility until Section 7 consultation is complete and EPA has determined, in consultation with USFWS and NOAA Fisheries, that an EPA authorization for the Sunrise Wind OCS-DC to withdraw and discharge NCCW is not likely to jeopardize the continued existence of any endangered or threatened species or adversely affect its



critical habitat. *See* 40 CFR § 122.49(c). EPA may also include conditions in the NPDES permit that are recommended by USFWS or NOAA Fisheries to the extent needed to comply with the ESA and carry out the provisions of 40 CFR § 122.49(c). *See* 40 CFR § 124.59(b).

Re-initiation of consultation under the ESA is required and shall be requested by EPA or by USFWS/NOAA Fisheries where discretionary federal involvement or control over the action has been retained or is authorized by law and if: 1) new information reveals that the action may affect listed species or critical habitat in a manner or to an extent not previously considered in the analysis; 2) the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in the previous analysis; 3) a new species is listed or critical habitat designated that may be affected by the identified action; or 4) there is any incidental taking of a listed species that is not covered by an incidental take statement.

## 6.2 Essential Fish Habitat

Under the 1996 Amendments (PL 104-267) to the Magnuson-Stevens Fishery Conservation and Management Act, 16 U.S.C. §§ 1801, *et seq.*, EPA is required to consult with NOAA Fisheries if proposed actions that EPA funds, permits, or undertakes, “may adversely impact any essential fish habitat.” *See* 16 U.S.C. § 1855(b). The Amendments broadly define “essential fish habitat” (EFH) as: “waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity.” *See* 16 U.S.C. § 1802(10). “Adverse impact” means any impact that reduces the quality and/or quantity of EFH. 50 CFR § 600.910(a). Adverse effects may include direct (e.g., contamination or physical disruption), indirect (e.g., loss of prey, reduction in species’ fecundity), site-specific, or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions.

EFH is only designated for fish species for which federal Fisheries Management Plans exist. *See* 16 U.S.C. § 1855(b)(1)(A). EFH designations for New England were approved by the U.S. Department of Commerce on March 3, 1999. A list of species and life stages with designated EFH at the location of the OCS-DC is included in Appendix A to this Fact Sheet and presented in Table 2.2.3-1 in Appendix N1 of the Sunrise Wind COP. BOEM, as the lead agency for the environmental review of the project under NEPA, will initiate an EFH consultation with NOAA Fisheries on behalf of all the federal agencies issuing licenses or permits for the windfarm, including for EPA with regard to the NPDES permit. BOEM submitted its EFH Assessment to NOAA Fisheries on in December 2022 and received comments from NOAA on its Assessment on February 28, 2023. BOEM provided a revised EFH Assessment for EPA’s review on May 4, 2023. NOAA Fisheries expects BOEM to submit a complete EFH assessment and initiate consultation in June 2023. Personal communication from S. Tuxbury (NOAA Fisheries) to D. Gaito (EPA) on 4/26/23. EPA will incorporate, as appropriate, limits and conditions consistent with the NOAA Fisheries recommendations resulting from the assessment where applicable to the NPDES permit.

Should unanticipated adverse impacts to EFH be detected as a result of the operation of the Facility under the NPDES permit, or if new information emerges that changes the basis for the conservation recommendations previously issued by NOAA Fisheries, the NOAA Fisheries

Habitat Division will be contacted and the EFH consultation will be reinitiated. *See* 50 CFR § 600.920(l).

## 7.0 Coastal Zone Management Act

The Coastal Zone Management Act (CZMA), 16 U.S.C. 1451, *et seq.*, and its implementing regulations (15 CFR Part 930) require that an applicant for a federal permit to authorize an activity affecting the coastal zone of a state with an approved Coastal Zone Management Program (CZMP) must provide a certification to the permitting agency (with a copy to the state coastal zone management agency) indicating that the permitted activity will be consistent with the enforceable policies of the state CZMP. *See* 16 U.S.C. § 1456(c)(3)(A). In such a case, EPA may not issue the NPDES permit until the state agency that administers the state's CZMP concurs with the permit applicant's certification, state concurrence has been conclusively presumed, *see id.*, or the Secretary of Commerce overrides the state nonconcurrence. *See id.* *See also* 40 CFR § 122.49(d); 15 CFR §§ 930.62(a) and (c), 930.63(a).

In the present case, however, the Sunrise Wind offshore wind farm project, and the OCS-DC in particular, will be located well outside the coastal zone of any state. Accordingly, the OCS-DS's discharges and water withdrawals regulated by the NPDES permit will all take place well outside the coastal zone of any state and should not directly or indirectly affect the resources or use of the coastal zone of any state.

That said, during environmental review of the project, Sunrise Wind has been in communication with the CZMPs in New York, Massachusetts, and Rhode Island to ensure compliance with any applicable requirements of the states' coastal zone management programs. *See* 40 CFR § 125.122(a)(8). In addition, the export cable and onshore facilities associated with the wind farm will be located, at least in part, within the coastal zone of the state of New York within their coastal jurisdiction for federal consistency. *See* Sunrise Wind COP Appendix C. Sunrise Wind prepared and submitted consistency certifications with the CZMP offices in New York, Massachusetts, and Rhode Island to ensure compliance with the CZMA. *See* Sunrise Wind COP Appendix C. *See also* 02/13/23 Letter from Massachusetts CZM to BOEM.

## 8.0 Public Comments, Hearing Requests, and Permit Appeals

All persons, including applicants, who believe any condition of the Draft Permit is inappropriate must raise all issues and submit all available arguments and all supporting material for their arguments in full by the close of the public comment period, to the permit writer, Danielle Gaito at the following email address: [gaito.danielle@epa.gov](mailto:gaito.danielle@epa.gov).

Prior to the close of the public comment period, any person may submit a written request to EPA for a public hearing to consider the Draft Permit. Such requests shall state the nature of the issues proposed to be raised in the hearing. A public hearing may be held if the criteria stated in 40 CFR § 124.12 are satisfied. If for any reason, comments on the Draft Permit and/or a request for a public hearing cannot be emailed to the permit writer specified above, please contact them at telephone number: (617) 918-1297. In reaching a final decision on the Draft Permit, EPA will

respond to all significant comments in a Response to Comments document attached to the Final Permit and make these responses available to the public on EPA's website.

Following the close of the comment period, and after any public hearings, if such hearings are held, EPA will issue a Final Permit decision, forward a copy of the final decision to the applicant, and provide a copy or notice of availability of the final decision to each person who submitted written comments or requested notice. Within 30 days after EPA serves notice of the issuance of the Final Permit decision, an appeal of the federal NPDES permit may be commenced by filing a petition for review of the permit with the Clerk of EPA's Environmental Appeals Board in accordance with the procedures at 40 CFR § 124.19.

## **9.0 Administrative Record**

The administrative record on which this Draft Permit is based may be accessed by contacting Danielle Gaito at (617) 918-1297 or via email to [gaito.danielle@epa.gov](mailto:gaito.danielle@epa.gov).

Date May 2023

Ken Moraff, Director  
Water Division  
U.S. Environmental Protection Agency

Figure 1: Location Map

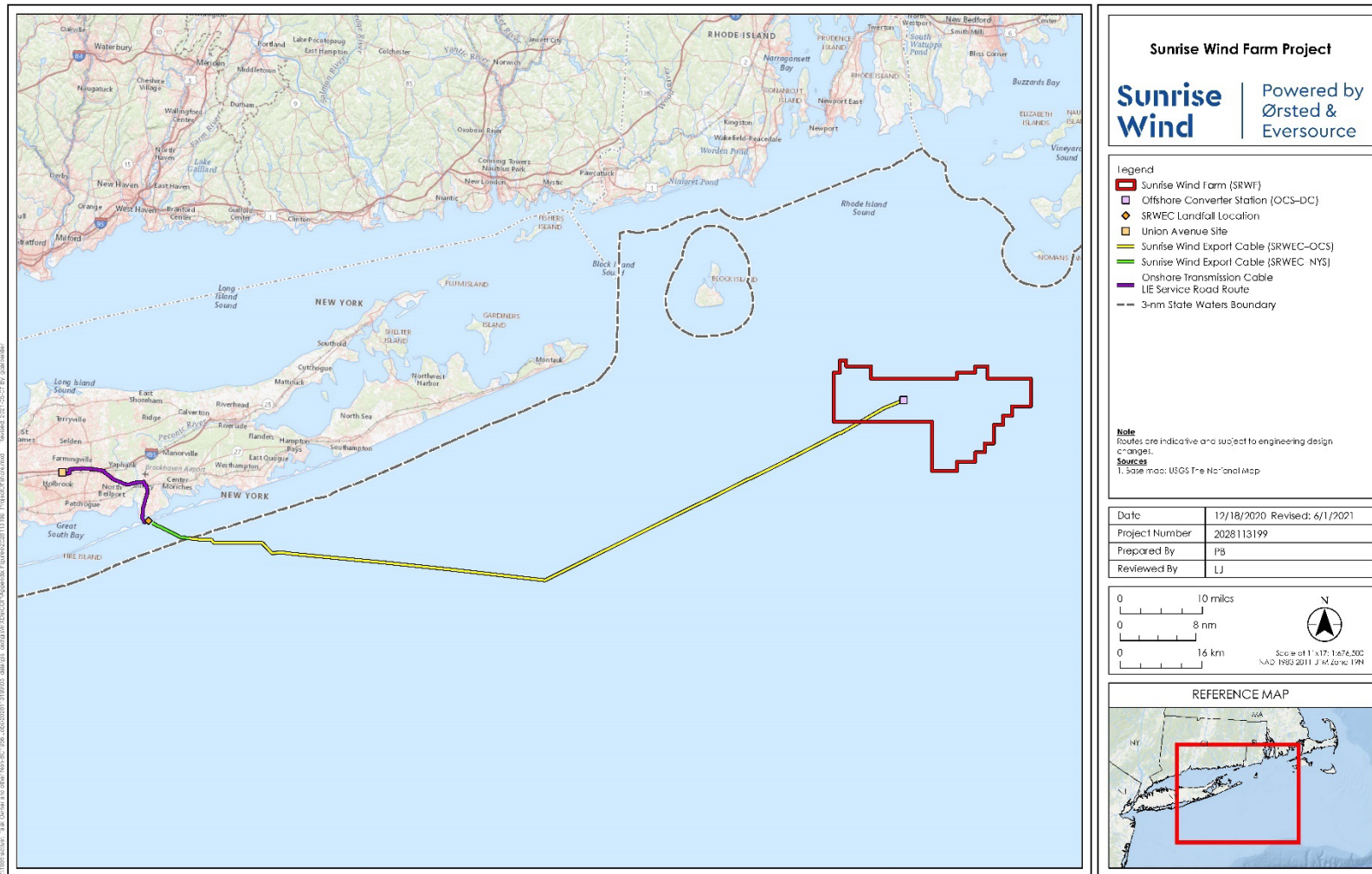
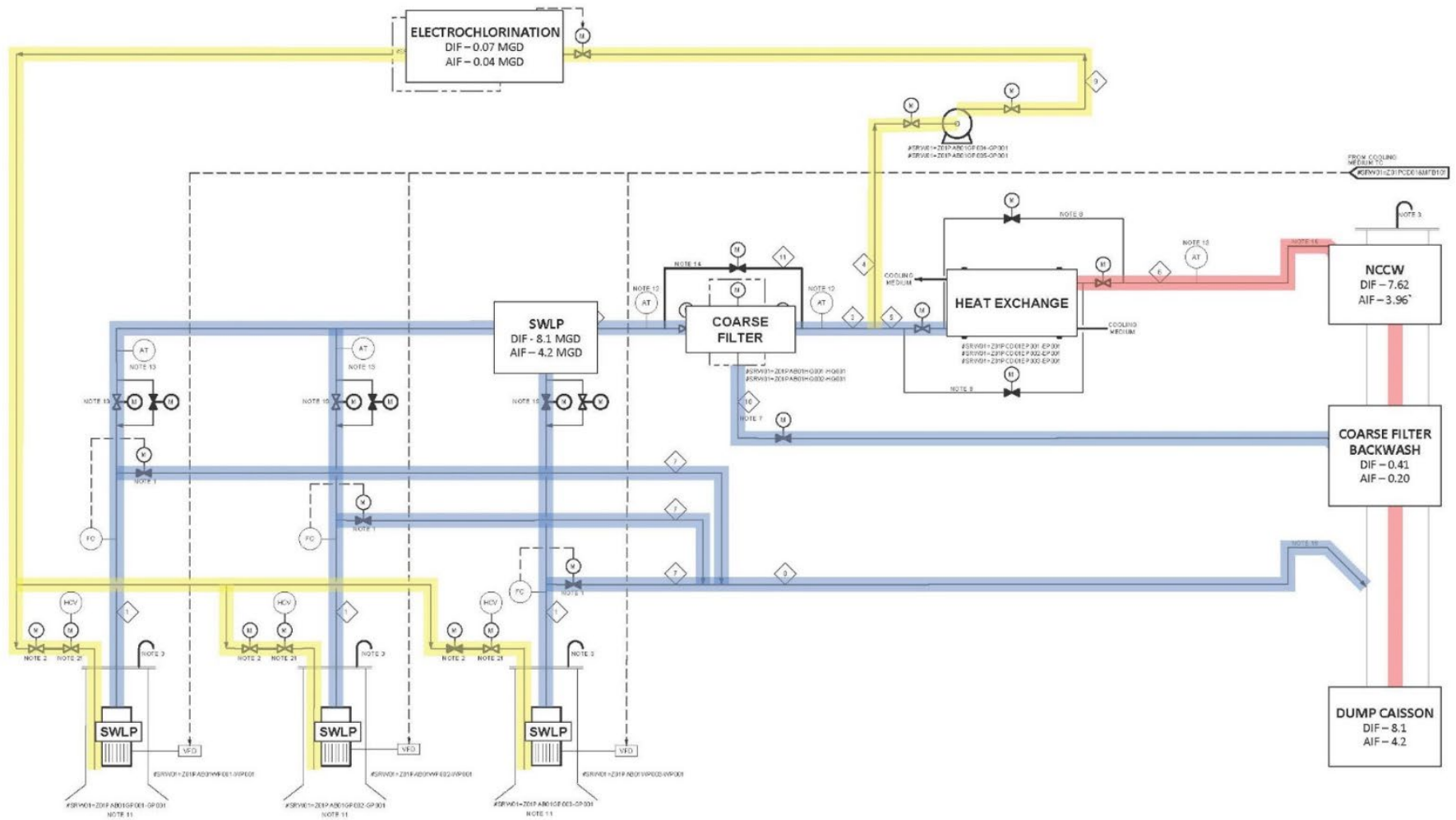
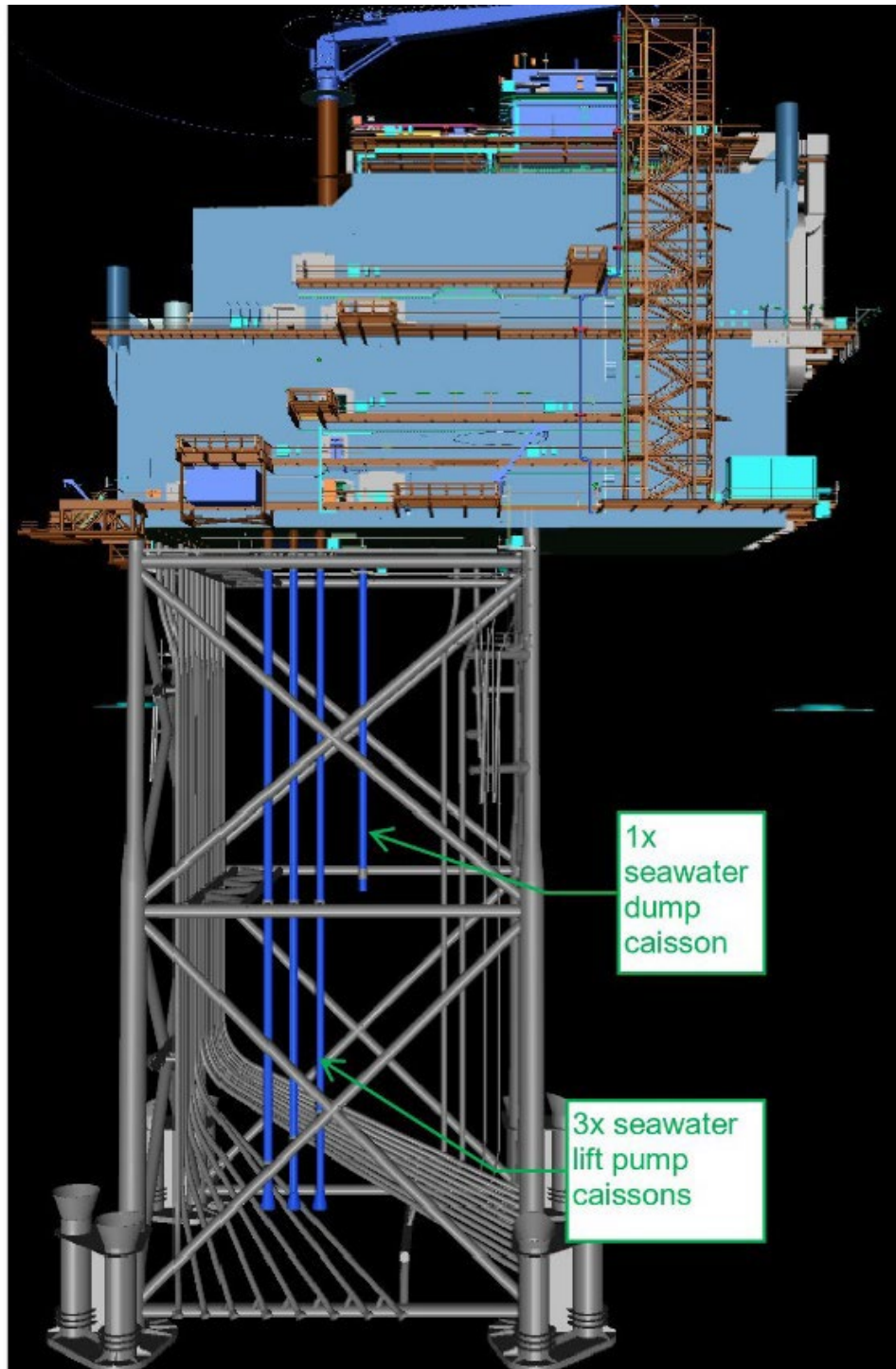


Figure 2: Schematic of Water Flow



**Figure 3: Engineering Drawing of the Cooling Water Intake Structure**





**Appendix A: Essential Fish Habitat**

	Egg	Larvae	Neonate	Juvenile	Adult
Atlantic Cod ( <i>Gadus morhua</i> )	X	X		X	X
Atlantic Herring ( <i>Clupea harengus</i> )	X	X		X	X
Atlantic Wolffish ( <i>Anarhichas lupus</i> )	X	X		X	X
Haddock ( <i>Melanogrammus aeglefinus</i> )		X		X	
Monkfish ( <i>Lophius americanus</i> )	X	X		X	X
Ocean Pout ( <i>Zoarces americanus</i> )	X			X	X
Pollock ( <i>Pollachius virens</i> )	X	X		X	
Red Hake ( <i>Urophycis chuss</i> )	X	X		X	X
Silver Hake ( <i>Merluccius bilinearis</i> )	X	X		X	
White Hake ( <i>Urophycis tenuis</i> )				X	
Windowpane Flounder ( <i>Scophthalmus aquosus</i> )	X	X		X	X
Winter Flounder ( <i>Pseudopleuronectes americanus</i> )		X		X	X
Witch Flounder ( <i>Glyptocephalus cynoglossus</i> )	X	X			X
Yellowtail Flounder ( <i>Limanda ferruginea</i> )	X	X		X	X
Altantic Butterfish ( <i>Peprius triacanthus</i> )	X	X		X	X
Altantic Mackerel ( <i>Scomber scombrus</i> )	X	X		X	X
Black Sea Bass ( <i>Centropristis striata</i> )				X	X
Bluefish ( <i>Pomatomus saltatrix</i> )	X	X			X
Scup ( <i>Stenotomus chrysops</i> )				X	X
Summer Flounder ( <i>Paralichthys dentatus</i> )	X	X			X
Atlantic Sea Scallop ( <i>Placopecten magellanicus</i> )	X	X		X	X
Longfin Inshore Squid ( <i>Doryteuthis pealeii</i> )				X	X
Ocean Quahog ( <i>Arctica islandica</i> )				X	X
Albacore Tuna ( <i>Thunnus alalunga</i> )				X	X
Bluefin Tuna ( <i>Thunnus thynnus</i> )				X	X
Skipjack Tuna ( <i>Katsuwonus pelamis</i> )				X	X
Yellowfin Tuna ( <i>Thunnus albacares</i> )				X	X
Barndoor Skate ( <i>Dipturis laevis</i> )				X	X
Little Skate ( <i>Leucoraja erinacea</i> )				X	X
Winter Skate ( <i>Leucoraja ocellata</i> )				X	X
Basking Shark ( <i>Cetorhinus maximus</i> )			X	X	X
Blue Shark ( <i>Prionace glauca</i> )			X	X	X
Common thresher Shark ( <i>Alopias vulpinus</i> )			X	X	X
Dusky Shark ( <i>Carcharhinus obscurus</i> )			X	X	X
Porbeagle shark ( <i>Lamna nasus</i> )			X	X	X
Sandbar shark ( <i>Carcharhinus plumbeus</i> )				X	X
Sand Tiger Shark ( <i>Carcharias taurus</i> )			X	X	
Shortfin Mako ( <i>Isurus oxyrinchus</i> )			X	X	X
Smoothhound Shark Complex (Atlantic stock) ( <i>Mustelus canis</i> )			X		
Spiny Dogfish ( <i>Squalus acanthias</i> )					X
Tiger Shark ( <i>Galeocerdo cuvier</i> )				X	X
White Shark ( <i>Carcharodon carcharias</i> )			X	X	X

## Appendix B: References

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UNITED STATES ENVIRONMENTAL  
PROTECTION AGENCY – REGION 1 (EPA)  
WATER DIVISION  
5 POST OFFICE SQUARE  
BOSTON, MASSACHUSETTS 02109

EPA PUBLIC NOTICE OF A DRAFT NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT TO DISCHARGE INTO WATERS OF THE UNITED STATES UNDER SECTION 402 OF THE CLEAN WATER ACT (CWA), AS AMENDED.

PUBLIC NOTICE PERIOD: **May 18, 2023 – June 16, 2023**

NAME AND MAILING ADDRESS OF APPLICANT:

Sunrise Wind, LLC  
437 Madison Avenue, Suite 1903  
New York, NY 10022

NAME AND ADDRESS OF THE FACILITY WHERE DISCHARGE OCCURS:

Sunrise Wind Farm Offshore Converter Station  
BOEM Renewable Energy Lease Area OCS-A0487

RECEIVING WATER AND CLASSIFICATION:

Atlantic Ocean (OCS-A0487)

PREPARATION OF THE DRAFT PERMIT AND EPA REQUEST FOR CWA § 401 CERTIFICATION:

EPA is issuing for public notice and comment the Draft NPDES Permit for the Sunrise Wind Offshore Converter Station, which discharges non-contact cooling water. The effluent limits and permit conditions have been drafted pursuant to, and assure compliance with, the CWA.

INFORMATION ABOUT THE DRAFT PERMIT:

The Draft Permit and explanatory Fact Sheet may be obtained at no cost at <https://www.epa.gov/npdes-permits/massachusetts-draft-individual-npdes-permits> or by contacting:

Danielle Gaito  
U.S. Environmental Protection Agency – Region 1  
5 Post Office Square, Suite 100 (06-4)  
Boston, MA 02109-3912  
Telephone: (617) 918-1297  
Email: [gaito.danielle@epa.gov](mailto:gaito.danielle@epa.gov)

Following U.S. Centers for Disease Control and Prevention (CDC) and U.S. Office of Personnel Management (OPM) guidance and specific state guidelines impacting our regional offices, EPA's workforce has been directed to telework to help prevent transmission of the coronavirus. While in this workforce telework status, there are practical limitations on the ability of Agency personnel to allow the public to review the administrative record in person at the EPA Boston office. However, any electronically available documents that are part of the administrative record can be requested from the EPA contact above.

## CWA §316(b) COOLING WATER INTAKE STRUCTURES

The Draft Permit contains requirements applicable to the facility's cooling water intake structure under section 316(b) of the CWA, which are fully explained in the Fact Sheet.

### PUBLIC COMMENT AND REQUESTS FOR PUBLIC HEARINGS:

All persons, including applicants, who believe any condition of this Draft Permit is inappropriate must raise all reasonably ascertainable issues and submit all reasonably available arguments supporting their position by **June 16, 2023**, which is the close of the public comment period. Comments, including those pertaining to EPA's request for CWA § 401 certification, should be submitted to the EPA contact at the address or email listed above. Upon the close of the public comment period, EPA will make all comments available to MassDEP. All commenters who want MassDEP to consider their comments in the state decision-making processes (i.e., the separate state permit and the CWA § 401 certification) must submit such comments to MassDEP during the state comment period for the state Draft Permit and CWA § 401 certification. For information on submitting such comments to MassDEP, please follow the instructions found in the state public notice at: <https://www.mass.gov/service-details/massdep-public-hearings-comment-opportunities>.

Any person, prior to the close of the EPA public comment period, may submit a request in writing to EPA for a public hearing on the Draft Permit under 40 CFR § 124.10. Such requests shall state the nature of the issues proposed to be raised in the hearing. A public hearing may be held after at least thirty days public notice if the Regional Administrator finds that response to this notice indicates significant public interest. In reaching a final decision on this Draft Permit, the Regional Administrator will respond to all significant comments and make the responses available to the public.

If comments are submitted in hard copy form, please also email a copy to the EPA contact above.

### FINAL PERMIT DECISION:

Following the close of the comment period, and after a public hearing, if such hearing is held, the Regional Administrator will issue a final permit decision and notify the applicant and each person who has submitted written comments or requested notice.

KEN MORAFF, DIRECTOR  
WATER DIVISION  
UNITED STATES ENVIRONMENTAL  
PROTECTION AGENCY – REGION 1