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626 Lafayette Road
Seabrook NH 03874

WATER QUALITY CERTIFICATION

In Fulfillment of

NH RSA 485-A:12

WQC # 2016-NRC-001

Activity Name	Seabrook Station Nuclear Power Plant
Activity Location	Seabrook, New Hampshire
Potentially Affected Surface waters	Atlantic Ocean , Hampton-Seabrook Harbor, Hunts Island Creek, Browns River, Back Creek, Swains Creek, Farm Brook and unnamed tributaries and wetlands
Owner/Applicant	NextEra Energy Seabrook LLC 626 Lafayette Road Seabrook NH 03874
Appurtenant State permit(s) (and any amendments):	State Discharge Permit NH0020338
Applicable Federal permit(s):	U.S. EPA NPDES Permit NH0020338 U.S. NRC Operating License NPF-86
DATE OF APPROVAL (subject to Conditions below)	July 26, 2016

A. INTRODUCTION

NextEra Energy Seabrook LLC (Applicant) has applied to the U.S. Nuclear Regulatory Commission (NRC) for an extension of its Operating License from March 15, 2030 to March 15, 2050 for the Seabrook Station Nuclear Power Plant (Seabrook Station). Operation and maintenance of the Seabrook Station, including, but not limited to, withdrawal and discharge of once-through cooling water from the Atlantic Ocean in Hampton-Seabrook Harbor are included as part of the "Activity" for this

Section 401 Water Quality Certification (WQC or Certification). A more complete description of the Activity is included in Finding D-2 of this Certification.

This Water Quality Certification documents laws, regulations, determinations and conditions related to the Activity for the attainment and maintenance of NH surface water quality standards, including the provisions of NH RSA 485-A:8 and NH Code of Administrative Rules Env-Wq 1700, for the support of designated uses identified in the standards.

B. 401 CERTIFICATION APPROVAL

Based on the facts, findings and conditions noted below, the New Hampshire Department of Environmental Services (NHDES) has determined that there is reasonable assurance that continued operation of the Activity will not violate surface water quality standards. DES hereby issues this Certification, subject to the conditions in Section E of this Certification, in accordance with Section 401 of the United States Clean Water Act (33 U.S.C. 1341), RSA 485-A:12,III, and RSA 485-A:12, IV.

C. STATEMENT OF FACTS AND LAW

C-1. Section 401 of the United States Clean Water Act (CWA) (33 U.S.C. 1341) states, in part: "Any applicant for a federal license or permit to conduct any activity including, but not limited to, the construction or operation of facilities, which may result in any discharge into the navigable waters, shall provide the licensing or permitting agency a certification from the State in which the discharge originates or will originate...that any such discharge will comply with the applicable provisions of sections 301, 302, 303, 306, and 307 of this title.....No license or permit shall be granted until the certification required by this section has been obtained or has been waived...No license or permit shall be granted if certification has been denied by the State..."

C-2. Section 401 further states, in part "Any certification provided under this section shall set forth any effluent limitations and other limitations, and monitoring requirements necessary to assure that any applicant for a Federal license or permit will comply with any applicable effluent limitations and other limitations...and shall become a condition on any Federal license or permit subject to the provisions of this section."

Section 401(d) of the CWA provides that: "Any certification provided under this section [401] shall set forth any effluent limitations and other limitations, and monitoring requirements necessary to assure that any applicant for a Federal license or permit will comply with [enumerated provisions of the CWA]...and with any other appropriate requirement of State law set forth in such certification."

According to U.S. Environmental Protection Agency (EPA) 401 Guidance[1], "Under § 401(d) the water quality concerns to consider and the range of potential conditions available to address those concerns, extend to any provision of state or tribal law relating to the aquatic resource. Considerations can be quite broad so long as they relate to water quality. The U.S. Supreme Court has stated that, once the threshold of a discharge is reached (necessary for § 401 certification to be applicable), the conditions and limitations in the certification may address the permitted activity as a whole."[2]

C-3. NH RSA 485-A:12, III, states: "No activity, including construction and operation of facilities, that requires certification under section 401 of the Clean Water Act and that may result in a discharge, as that term is applied under section 401 of the Clean Water Act, to surface waters of the state may commence unless the department certifies that any such discharge complies with the state surface water quality standards applicable to the classification for the receiving surface water body. The department shall provide its response to a request for certification to the federal agency or authority responsible for issuing the license, permit, or registration that requires the certification under section 401 of the Clean Water Act. Certification shall include any conditions on, modifications to, or monitoring of the proposed activity necessary to provide assurance that the proposed discharge complies with applicable surface water quality standards. The department may enforce compliance with any such conditions, modifications, or monitoring requirements as provided in RSA 485-A:22."

C-4. NH RSA 485-A: IV states: "No activity that involves surface water withdrawal or diversion of surface water that requires registration under RSA 488:3, that does not otherwise require the certification required under paragraph III, and which was not in active operation as of the effective date of this paragraph, may commence unless the department certifies that the surface water withdrawal or diversion of surface water complies with state surface water quality standards applicable to the classification for the surface water body. The certification shall include any conditions on, modifications to, or monitoring of the proposed activity necessary to provide reasonable assurance that the proposed activity complies with applicable surface water quality standards."

C-5. NH RSA 485-A:8 and Env-Wq 1700 (Surface Water Quality Regulations), together fulfill the requirements of Section 303 of the Clean Water Act that the State of New Hampshire adopt water quality standards consistent with the provisions of the Act.

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[1] *Clean Water Action Section 401 Water Quality Certification: A Water Quality Protection Tool for States and Tribes.* U.S. Environmental Protection Agency, Office of Wetlands, Oceans and Watersheds. 2010.

[2] *PUD No. 1 of Jefferson County v. Washington Department of Ecology*, 511 U.S. 700, 712 (1994).

C-6. Env-Wq 1701.02, entitled "Applicability", states that:

"(a) These rules shall apply to all surface waters.

(b) These rules shall apply to any person who causes point or nonpoint source discharge(s) of pollutants to surface waters, or who undertakes hydrologic modifications, such as dam construction or water withdrawals, or who undertakes any other activity that affects the beneficial uses or the level of water quality of surface waters."

C-7. Env-Wq 1703.01 Water Use Classifications.

(a) State surface waters shall be divided into class A and class B, pursuant to RSA 485-A:8, I, II and III. Each class shall identify the most sensitive use which it is intended to protect.

(b) All surface waters shall be restored to meet the water quality criteria for their designated classification including existing and designated uses, and to maintain the chemical, physical, and biological integrity of surface waters.

(c) All surface waters shall provide, wherever attainable, for the protection and propagation of fish, shellfish and wildlife, and for recreation in and on the surface waters.

(d) Unless the flows are caused by naturally occurring conditions, surface water quantity shall be maintained at levels adequate to protect existing and designated uses.

C-8. Env-Wq 1702.46 defines surface waters as "surface waters of the state" as defined in NH RSA 485-A:2, XIV and waters of the United States as defined in 40 CFR 122.2.

NH RSA 485-A:2, XIV defines "surface waters of the state" as "perennial and seasonal streams, lakes, ponds and tidal waters within the jurisdiction of the state, including all streams, lakes, or ponds bordering on the state, marshes, water courses and other bodies of water, natural or artificial."

40 CFR 122.2 defines 'waters of the United States' as

(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 purposes;

(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.

Wetlands are defined in 40 CFR 122.2 as "[t]hose 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. This definition is the same as the definition of jurisdictional wetlands used for State wetland permitting in NH RSA 482-A:2, X (see C-9). 40 CFR 122.2 further states that wetlands generally include swamps, marshes, bogs, and similar areas.

C-9. NH RSA 482-A:2, X. defines "Wetlands" as "[a]n area that is inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under normal conditions does support, a prevalence of vegetation typically adapted for life in saturated soil conditions."

C-10. Env-Wq 1702.04 "Benthic community" mean the community of plants and animals that live on, over, or in the substrate of the surface water.

C-11. Env-Wq 1702.07 "Biological Integrity" means the ability of an aquatic ecosystem to support and maintain a balanced, integrated, adaptive community of organisms having a species composition, diversity, and functional organization comparable to that of similar natural habitats of a region.

C-12. Env-Wq 1702.08 "Biota" means species of plants or animals occurring in surface waters.

C-13. Env-Wq 1702.13 "Community" means one or more populations co-occurring in surface waters.

C-14. Env-Wq 1702.17 "Designated uses" means those uses specified in water quality standards for each water body or segment whether or not such uses are presently occurring.

C-15. Env-Wq 1702.18 defines a discharge as:

"a. The addition, introduction, leaking, spilling, or emitting of a pollutant to surface waters, either directly or indirectly through the groundwater, whether done intentionally, unintentionally, negligently, or otherwise; or

b. The placing of a pollutant in a location where the pollutant is likely to enter surface waters."

C-16. The term "discharge", as applied under section 401 of the Clean Water Act means the potential for a discharge. It does not need to be a certainty, only that it may occur should the federal license or permit be granted. Further, the discharge does not need to involve the addition of pollutants (such as water released from the tailrace of a dam). As the U.S. Supreme Court has stated "[w]hen it applies to water, 'discharge' commonly means a 'flowing or issuing out'" and an addition of a pollutant is not "fundamental to any discharge" [3].

C-17. Env-Wq 1702.23 "Existing uses" means those uses, other than assimilation waste transport, which actually occurred in the water body on or after November 28, 1975, whether or not they are included in the water quality standards.

C-18. Env-Wq 1702.27 "Mixing zone" means a defined area or volume of the surface water surrounding or adjacent to a wastewater discharge where the surface water, as a result of the discharge, might not meet all applicable water quality standards.

C-19. Env-Wq 1702.34 "Nuisance species" means any species of flora or fauna living in or near the water whose noxious characteristics or presence in sufficient number or mass prevent or interfere with a designated use of those surface waters.

C-20. Env-Wq 1702.39 defines a pollutant as: "pollutant" as defined in 40 CFR 122.2. This means "dredged spoil, solid waste, incinerator residue, filter backwash, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, (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."

C-21. Env-Wq 1702.40 "Pollution" means the man-made or man-induced alteration of the chemical, physical, biological, or radiological integrity of water.

C-22. Env-Wq 1702.41 "Population" means a group of individuals of one biological species co-occurring in time and space.

C-23. Env-Wq 1702.43 "Radionuclide" means a radioactive atomic nucleus specified by its atomic number, atomic mass and energy state.

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[3] Information in this paragraph is from page 4 of the following guidance document: *Clean Water Action Section 401 Water Quality Certification: A Water Quality Protection Tool for States and Tribes*. U.S. Environmental Protection Agency, Office of Wetlands, Oceans and Watersheds. 2010. The Supreme Court case that is referred to is *S.D. Warren Co. v. Maine Board of Environmental Protection et al*, 547 U.S. 370, 126 S. Ct. 1853 (2006).

C-24. Env-Wq 1702.46 "Surface waters" means "surface waters of the state" as defined in RSA 485-A:2,XIV and waters of the United States as defined in 40 CFR 122.2.

C-25. Env-Wq 1702.48 "Tidal Waters" means those portions of the Atlantic Ocean within the jurisdiction of the state, and other waters subject to the rise and fall of the tide.

C-26. Env-Wq 1702.54 "Zone of passage" means an area bordering a mixing zone and which is free from pollutants and which allows for unobstructed movement of aquatic organisms.

C-27. Env-Wq 1703.03 General Water Quality Criteria.
(a) The presence of pollutants in the surface waters shall not justify further introduction of pollutants from point or nonpoint sources, alone or in any combination.
(b) State surface waters shall retain their legislated classification even if they fail to meet any or all of the general, class-specific, or toxic criteria contained in this part.
(c) The following physical, chemical and biological criteria shall apply to all surface waters:
(1) All surface waters shall be free from substances in kind or quantity which:
a. Settle to form harmful deposits;
b. Float as foam, debris, scum or other visible substances;
c. Produce odor, color, taste or turbidity which is not naturally occurring and would render it unsuitable for its designated uses;
d. Result in the dominance of nuisance species; or
e. Interfere with recreational activities;
(2) The level of radioactive materials in all surface waters shall not be in concentrations or combinations that would:
a. Be harmful to human, animal or aquatic life or the most sensitive designated use;
b. Result in radionuclides in aquatic life exceeding the recommended limits for consumption by humans; or
c. Exceed limits specified in EPA's national drinking water regulations or Env-Ws 300 or successor rules in subtitle Env-Dw, whichever are more stringent; and
(3) Tainting substances shall not be present in concentrations that individually or in combination are detectable by taste and odor tests performed on the edible portions of aquatic organisms.

C-28. Env-Wq 1703.13 entitled "Temperature", states the following:
"(a) There shall be no change in temperature in class A waters, unless naturally occurring.
(b) Temperature in class B waters shall be in accordance with RSA 485-A:8, II, and VIII.

NH RSA-A:8,II states the following for Class B waters "[A]ny stream

temperature increase associated with the discharge of treated sewage, waste or cooling water, water diversions, or releases shall not be such as to appreciably interfere with the uses assigned to this class."

NH RSA-A:8,VIII states the following: "In prescribing minimum treatment provisions for thermal wastes discharged to interstate waters, the department shall adhere to the water quality requirements and recommendations of the New Hampshire fish and game department, the New England Interstate Water Pollution Control Commission, or the United States Environmental Protection Agency, whichever requirements and recommendations provide the most effective level of thermal pollution control."

C-29. Env-Wq 1703.14, entitled "Nutrients", states that

"a. Class A waters shall contain no phosphorous or nitrogen unless naturally occurring.
b. Class B waters shall contain no phosphorous or nitrogen in such concentrations that would impair any existing or designated uses, unless naturally occurring.
c. Existing discharges containing either phosphorous or nitrogen which encourage cultural eutrophication shall be treated to remove phosphorus or nitrogen to ensure attainment and maintenance of water quality standards.
d. There shall be no new or increased discharge of phosphorous into lakes or ponds.
e. There shall be no new or increased discharge(s) containing phosphorous or nitrogen to tributaries of lakes or ponds that would contribute to cultural eutrophication or growth of weeds or algae in such lakes and ponds."

C-30. Env-Wq 1703.15 Gross Beta Radioactivity. Class A and B waters shall not contain gross beta radioactivity in excess of 1,000 picocuries per liter.

C-31. Env-Wq 1703.16 Strontium-90. Class A and B waters shall not contain strontium-90 in excess of 10 picocuries per liter.

C-32. Env-Wq 1703.17 Radium-226. Class A and B waters shall contain no radium-226 in excess of 3 picocuries per liter.

C-33. Env-Wq 1703.19, entitled "Biological and Aquatic Community Integrity", states that

"a. The surface waters shall support and maintain a balanced, integrated and adaptive community of organisms having a species composition, diversity, and functional organization comparable to that of similar natural habitats of a region; and
b. Differences from naturally occurring conditions shall be limited to non-detrimental differences in community structure and function."

C-34. Env-Wq 1703.21 (a)(1) states that "Unless naturally occurring or allowed under part Env-Wq 1707, all surface waters shall be free from toxic substances or chemical constituents in concentrations or combinations that injure or are inimical to plants, animals, humans or aquatic life."

C-35. Env-Wq 1707.02 Minimum Criteria. Mixing zones shall be subject to site specific criteria that, as a minimum:
(a) Meet the criteria in Env-Wq 1703.03(c)(1);
(b) Do not interfere with biological communities or populations of indigenous species;
(c) Do not result in the accumulation of pollutants in the sediments or biota;
(d) Allow a zone of passage for swimming and drifting organisms;
(e) Do not interfere with existing and designated uses of the surface water;
(f) Do not impinge upon spawning grounds and/or nursery areas of any indigenous aquatic species;
(g) Do not result in the mortality of any plants, animals, humans, or aquatic life within the mixing zone;
(h) Do not exceed the chronic toxicity value of 1.0 TUc at the mixing zone boundary; and
(i) Do not result in an overlap with another mixing zone.

C-36. Env-Wq 1703.21 Water Quality Criteria for Toxic Substances.
(a) Unless naturally occurring or allowed under part Env-Wq 1707, all surface waters shall be free from toxic substances or chemical constituents in concentrations or combinations that:
(1) Injure or are inimical to plants, animals, humans or aquatic life; or
(2) Persist in the environment or accumulate in aquatic organisms to levels that result in harmful concentrations in edible portions of fish, shellfish, other aquatic life, or wildlife which might consume aquatic life.

C-37. Env-Wq 1703.07 through 1703.11 contain standards relative to dissolved oxygen, bacteria, benthic deposits, oil and grease, and turbidity.

C-38. Antidegradation: Env-Wq 1708.01 Purpose.

The purpose of these antidegradation provisions is to ensure that the following provisions of 40 CFR 131.12 are met:
(a) Existing uses and the level of water quality necessary to protect the existing uses shall be maintained and protected;
(b) For significant changes in water quality, where the quality of the surface waters exceeds levels necessary to support propagation of fish, shellfish, and wildlife, and recreation in and on the water, that quality shall be maintained and protected unless the department finds, after full satisfaction of the intergovernmental coordination and public participation provisions that, in accordance with Env-Wq 1708.10, allowing lower water quality is necessary to accommodate important economic or social development in the area in which the surface waters are located. In allowing such degradation or lower water

quality, the department shall assure water quality adequate to fully protect existing uses. Further, the department shall assure that the highest statutory and regulatory requirements shall be achieved for all new and existing point sources and that all cost effective and reasonable best management practices for nonpoint source control shall be implemented;
(c) For insignificant changes in water quality, where the quality of the surface waters exceeds levels necessary to support propagation of fish, shellfish, and wildlife, and recreation in and on the water, that quality shall be maintained and protected. In allowing such degradation or lower water quality, the department shall assure water quality adequate to protect existing uses fully. Further, the department shall assure that the highest statutory and regulatory requirements shall be achieved for all new and existing point sources and that all cost effective and reasonable best management practices for nonpoint source control shall be implemented;
(d) Where high quality surface waters constitute an outstanding resource waters (ORW), that water quality shall be maintained and protected; and
(e) In those cases where a potential water quality impairment is associated with a thermal discharge, the antidegradation provisions shall ensure that the requirements of section 316 of the Clean Water Act are met.

C-39. Antidegradation: Provisions in Env-Wq 1702 and Env-Wq 1708 regarding applicability, assimilative capacity, significant/insignificant determination, requirements for activities determined to result in significant changes in water quality or quantity, are summarized below.

a. Env-Wq 1702.02 states that "Antidegradation" means a provision of the water quality standards that maintains and protects existing water quality and uses.
b. Env-Wq 1708.02 states that "Antidegradation shall apply to: (a) Any proposed new or increased activity, including point source and nonpoint source discharges of pollutants, that would lower water quality or affect the existing or designated uses;(b) Any proposed increase in loadings to a waterbody when the proposal is associated with existing activities; (c) Any increase in flow alteration over an existing alteration; and (d) Any hydrologic modifications, such as dam construction and water withdrawals."
c. Antidegradation applies to all parameters as evidenced by Env-Wq 1708.08 (a) (Assessing Waterbodies) which states " The applicant shall characterize the existing water quality and determine if there is remaining assimilative capacity for each parameter in question."
d. According to Env-Wq 1708.04 (b), "A proposed discharge or activity shall not eliminate any existing uses or the water quality needed to maintain and protect those uses".
e. Env-Wq 1702.03 states that "Assimilative capacity" means the amount of a pollutant or pollutants that can safely be released to a waterbody without causing violations of applicable water quality criteria or negatively impacting uses.

f. Env-Wq 1708.08 describes the process for assessing waterbodies to determine if there is remaining assimilative capacity for each parameter in question.
g. Env-Wq 1708.09 Significant or Insignificant Determination states :(a) Any discharge or activity that is projected to use 20% or more of the remaining assimilative capacity for a water quality parameter, in terms of either concentration or mass of pollutants, or volume or flow rate for water quantity, shall be considered a significant lowering of water quality. The department shall not approve such a discharge or activity unless the applicant demonstrates that the proposed lowering of water quality is necessary to achieve important economic or social development, in accordance with Env-Wq 1708.10, in the area where the waterbody is located.
h. Env-Wq 1708.01 (b) states: "For significant changes in water quality, where the quality of the surface waters exceeds levels necessary to support propagation of fish, shellfish, and wildlife, and recreation in and on the water, that quality shall be maintained and protected unless the department finds, after full satisfaction of the intergovernmental coordination and public participation provisions that, in accordance with Env-Wq 1708.10, allowing lower water quality is necessary to accommodate important economic or social development in the area in which the surface waters are located. In allowing such degradation or lower water quality, the department shall assure water quality adequate to fully protect existing uses. Further, the department shall assure that the highest statutory and regulatory requirements shall be achieved for all new and existing point sources and that all cost effective and reasonable best management practices for nonpoint source control shall be implemented".
i. Env-Wq 1708.01 (c) states: "For insignificant changes in water quality, where the quality of the surface waters exceeds levels necessary to support propagation of fish, shellfish, and wildlife, and recreation in and on the water, that quality shall be maintained and protected. In allowing such degradation or lower water quality, the department shall assure water quality adequate to protect existing uses fully. Further, the department shall assure that the highest statutory and regulatory requirements shall be achieved for all new and existing point sources and that all cost effective and reasonable best management practices for nonpoint source control shall be implemented".

C-40. Antidegradation: Env-Wq 1708.05 - Protection of Water Quality in ORW.

(a) Surface waters of national forests and surface waters designated as natural under NH RSA 483:7-a, I, shall be considered outstanding resource waters (ORW).
(b) Water quality shall be maintained and protected in surface waters that constitute ORW, except that some limited point and nonpoint source discharges may be allowed providing that they are of limited activity which results in no more than temporary and short-term changes in water quality. "Temporary and short term" means that degradation is

limited to the shortest possible time. Such activities shall not permanently degrade water quality or result at any time in water quality lower than that necessary to protect the existing and designated uses in the ORW. Such temporary and short term degradation shall only be allowed after all practical means of minimizing such degradation are implemented.

C-41. Antidegradation: Env-Wq 1708.07 Protection of Water Quality in High Quality Waters.

(a) Subject to (b) below, high quality waters shall be maintained and protected, except that insignificant changes in water quality, as determined by the department in accordance with Env-Wq 1708.09, shall be allowed.
(b) Degradation of significant increments of water quality, as determined in accordance with Env-Wq 1708.09, in high quality waters shall be allowed only if it can be demonstrated to the department, in accordance with Env-Wq 1708.10, that allowing the water quality degradation is necessary to accommodate important economic or social development in the area in which the receiving waters are located.
(c) Economic/social benefits demonstration and alternatives analysis shall not be required for authorization of an insignificant lowering of water quality. However, in allowing a lowering of water quality, significant or insignificant, all reasonable measures to minimize degradation shall be used.
(d) If the water body is Class A Water, the requirements of Env-Wq 1708.06 shall also apply.

C-42. Env-Wq 1702.06 states ""Best management practices" means those practices which are determined, after problem assessment and examination of all alternative practices and technological, economic and institutional considerations, to be the most effective practicable means of preventing or reducing the amount of pollution generated by point or nonpoint sources to a level compatible with water quality goals."

C-43. With regards to fertilizers, NH RSA 483:1, XXII defines turf as follows: "Turf'" or "lawn" means non-agricultural land planted in closely mowed, managed grasses except golf courses, parks, athletic fields, and sod farms."

NH RSA 431:4-a Nitrogen Content of Fertilizer, states the following:

"I. No turf fertilizer sold at retail shall exceed 0.7 pounds per 1,000 square feet of soluble nitrogen per application when applied according to the instructions on the label.
II. No turf fertilizer sold at retail shall exceed 0.9 pounds per 1,000 square feet of total nitrogen per application when applied according to the instructions on the label.
III. No turf fertilizer shall exceed an annual application of 3.25 pounds per 1,000

square feet of total nitrogen when applied according to the instructions on the label.
IV. No enhanced efficiency fertilizer shall exceed a single application rate of 2.5 lbs. per 1,000 square feet of total nitrogen and an annual application rate of 3.25 pounds per 1,000 square feet of total nitrogen nor release at greater than 0.7 pounds per 1,000 square feet per month when applied according to the instructions on the label."

NH RSA 431:4-b Phosphorus Content of Fertilizer, states the following:
"I. No fertilizer sold at retail that is intended for use on turf shall exceed a content level of 0.67% available phosphate unless specifically labeled for establishing new lawns, for repairing a lawn, for seeding, or for use when a soil test indicates a phosphorus deficiency.
II. No fertilizer sold at retail that is intended for use on newly established or repaired lawns, or for lawns testing deficient in phosphorus shall exceed an application rate of one pound per 1,000 square feet annually of available phosphate.
III. No natural organic turf fertilizer shall exceed a per application rate of one pound of available phosphate per 1,000 square feet when applied according to the instructions on the label."

C-44. NH RSA 483:4 defines "interbasin transfer" and "river drainage basin":
XII. "Interbasin transfer" means any transfer of water for use from one river drainage basin to another.
XIX. "River drainage basin" means the Androscoggin, Coastal, Connecticut, Merrimack, Piscataqua, and Saco river basins as delineated on a map compiled by the department.

C-45. NH RSA 483:9 Natural Rivers Protection (at 9-a, 9-aa, and 9-b) states that no interbasin transfers from designated rural, rural-community, or community rivers or their segments shall be permitted.

C-46. NH RSA 488:3 regarding registration of withdrawals and discharges states the following:

I. No person shall withdraw or discharge a cumulative amount of more than 20,000 gallons of water per day, averaged over any 7-day period, or more than 600,000 gallons of water over any 30-day period, at a single real property or place of business without registering the withdrawal or discharge with the department. Transfers of such volume of water shall also be registered. Registration shall be in addition to any required permits.

II. No registration shall be transferred to another person without written notification to the commissioner.

C-47. Section 303(d) of the Clean Water Act (33 U.S.C. 1313(d)) and the regulations promulgated thereunder (40 C.F.R. 130.0 – 40 C.F.R. 130.11) require states to identify and list surface waters that are violating state water quality standards (i.e., Section 303(d) List) that do not have an approved TMDL. For these water

quality-impaired waters, states must establish Total Maximum Daily Loads (TMDLs) for the pollutants causing the impairments and submit the list of impaired surface waters and TMDLs to EPA for approval. TMDLs include source identification, determination of the allowable load and pollutant reductions (by source) necessary to meet the allowable load. Once a TMDL is conducted, the pollutant/surface water is transferred to the list of impaired waters with approved TMDLs (known as Category 4A waters). The Section 303(d) List is, therefore, a subset of all impaired waters. The most recent Section 303(d) list of impaired waters is the 2014 Section 303(d) List. A list of all impaired waters is available at http://des.nh.gov/organization/divisions/water/wmb/swqa/index.htm.

C-48. Section 316 of the Clean Water Act states the following with regards to thermal discharges from point sources:

"(a) With respect to any point source otherwise subject to the provisions of section 301 or section 306 of this Act, whenever the owner or operator of any such source, after opportunity for public hearing, can demonstrate to the satisfaction of the Administrator (or, if appropriate, the State) that any effluent limitation proposed for the control of the thermal component of any discharge from such source will require effluent limitations more stringent than necessary to assure the projection and propagation of a balanced, indigenous population of shellfish, fish, and wildlife in and on the body of water into which the discharge is to be made, the Administrator (or, if appropriate, the State) may impose an effluent limitation under such sections for such plant, with respect to the thermal component of such discharge (taking into account the interaction of such thermal component with other pollutants), that will assure the projection and propagation of a balanced, indigenous population of shellfish, fish, and wildlife in and on that body of water.

(b) Any standard established pursuant to section 301 or section 306 of this Act 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."

C-49. On December 20, 2007, EPA approved the Northeast Regional Mercury TMDL[4] which addressed mercury impairments in all New Hampshire fresh surface waters.

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[4] Northeast Regional Mercury Total Maximum Daily Load. Connecticut Department of Environmental Protection, Maine Department of Environmental Protection, Massachusetts Department of Environmental Protection, New Hampshire Department of Environmental Services, New York Stated Department of Environmental Conservation, Rhode Island Department of Environmental Management, Vermont Department of Environmental Conservation, New England Interstate Water Pollution Control Commission. October 24, 2007.

C-50. When a surface water does not meet water quality standards (i.e., when it is impaired), the addition of pollutants causing or contributing to impairment is prohibited in accordance with the following:

Env-Wq 1703.03 (a) states that "The presence of pollutants in the surface waters shall not justify further introduction of pollutants from point or nonpoint sources, alone or in any combination".

NH RSA 485-A:12 (I) (Enforcement of Classification) states that "After adoption of a given classification for a stream, lake, pond, tidal water, or section of such water, the department shall enforce such classification by appropriate action in the courts of the state, and it shall be unlawful for any person or persons to dispose of any sewage, industrial, or other wastes, either alone or in conjunction with any other person or persons, in such a manner as will lower the quality of the waters of the stream, lake, pond, tidal water, or section of such water below the minimum requirements of the adopted classification".

C-51. NH Division of Pesticides regulations (Pes 1001.01-Restrictions on Pesticide Use by Residential Property Owners, Private Applicators and Commercial Applicators) states that "[N]o residential property owner, private applicator, or commercial applicator shall apply pesticides within the following distances of the reference line[5]:

(a) Within 25 feet as it pertains to surface waters; and
(b) Beyond 25 feet in such a manner or by such methods that would result in the presence of pesticides within 25 feet of the reference line of any lake, pond, river or coastal water."

According to Pes 1001.02 (Pesticide Applications Within 25 Feet of the Reference Line): "[T]he restrictions in Pes 1001.01 shall not apply to the following:

(a) Pesticide applications inside structures provided there is no soil contact or soil incorporation;
(b) Pesticide applications to control termites provided the applicator is in possession of a special permit issued by the division in accordance with the provisions of Pes 502.04;
(c) Pesticide applications which are subject to prior approval of the division through issuance of a special permit where distances from surface water are determined on a case by case basis; and
(d) Pesticide applications to control vegetation along the embankments of sewage lagoons of wastewater treatment facilities."

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[5] Reference line is defined in Pes 101.28.

C-52. The Applicant submitted an application for a WQC to NHDES on December 3, 2013 which included supporting information. On November 17, 2014 NHDES requested that the Applicant withdraw and resubmit their WQC application to provide more time to continue the review of supporting documentation. On December 3, 2014 the Applicant withdrew and resubmitted their WQC application. The Applicant provided additional information on several occasions that NHDES considers necessary to conduct its review. The most recent submission was the Final Supplemental Environmental Impact Statement issued by the NRC on July 30, 2015. The application for WQC was determined to be complete as of July 30, 2015.

C-53. NHDES issued a draft certification for public comment from June 20, 2016 to July 22, 2016. No comments were received.

D. FINDINGS

D-1. The Applicant is currently authorized by the federal U.S. Nuclear Regulatory Commission (NRC) Operating License NPF-86 to operate the Seabrook Station thru March 15, 2030. On May 25, 2010, the Applicant submitted an application to the NRC[6] to issue a renewed operating license for Seabrook Station for an additional 20 years (to March 15, 2050).

The purpose and need for the proposed issuance of a renewed license is to provide an option that allows for baseload power generation capability beyond the term of the current operating license to meet future generation needs. Such needs may be determined by other energy decision makers (other than the NRC) such as the state or a utility or other federal agency. Unless there are findings in the safety review required by the Atomic Energy Act or findings in the National Environmental Policy Act (NEPA) environmental analysis that would lead the NRC to reject a license renewal application, the NRC does not have a role in energy planning decisions as to whether a nuclear power plant should continue to operate or not.

If the renewed operating license is issued, the appropriate energy- planning decision makers in the state and the Applicant (but not the NRC) will decide if the plant will continue to operate based on factors such as the need for power. If, however, the operating license is not renewed, then the facility must shut down on or before the expiration date of the current operating license.

D-2. The Activity reviewed for this certification is as described in the Applicant's application for 401 certification and supporting documentation and in general includes operation (with a focus on potential impacts to surface waters), of all items included in the scope of the Supplemental Environmental Impact

[6] Final Applicant's Environmental Report – Operating License Renewal Stage, Seabrook Station. NextEra Energy Seabrook LLC, Unit 1, Docket No. 0500443, License No. NPF-86.

Statement (SEIS) prepared by the NRC as part of their review of the renewal application (see D-23) that are the responsibility of the Applicant.

More specifically, the Activity includes operation of Seabrook Station, a single unit (Unit 1) 1245 net megawatt nuclear-powered steam electric generating facility that has been in operation since 1990 and all appurtenant infrastructure located in the Town of Seabrook, New Hampshire on the western shore of Hampton Harbor and approximately two miles west of the Atlantic Ocean. The site consists of two lots which span 889 acres of tidal marsh and peninsulas and wooded areas that rise to elevations 20 to 30 feet above sea level. It is estimated that approximately 300 acres are upland and the remaining 589 acres are marsh/wetland areas. Lot 1, which is owned by the Seabrook Station joint owners, is approximately 109 acres and is situated on a peninsula bordered by the Browns River to the north, Hunts Island Creek to the south and estuarine marshlands to the east. Lot 1 is mostly developed and holds most of the operating facility. Lot 2, which is owned by NextEra Energy Seabrook, LLC is approximately 780 acres and consists mainly of open tidal marsh available with fabricated linear ditches and tidal creeks and is made available for wildlife resources.

Site structures on Lot 1 include the Unit 1 containment building, primary auxiliary building, control and diesel generating building, turbine building, administrative and service building, ocean intake and discharge structures, circulating water pump house, and service water pump house. The Applicant originally planned to build two units at Seabrook but cancelled construction of Unit 2 in 1984 and has no plans to complete construction in the future.

The ocean intake and discharge structures include two, approximately 3-mile-long, 19-foot-diameter concrete lined tunnels that have been drilled through ocean bedrock. The tunnels bring water to and from the Atlantic Ocean for cooling purposes[7] and other plant systems.

Water withdrawn from the ocean travels through one of three concrete intake shafts (located at a depth of 60 feet) that are connected to the intake tunnel. Each intake shaft extends upward from the intake tunnel above the bedrock. A velocity cap, which sits on top of each intake shaft regulates flow to help minimize fish entrapment. In 1999, the Applicant modified the intake shafts with additional vertical bars to help prevent seal entrapment. The entrance to the intake tunnel is approximately 7,000 feet offshore from the Hampton Beach shoreline.

Water that has passed through Seabrook Station discharges to the Atlantic Ocean through the discharge tunnel, which has the same diameter, lining,

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[7] The Activity uses what is called a "once-through" cooling system.

depth, and percent grade as the intake tunnel. The end of the discharge tunnel is approximately 5,000 feet offshore from the Seabrook Beach shoreline. Effluent is discharged from the tunnel via 11 concrete shafts that are 70 feet deep and approximately 100 feet apart from one another. To increase the discharge velocity and more quickly diffuse the heated effluent, a double-nozzle fixture with nozzles pointed up at an angle of approximately 22.5 degrees, is attached to the top of each shaft.

Operation of appurtenant roads, parking lots and utilities, including control of stormwater runoff, are also included as part of the Activity. Operation of the three 345-kV transmission lines in New Hampshire that connect the facility to the transmission system are not included as these are owned and operated by Eversource (see the SEIS for details).

D-3. The Applicant is responsible for the Activity.

D-4. Surface waters are navigable waters for the purposes of certification under Section 401 of the Clean Water Act. Surface waters are jurisdictional wetlands for the purposes of wetlands permitting under RSA 482-A.

D-5. The named and unnamed fresh and tidal waterbodies (including wetlands) in New Hampshire that may be most impacted by the Activity are shown in the table below. These waterbodies are "surface waters" as defined under Env-Wq 1702.46 (see C-24) and, therefore, in accordance with Env-Wq 1701.02(a) (see C-6) are subject to New Hampshire surface water quality regulations (Env-Wq 1700). NHDES has assigned Assessment Unit (AU) identification numbers to many, but not all surface waters. Surface waters that do not have an AU number are still considered surface waters subject to state surface water quality regulations (Env-Wq 1700).

Table 1

Surface Water Name and AU Numbers
Atlantic Ocean, NHOCN000000000-02-18
Atlantic Ocean, NHOCN000000000-08-01
Browns River (Lower) (Estuary), NHEST600031004-05-01
Back Creek (Estuary), NHEST600031004-05-02
Swains Creek (Estuary), NHEST600031004-05-03
Browns River (Upper) (Estuary), NHEST600031004-05-04
Hunts Island Creek (Lower) (Estuary), NHEST600031004-06-01
Hunts Island Creek (Upper) (Estuary), NHEST600031004-06-02
Mill Creek (Estuary), NHEST600031004-07
Hampton/Seabrook Harbor - Seabrook Harbor Beach (Estuary), NHEST600031004-09-05
Hampton/Seabrook Harbor – Hampton Harbor Beach (Estuary), NHEST600031004-09-06
Hampton/Seabrook Harbor – Fish Coop 150 SZ (Estuary), NHEST600031004-09-07

Surface Water Name and AU Numbers
Hampton/Seabrook Harbor – Hampton River Marina SZ (Estuary), NHEST600031004-09-08
Hampton/Seabrook Harbor (Estuary), NHEST600031004-09-09
Browns River (Freshwater), NHRIV600031004-07
Farm Brook (Freshwater), NHRIV600031004-08
Any other surface water in the vicinity of the Activity that has not been assigned an AU number

D-6. The Activity includes discharges of wastewater, stormwater runoff (including snowmelt) and groundwater to surface waters within the jurisdiction of New Hampshire that meet the definition of a discharge under Env-Wq 1702.18.

D-7. Because the Activity requires a federal license or permit (see D-1) and may involve a discharge to surface waters under New Hampshire's jurisdiction (see D-2, D-5 and D-6), Section 401 Water Quality Certification is required.

D-8. The potentially affected surface waters are Class B waterbodies; therefore Class B New Hampshire surface water quality standards apply to the Activity. Class B waterways are considered suitable for aquatic life, primary and secondary contact recreation, fish consumption, wildlife, and, after adequate treatment, as a water supply[8].

D-9. The potentially affected surface waters do not include Outstanding Resource Waters as defined in Env-Wq 1708.05(a) [see C-40].

D-10. The Activity is not located within ¼ mile of Designated River[9].

D-11. The Activity does not involve an "interbasin transfer" as defined in RSA 483:4 (see C-44).

D-12. *Impaired Waters:* According to the 2014 list of impaired waters (see C-47), the following surface waters in the vicinity of the proposed Activity are listed as impaired. All impairments, with the exception of those highlighted in bold (which have approved TMDLs), are on the Section 303(d) List:

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8. 2014 Section 305(b) and 303(d) Consolidated Assessment and Listing Methodology. October, 2015. NH Department of Environmental Services. NHDES-R-WD-15-9.

9. If an Activity is located within ¼ mile of a Designated River, a copy of the complete application must be provided to the Local River Management Advisory Committee (RSA 483).

Table 2: Known waterbody impairments in the vicinity of the Activity

Assessment Unit (AU)	Water Body Name	Cause of Impairment (Designated Use Impaired)
NHOCN000000000-02-18	Atlantic Ocean Hampton-Seabrook Harbor	Mercury (FC) Polychorinated Biphenyls (FC) Dioxin (SFC) Mercury (SFC) Polychorinated Biphenyls (SFC)
NHOCN000000000-08-01	Atlantic Ocean Hampton-Seabrook Harbor	
NHEST600031004-05-01	Browns River (Lower) (Estuary)	Mercury (FC, SFC) Polychorinated Biphenyls (FC, SFC) Dioxin(SFC) **Fecal Coliform (SFC)**
NHEST600031004-05-02	Back Creek (Estuary)	
NHEST600031004-05-03	Swains Creek (Estuary)	
NHEST600031004-05-04	Browns River (Upper) (Estuary)	
NHEST600031004-06-01	Hunts Island Creek (Lower) (Estuary)	
NHEST600031004-06-02	Hunts Island Creek (Upper) (Estuary)	
NHEST600031004-07	Mill Creek (Estuary)	Mercury (FC, SFC) Polychorinated Biphenyls (FC, SFC) Dioxin(SFC) **Fecal Coliform (SFC)** **Enterococcus (PCR)**
NHEST600031004-09-05	Hampton/Seabrook Harbor – Seabrook Harbor Beach (Estuary)	
NHEST600031004-09-06	Hampton/Seabrook Harbor – Hampton Harbor Beach (Estuary)	Mercury (FC, SFC) Polychorinated Biphenyls (FC, SFC) Dioxin(SFC) **Fecal Coliform (SFC)**
NHEST600031004-09-07	Hampton/Seabrook Harbor – Fish Coop 150 SZ (Estuary)	
NHEST600031004-09-08	Hampton/Seabrook Harbor – Hampton River Marina SZ (Estuary)	Mercury (FC, SFC) Polychorinated Biphenyls (FC, SFC) Dioxin(SFC) **Fecal Coliform (SFC)** **Enterococcus (PCR, SCR)**

Assessment Unit (AU)	Water Body Name	Cause of Impairment (Designated Use Impaired)
NHEST600031004-09-09	Hampton/Seabrook Harbor (Estuary)	Aluminum (AL) DDD (AL) Dieldrin (AL) Lindane (AL) Mercury (FC, SFC) Polychorinated Biphenyls (FC, SFC) Dioxin(SFC) **Fecal Coliform (SFC)**
NHRIV600031004-07	Browns River (Freshwater)	**Mercury (FC)**
NHRIV600031004-08	Farm Brook (Freshwater)	

Notes: AL = Aquatic Life, PCR = Primary Contact Recreation, SCR = Secondary Contact Recreation, FC = Fish Consumption, SFC = Shellfish Consumption. Impairments highlighted in bold have approved TMDLs. All other impairments are on the Section 303(d) List. All fresh surface waters are impaired for mercury due to concentrations found in fish tissue which have resulted in a statewide fish consumption advisory. The primary source of mercury is atmospheric deposition from in-state and out-of-state emissions.

As stated in section C-50 of this Certification, when a surface water does not meet water quality standards (i.e., when it is impaired), the addition of pollutants causing or contributing to impairment is prohibited. That is, existing loadings must be held. Further, as stated in C-47 of this Certification, TMDLs must eventually be conducted for any surface water listed on the Section 303(d) List of impaired waters.

Continued operation of the Activity is not expected to result in an increase in loadings of pollutants that are currently causing the impairments listed above.

As noted above, all surface water in New Hampshire are impaired for mercury due to concentrations found in fish tissue which have resulted in a statewide fish consumption advisory. On December 20, 2007, EPA approved the Northeast Regional Mercury TMDL which addressed mercury impairments in all New Hampshire fresh surface waters (see C-48). The primary source of mercury is atmospheric deposition from in-state and out-of-state emissions. The proposed Activity is not expected to have a significant impact on mercury levels in fish tissue.

D-13. *Best Management Practices (BMPs):* Section C-39 h and C-39 i of this Certification includes excerpts from Env-Wq 1708.01 regarding antidegradation which state that "the department shall assure that the highest statutory and regulatory requirements shall be achieved for all new and existing point sources and that all cost effective and reasonable best management practices for nonpoint source control shall be implemented". In addition to being cost effective and reasonable, best management practices must be selected to

ensure attainment of water quality standards in receiving waters as evidenced by the following:

a. As stated in section C-42 of this Certification, "Best Management Practices" (BMPs) are defined in Env-Wq 1702.06 as "those practices which are determined, after problem assessment and examination of all alternative practices and technological, economic and institutional considerations, to be the most effective practicable means of preventing or reducing the amount of pollution generated by point or nonpoint sources to a level *compatible with water quality goals"* (italics added).
b. Env-Wq 1708.01 (b) and (c) (see C-39 h and C-39 i) which states "In allowing such degradation or lower water quality, the department shall assure water quality adequate to fully protect existing uses".

D-14. The Activity will result in discharges which, if not properly controlled, may cause the permanent alteration of, or temporary impacts to surface waters.

D-15. *Road Salt (Chlorides):* Operation of the Activity during the winter will likely include application of deicing chemicals to roads and other impervious surfaces that contain chloride (i.e. rock salt). Chlorides are conservative substances that persist in the environment and are not treatable by structural BMPs. Frequent application of road salt can result in levels of chloride in fresh surface waters that are harmful to aquatic life. Application of road salt can be minimized by requiring applicators to be properly trained.

Training can be accomplished by requiring applicators to be certified in accordance with the UNH T2 Green SnowPro program (see http://t2.unh.edu/green-snowpro-training-and-certification). Establishment of a certification program was authorized under NH RSA 489-C. The goal of the program is to improve efficiency in salt use, such that the least amount of salt is used to ensure safe conditions for pedestrians and vehicles. Under the new law certified salt applicators (and property owners who hire them) who follow best management practices and keep basic records, are provided with limited liability for damages arising from hazards caused by snow or ice. Certification expires every June.

In addition to maintaining certification, obligations of certified salt applicators also include record keeping and annual reporting of the amount of salt used, the town it was applied, the number of acres of paved surface maintained and the type and amount of each salt alternative used. This information can be reported in the web-based tracking system available at http://www.roadsalt.unh.edu/Salt/.

D-16. *Pesticides:* Operation of the Activity could result in application of pesticides such as herbicides and insecticides. Improper application of pesticides can harm aquatic life and result in surface water quality violations. In New Hampshire, pesticides are regulated by the Department of Agriculture Pesticide Division. As

stated in Pes 1001.01(see C-51), and unless otherwise allowed per Pes 1001.02 (see C-51), no residential property owners, private applicator, or commercial applicator shall apply pesticides within the 25 feet of the reference line of surface waters or beyond 25 feet in such a manner or by such methods that would result in the presence of pesticides within 25 feet of any lake, pond, river or coastal water. The NH Pesticide regulations also require licensing or permitting of all commercial and private pesticide applicators as well as pesticide dealers. Through this process, only persons demonstrating satisfactory competence in the safe and legal use of pesticides within New Hampshire may apply pesticides. Compliance with the NH Pesticide Division regulations regarding the application of pesticides is expected to prevent water quality standard violations due to pesticides.

D-17. *Fertilizer:* If not properly controlled, the Activity could result in discharges to surface waters of nutrients such as phosphorus and nitrogen that can lead to excessive aquatic plant growth and impairment of aquatic life and contact recreational uses such as swimming or wading. Application of fertilizers can be a primary source of nutrients. NH RSA 431:4-a and 431:4-b (see C-43) limits the nitrogen and phosphorus content of fertilizers sold at retail and intended for use on home lawns (i.e., turf). Among other things, these statutes include annual application rates for nitrogen and phosphorus. Other examples of state fertilizer statutes include NH RSA 483-B:9 (d) of the Shoreland Water Quality Protection Act which states the following: "No fertilizer shall be applied to vegetation or soils located within 25 feet of the reference line of any public water. Beyond 25 feet, slow or controlled release fertilizer, as defined by rules adopted by department, may be used."

Compliance with NH RSA 431:4-a and 431:4-b (see C-43) will help to address potential nutrient concerns associated with fertilizers.

D-18. *NPDES / State Discharge Permits (General Information)*: Section 402 of the Clean Water Act includes provisions for the National Pollutant Discharge Elimination System (NPDES) permit program. Federal regulations implementing the NPDES permit program are included in 40 CFR Part 122 [10] of the CWA. In general, NPDES permits are issued for point source discharges of pollutants and expire after five years from the date of issuance. Prior to expiration, permittees must file for reissuance. If an application for reissuance has been filed prior to the permit expiration date and accepted by EPA, the existing permit remains in effect until the permit is reissued. Prior to issuing a new or reissued permit, EPA must public notice a draft of the permit for public comment.

Before EPA can issue a final NPDES permit, NHDES must certify (i.e., issue a

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[10] 40 CFR Part 122 – see http://www.ecfr.gov/cgi-bin/text-idx?tpl=/ecfrbrowse/Title40/40cfr122_main_02.tpl

Section 401 Water Quality Certification) in accordance with Section 401 of the CWA and RSA 485-A:12, III, that the permit effluent limits and conditions will comply with state surface water quality standards. In New Hampshire, EPA issues NPDES permits since the state has not been delegated by EPA to issue NPDES permits.

For NPDES permits involving the discharge of sewage or waste (as defined in RSA 485-A:2), the Applicant must also obtain a state discharge permit from NHDES in accordance with RSA 485-A:13. Since NPDES permits must be written to comply with state surface water quality standards (RSA 485-A:8 and Env-Wq 1700), NHDES typically issues a letter to the permittee stating that the NPDES permit is also the permittee's State Discharge Permit for the facility.

In addition to NPDES permits issued to individual facilities, EPA also issues general permits which apply to larger groups or sectors with similar characteristics (such as stormwater multi-sector general permits for industrial activities, stormwater construction general permits, etc.).

There are two NPDES permits that apply to the operation of the Activity; the NPDES Stormwater Multi-Sector General Permit and NPDES permit number NH00203338 issued for Seabrook Station. These are discussed below in D-19 and D-20.

At any particular time the versions of all applicable NPDES permits and associated 401 Certifications as well as the State Discharge Permit issued for the Activity under RSA 485-A:13, that are in effect, are considered part of this Certification.

D-19. *NPDES Multi-sector General Permit for Stormwater:* In their application for NRC license renewal, the Applicant indicated that the NPDES Stormwater Multi-Sector General Permit (MSGP) for Industrial Activities applies to the Activity. The most recent MSGP[11] issued by EPA became effective June 21, 2015. NHDES issued a 401 certification for the 2015 MSGP on February 7, 2014, which certified that compliance with the MSGP should comply with state surface water quality standards.

To be covered under the 2015 MSGP, one must (among other tasks) complete the development of a Stormwater Pollution Prevention Plan (SWPPP) or update an existing SWPPP consistent with Part 5 of the MSGP and then submit a complete and accurate Notice of Intent (NOI) to EPA by the deadline specified in the MSGP. The NOI certifies to EPA that you are eligible for coverage according

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[11] A copy of the 2015 MSGP is available at https://www.epa.gov/sites/production/files/2015-10/documents/msgp2015_finalpermit.pdf

to Part 1.1 of the permit, and provides information on your industrial activities and related discharges. The SWPPP must be available to the public.

In their application for NRC license renewal, the Applicant indicated that they submitted a Notice of Intent (NHR05A729) and received confirmation from EPA that they had received the NOI on November 5, 2002.

Since 2002, the MSGP has been revised and reissued twice; once in 2008 and most recently in 2015. On June 8, 2016, the Applicant advised that they have submitted NOIs for coverage under the 2008 and 2015 MSGPs.

D-20. *NPDES Permit NH0020338 for Seabrook Station:* The most recent NPDES permit for Seabrook Station (NPDES permit number NH0020338) became effective April 1, 2002[12]. The permit includes a general statement that the discharge "shall not violate State Water Quality Standards of the receiving water" as well as effluent limitations and/or monitoring requirements for flow, temperature, total residual oxidants, pH, whole effluent toxicity and EVAC (a molluscicide). The permit allows a discharge of 720 mgd on both an average monthly and maximum daily basis. The permit also includes maximum temperature differences between the discharge temperature and the intake temperature and limits the rise in monthly mean temperature to 5 degrees Fahrenheit at the surface of the receiving waters in the "near field jet mixing region," (defined as within 300 feet of the submerged diffuser in the direction of the discharge).

The permit also includes requirements for the cooling water system to protect aquatic life. This includes limiting the velocity of water as it enters the intake structure to no more than 1.0 feet per second.

The permit prohibits the discharge of polychlorinated biphenyl compounds such as commonly used for transformer fluid and requires the discharge of radioactive materials to be in accordance with the Nuclear Regulatory Commission requirements (10 CFR 20 and the Seabrook Station Operating License, Appendix A, Technical Specifications).

The permit also includes a determination that the thermal limits in the permit constitute a CWA Section 316(a) thermal discharge variance. This is discussed in more detail in D-22 below.

During operation, the permit requires the Applicant to conduct biological/ environmental studies "... to determine the effects of Station's discharge on the balanced, indigenous population of shellfish, fish and wildlife in and on the

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[12] A copy NPDES Permit NH0020338 for Seabrook Station is available at https://www3.epa.gov/region1/npdes/permits/2002/finalnh0020338permit.pdf

Atlantic Ocean".

In September, 2006 the Applicant submitted a permit renewal application to EPA for NPDES permit NH0020338. Until such time that EPA reissues the permit, the existing permit issued in 2002 remains in effect.

D-21. *Tritium:* The following describes the status of tritium releases at the Activity. Sections in quotes are from the final SEIS (see D-23).

> "In September 1999, NextEra discovered elevated tritium levels in groundwater that was seeping into the Unit 1 containment annulus. After investigation, the source of the tritium was found to be a leak from the cask loading area and transfer canal, which is connected to the SFP." "Once a non-metallic liner was applied to the stainless steel liner in the cask loading area and transfer canal in 2004, tritium concentrations in both of these locations dropped significantly, with average tritium levels in 2009 recorded at 4,525 pCi/L in the PAB and 4,745 pCi/L in the containment enclosure area. From 2004–2009, tritium levels in the onsite surficial aquifer were recorded ranging from 617–2,930 pCi/L, all well below the EPA's drinking water standard of 20,000 pCi/L (NextEra 2010a). Based on 2011 monitoring data, the highest tritium concentrations were found in one shallow (surficial) aquifer well (SW-1), ranging from 1,936 to a maximum of 2,850 pCi/L".
>
> The Applicant "....installed dewatering systems in the fuel building, PAB, and containment area of Unit 1 as part of the tritium mitigation. The Unit 1 groundwater withdrawal system provides the hydraulic containment of the tritium, as well as an additional 32,000 gpd (120 m3) of groundwater being pumped from the incomplete Unit 2 containment building, which acts to reverse the hydraulic gradient along the southern boundary of the site and slow the flow of groundwater offsite. No offsite migration of tritium in groundwater has been observed." "To track the progress of the dewatering program, 27 monitoring wells have been installed onsite as part of the plant's Groundwater Monitoring Program."
>
> "The Town of Seabrook's 10 freshwater supply wells are located hydraulically upgradient from Seabrook and at least 2 mi (3.2 km) west of the site. Potential releases of tritiated water from the plant cannot lead to drinking water sources due to the site's hydrogeologic characteristics."
>
> The NRC staff agrees with the Applicant's position "... that there are no significant impacts associated with tritium in the groundwater at Seabrook. This conclusion is supported by the following information. While "... tritium continues to be detected above background at several onsite locations, the applicant is actively controlling the groundwater with relatively high tritium concentrations. Dewatering operations pump out the groundwater to create a cone of depression that provides hydraulic

containment of tritium-impacted groundwater. The tritium-impacted groundwater is sent to the facility's main outfall to the ocean, where it is released in compliance with NPDES and NRC's radiological limits. Tritium concentrations in groundwater, as measured in onsite monitoring wells, have remained well below EPA's 20,000 pCi/L drinking water standard, and are not expected to impact human or biota receptors. The nearest groundwater users are over 3,000 ft (910 m) from the plant site and are upgradient, as the groundwater flow path beneath the plant site is generally to the east and southeast toward the tidal marsh." The applicant's Radiological Environmental Monitoring Program (REMP) "...will monitor the groundwater and continue to report the results in its annual radiological environmental monitoring report. Also, NRC inspectors will periodically review the REMP data for compliance with NRC radiation protection standards."

Since tritium impacted groundwater is discharged to the Activity's main outfall tunnel to the ocean, it is therefore subject to terms and conditions of NPDES permit NH0020338 (see D-20). Compliance with NPDES permit NH0020338 should therefore ensure that tritium does not cause or contribute to violations of applicable state surface water quality standards.

D-22. *Section 316 of the CWA:* According to Env-Wq 1708.01 "The purpose of these antidegradation provisions is to ensure that the following provisions of 40 CFR 131.12 are met:"...."(e) In those cases where a potential water quality impairment is associated with a thermal discharge, the antidegradation provisions shall ensure that the requirements of section 316 of the Clean Water Act are met."

Section 316(a) of the CWA applies to point sources with thermal discharges. It authorizes the NPDES permitting authority to impose alternative effluent limitations for the control of the thermal component of a discharge in lieu of the effluent limits that would otherwise be required under sections 301 or 306 of the CWA (see C-48). Regulations implementing section 316(a) are codified at 40 C.F.R. Part 125, subpart H (§ 125.70 – 125.73). These regulations identify the criteria and process for determining whether an alternative effluent limitation (i.e., a thermal variance from the otherwise applicable effluent limit) may be included in a permit and, if so, what that limit should be.

Section 316(b) of the CWA states that "...any standard established pursuant to section 301 or section 306 of this Act 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" (see C-48). Regulations implementing section 316(b) became effective on October 14, 2014 and are codified at 40 CFR. Part 125, subpart I (§ 125.80 – 125.89) for cooling water intake structures for new facilities and in 40 CFR, Part 125, subpart J (§ 125.90 – 125.99) for existing cooling water intake structures for existing facilities such as Seabrook Station.

According to the Federal Register[13], the purpose of the rules is "... to reduce impingement and entrainment of fish and other aquatic organisms at cooling water intake structures used by certain existing power generation and manufacturing facilities for the withdrawal of cooling water from waters of the United States" and to "...provide requirements that reflect the best technology available (BTA) for minimizing adverse environmental impact."

With regards to cooling water intake structures for existing facilities, 40 CFR 125.90 (a) states that requirements ".... include standards for minimizing adverse environmental impact associated with the use of cooling water intake structures and required procedures (e.g., permit application requirements, information submission requirements) for establishing the appropriate technology requirements at certain specified facilities as well as monitoring, reporting, and recordkeeping requirements to demonstrate compliance. In combination, these components represent the best technology available for minimizing adverse environmental impact associated with the use of cooling water intake structures at existing facilities. These requirements are to be established and implemented in National Pollutant Discharge Elimination System (NPDES) permits issued under the Clean Water Act (CWA)."

According to 40 CFR 125.90 (c) the state may adopt more stringent requirements: "Nothing in this subpart shall be construed to preclude or deny the right under section 510 of the CWA of any State or political subdivision of a State or any interstate agency to adopt or enforce any requirement with respect to control or abatement of pollution that is more stringent than required by Federal law."

40 CFR 125.93(c) establishes Best Technology Available (BTA) standards for impingement mortality. Applicants must comply with one of seven alternatives [(c)(1) through (c)(7)] except as provided in (c)(11) (De minimis rate of impingement) or (c)(12) (Low capacity utilization power generating units). The seven options include:

1. operating a closed–cycle recirculating system,
2. maintaining a maximum through-screen design velocity of 0.5 feet per second (fps),
3. maintaining a maximum through-screen actual velocity of 0.5 feet per second (fps),
4. operating an existing off-shore velocity cap,
5. operating modified traveling screens,
6. operating a system of technologies, management practices, and

[13] Federal Register/ Volume 79, No. 158, August 15, 2014.

operational measures and preparing an "Impingement Technology Performance Optimization Study per 40 CFR 122.21(r)(6)(ii) which demonstrates that the system has been optimized to minimize impingement mortality of all non-fragile species, and

7. operating to achieve the specified impingement mortality performance standards specified in 40 CFR 125.93 (c)(7).

The regulation also requires Applicants to comply with any additional measures established by the Director to protect shellfish or fragile species [(c)(8) and (c)(9)].

With regards to entrainment, 40 CFR 125.93(d), requires the Director to establish standards for entrainment on a site-specific basis that reflect the Director's determination of the maximum reduction in entrainment warranted after consideration of the relevant factors as specified in § 125.98.

As indicated above, requirements to satisfy Section 316 of the CWA are established and implemented in NPDES permits. For this Activity, the applicable permit is NPDES permit No. NH0020338, which was last issued in 2002 and administratively continued by EPA after receiving a renewal application in September, 2006. Attachment A of the 2002 permit, includes a discussion of the section 316(a) variance. According to Attachment A, after consultation with the Technical Advisory Committee[14], the Regional Administrator "... determined that the current biological and hydrological monitoring data shows that a once-through cooling system for Seabrook Station satisfies the thermal requirements and will ensure the protection and propagation of a balanced indigenous community of fish, shellfish, and wildlife in and on Hampton Harbor and the nearshore Atlantic Ocean. In making this determination the Regional Administrator has taken into account the length of time and the nature of the discharge (approximately ten years and about 560 Million Gallons per Day of heated effluent). The thermal limits proposed in the draft permit constitutes a Section 316(a) thermal discharge variance. The post-operational phase of the biological monitoring program will continue in order to assure EPA and the State that the continued operations of Seabrook Station does not significantly impact

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[14] According to Attachment A of the 2002 NPDES permit, in 1975, EPA and the State jointly formed a committee of biologists from regulatory agencies which were responsible for the aquatic community in the Hampton Harbor Seabrook area. The agencies included the EPA, the National Marine Fisheries Service (NMFS), NHDES, and the NH Fish and Game Department. In the 1993 permit renewal, the biological committee was formalized into the Technical Advisory Committee (TAC), to ensure that this effort was an official part of the permit. The TAC was empowered to accept, reject, or modify the facility's biological monitoring program and/or schedules. However, according to the Fact Sheet for the 2002 NPDES permit (Section 5.1), the TAC requirements were eliminated from the permit based, in part, on its inability to fully comply with the provisions of the Federal Advisory Committee Act (FACA). The 2002 permit does, however, contain provisions for input from members of the former TAC before significant changes in the biological, hydrological and chlorination monitoring programs can be implemented. The Biological Monitoring Program is an enforceable part of the 2002 permit.

the local biological community."

Based on the above, Part I.A.2 of the 2002 permit includes the following requirement: "The Regional Administrator has determined that the Cooling Water Intake System, as presently designed, employs the best technology available for minimizing adverse environmental impact. Therefore, no change in the location, design or capacity of the present system can be made without prior approval of the Regional Administrator and the Director. The present design shall be reviewed for conformity to regulations pursuant to Section 316(b) when such are promulgated." As mentioned above, regulations for implementing Section 316(b) were promulgated in 2014.

According to the Fact Sheet for the 2002 NPDES permit, "Each time the permit is reissued (not to exceed 5 years), the 316(a) and 316(b) determinations are reviewed. The permittee must certify any changes in: (1), the facility discharge characteristics; (2) the waterway characteristics, and (3) resident and transient aquatic community. The permittee must then explain any differences identified and their impact on the local ecological community." Pursuant to 40 CFR 122.21(d), the Applicant submitted a permit renewal application to EPA in September 2006 for NPDES permit No. NH0020338 which included the Section 316(a) and 316(b) certifications discussed above.

In summary, CWA Section 316(a) and 316(b) requirements are implemented through the NPDES permit. Each time the NPDES permit NH0020338 is reissued, EPA will make a determination regarding section 316(a) and 316(b) and associated permit requirements. Since the last permit was issued in 2002 and since the Applicant filed for renewal in 2006, EPA has promulgated new regulations regarding implementation of Section 316(b). How the new federal regulations will impact the current NPDES permit requirements regarding the thermal discharge and cooling water intake (including biological monitoring requirements) will be determined when the permit is reissued. In either case, NHDES will have to issue a CWA Section 401 Water Quality Certification for the NPDES permit each time it is reissued. If federal requirements are not considered sufficient to meet state surface water quality standards, NHDES can include additional conditions in the 401 Certification and the State discharge permit issued for Seabrook Station. Drafts of NPDES permits are first issued for public comment prior to final issuance.

D-23. 2015 SEIS: Pursuant to 10 CFR 51.20(b) (2) the NRC prepared and issued a Final Supplement Environmental Impact Statement[15] (SEIS) in July 2015 in response to the application for NRC license renewal submitted by the Applicant. Section 4.6.2 of the 2015 SEIS discusses the effects of entrainment and

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[15] Generic Environmental Impact Statement for License Renewal of Nuclear Plants, Supplement 46, Regarding Seabrook Station, Final Report. July 2015. NUREG-1437, Supplement 46, Volume 1. U.S. Nuclear Regulatory Commission.

impingement, section 4.6.3 discusses the effects of thermal shock and section 4.6.5 discusses the potential combined effects of the Activity on aquatic resources.

Since the 1970s the Applicant has conducted monitoring studies for plankton, fish, invertebrates and macroalgae. The data was used to test the statistical significance of differences in community structure and abundance in between the preoperation and operational period at nearfield and farfield sites. If a significant difference occurs in the geographic distribution of the population, it could be due to entrainment, impingement, heat shock, or a combination of cumulative effects from operation of the Activity.

NRC related the Applicant's monitoring results to NRC's definitions of SMALL, MODERATE, and LARGE, as defined below.

NRC Category	NRC Definition
SMALL	Monitoring data concluded that no significant difference occurred between the preoperational and operational periods or, if there was a change, that it occurred at both the nearfield and farfield sites. In this situation, NRC would conclude that operations of the Activity's cooling system do not noticeably alter the aquatic resource.
MODERATE	Monitoring data indicated that the abundance of a certain species or biological group increased at farfield sites and remained steady at nearfield sites during operations. In this situation, NRC staff would conclude that operations of the Activity's cooling system noticeably altered, but does not destabilize, the aquatic resource.
LARGE	Monitoring data indicated that the abundance of a certain species or biological group increased or remained steady at farfield sites and decreased at nearfield sites or if the abundance of a species or biological group declined at all sites, but the decline was significantly greater at nearfield sites. In this situation, NRC would conclude that operations of the Activity's cooling system destabilizes the aquatic resources within 3–4 mi (5–8 km) of the Activity.

A summary of entrainment and impingement study results are provided in section 4.6.2 of the EIS. For the period 1990 – 2009, the annual average total fish egg entrainment was 901 million per year, the annual average fish larvae entrainment was 260.6 million larvae per year and the annual average total bivalve larvae entrainment was 17,595 x 10^9 per year.

For the period 1995-2009, the annual average impingement was 20,876 fish with the most commonly impinged fish being Atlantic silverside (*Menidia menidia*) (11.5 percent), rock gunnel (10.5 percent) and winter flounder (10 percent). Winter flounder had an annual average impingement rate of 2083 per year. Rainbow smelt (Osmerus mordax), was the sixth most impinged species with an annual impingement rate of 1093 per year. The majority of impingement occurred during the spring and fall, especially with young-of-the-

year demersal fish.

Based on statistical analyses conducted by the Applicant and the NRC's definitions above for LARGE, MODERATE and SMALL, the NRC concluded that the impact from operation of the Activity's cooling system on phytoplankton, zooplankton (holoplankton, meroplankton, and hyperbenthos), invertebrates, and most fish species is SMALL since monitoring data suggest that operations have not noticeably altered these aquatic communities near the Activity.

With regards to the impact on fish, the SEIS reported the following: "The abundances of the majority of species were higher during preoperational monitoring than during operations, although the abundance of some species increased with time (Table 4–13). NAI (2010) used a mixed model analysis of variance to determine if there were statistically significant differences between the preoperational and operational monitoring periods, nearfield and farfield sampling stations, and in the interaction of these terms. The abundance of yellowtail flounder, Atlantic cod, and rainbow smelt[16] were significantly higher prior to operations at the nearfield and farfield sampling sites. The decrease in rainbow smelt was significantly greater at the nearfield station compared to the farfield station (see Table 4–13). However, NAI (2010) observed a different trend for winter flounder and silver hake. At the nearfield site (T2), the abundance of winter flounder significantly decreased over time from a mean CPUE of 5.5 prior to operations to 2.3 during operations. However, at both farfield sampling sites (T1 and T3), the mean CPUE increased from 2.8 and 1.4 prior to operations, respectively, to 4.0 and 3.6 during operations. This increase was statistically significant at one of the farfield sites (T3). Silver hake abundance also increased at farfield sampling sites and decreased at the nearfield sampling site. NAI (2010) did not test if these trends were statistically significant."

Based on the above, the NRC concluded that for winter flounder, rainbow smelt, and macroalgae (*L. digitata* and sea belt), the impact is LARGE since the abundance of these species "... has decreased to a greater and observable extent near Seabrook's intake and discharge structures compared to 3–4 mi (5–8 km) away. The local decrease suggests that, to the extent local subpopulations exist within 3–4 mi (5–8 km), they have been destabilized through operation of Seabrook's cooling water system." As mentioned, the NRC

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[16] Rainbow smelt is a National Marine Fisheries Services (NMFS) "Species of Concern". Species of Concern include species that the NMFS has some concerns about status and threats, but there is insufficient information available to indicate a need to list the species under the Endangered Species Act (ESA). Although the "Species of Concern" status does not carry any procedural or substantive protections under the ESA, the NMFS wishes to draw proactive attention and conservation action to these species (from http://www.nmfs.noaa.gov/pr/species/concern/).

did not have sufficient information to make a species-specific conclusion regarding silver hake abundance because NAI (2010) did not test whether the differences in silver hake abundance at the sampling sites were statistically significant. [According to the Applicant, trends in abundance of silver hake were not investigated because this is not one of the selected species that are subject to extensive quantitative analyses (Appendix A of SEIS, p. A-188)].

D-24. *Applicant's Comments on SEIS:* The Applicant provided comments on the SEIS in 2011 when a draft was issued for public comment. A copy of their comments is provided in Appendix A of the 2015 SEIS. In general they disagree with the NRC's conclusions that the impact is LARGE for winter flounder, rainbow smelt and macroalgae (*L. digitata* and sea belt) for the following reasons.

Species	**Summary of Counterarguments Presented by the Applicant**
Winter Flounder	Winter flounder abundance decreased between the preoperational and operational periods at Station T2, was not significantly different between periods at Station T1, and decreased between periods at Station T3. The two supposed impacts due to plant operation are entrainment and impingement. Although entrainment of eggs has averaged approximately 90,000 eggs per year, this number is not likely to affect winter flounder populations for two reasons: 1. Based on the Applicant's Equivelant Adult (EA) analysis, the estimated annual equivalent adult loss of adult winter flounder due to entrainment was 1347 / year (1998-2010) and the estimated equivelant adult loss due to impingement was 85/year (1994-2010). Compared to the average of approximately 16,000 /year of winter flounder taken from New Hampshire waters by recreational anglers from 1998-2009 , the combined estimated adult loss of approximately 1500 /year due to impingement and entrainment at Seabrook Station represents only about 1/10 of the total annual catch by recreational anglers. 2. Winter flounder larvae are planktonic and would be widely distributed in the vicinity of Seabrook Station. Entrainment of these planktonic species would not result in the decrease in abundance of juvenile and adults observed at only one sampling station (T2) because the lifestages have not settled to the bottom yet and are likely to show significant movement before settlement. The Applicant also commented that a localized decrease in abundance of winter flounder at station T2 could only occur if the winter flounder impinged were going to reside in the area and not move. According to the Applicant, a recent study (Fairchild et al., 2011) indicated that although there is evidence to indicate that winter flounder return to the same area to spawn, their movements between spawning periods may be significant. Based on accoustic tagging, the study showed that in Ipswich Bay (MA), only 5% of the fish tagged were recovered in Ipswich Bay and some were recovered as far away as 43-57 km away from the tagging site. The Applicant has also noted that the NRC's conclusion includes the

Species	Summary of Counterarguments Presented by the Applicant
	caveat, "to the extent local subpopulations exist within 3–4 mi (5–8 km) but no evidence of local subpopulations is provided[17].
Rainbow Smelt	The Applicant acknowledges that the abundance of rainbow smelt has decreased significantly at all three trawl stations from the preoperational period to the operational period of the plant with a greater decrease at the sampling station near the intakes and discharges than at the other two stations. However, this decrease by itself does not necessarily mean that that operation of the cooling water system is the cause. Results must be put in context with regional trends to see if there are any region-wide causes that could result in what appears to be a local impact. Throughout the Gulf of Maine, unrelated to operation of the Activity, there has been a regional decrease in abundance of rainbow smelt. This unrelated regional decrease likely caused the reduction in abundance at all sampling stations. Acid precipitation, spawning habitat degradation, overfishing, dams and blocked culverts are factors which could be contributing to the regional decline. Although rainbow smelt are entrained and impinged at Seabrook Station, the losses are relatively small when put in context through comparison with New Hampshire recreational catch statistics. According to the Applicant there is little information on the movement of rainbow smelt once they exit the estuaries. Rainbow smelt spawn in estuaries and the demersal and adhesive eggs are not subject to entrainment. Rainbow smelt larvae can, however, be subject to entrainment and an estimated annual average of 430,000 have been entrained between 1990 and 2010. According to the Applicant, natural mortality would greatly reduce this estimate to a small number of adult reproductive fish. An annual average of 1054 rainbow smelt are impinged every year (this is different than the EIS, p, 4-18, which indicates that from 1994 to 2009 an annual average of 1093 are impinged every year). In comparison, recreational fishing in nearby Great Bay removed an estimated average of 102,000 adult rainbow smelt each year between 1994 and 2010. These relatively small losses at Seabrook Station due to entrainment and impingement are relatively small (~ 1%) of the losses due to recreational fishing. (note this does not include adult fish that would have been impinged if their larvae had not been entrained.) The Applicant has also noted that the NRC's conclusion includes the caveat, "to the extent local subpopulations exist within 3–4 mi (5–8 km) but no evidence of local subpopulations is provided[18].
Macroalgae (*L. digitata* and sea belt)	There has been a significant negative trend in L. digitata density throughout the entire time series (1982 – 2009) at all four benthic stations (shallow subtidal: nearfield and farfield; mid-depth; nearfied and farfield). This is an indication that this is a long-term decline in

[17] Meeting between NextEra and NHDES in November, 2014.
[18] Meeting between NextEra and NHDES in November, 2014.

Species	Summary of Counterarguments Presented by the Applicant
	abundance unrelated to the operation of Seabrook Station and may be a region-wide phenomenon because it occured at both nearfield and farfield stations. Furthermore there are habitat differences between the mid-depth stations and farfield stations. The habitat at mid-depth nearfield statiion is less preferable for *L. digitata* due the the greater depth (12.2 m) compared to the nearfield station (9.4 m). Special studies conducted by the Applicant indicate the thermal discharge from Seabrook Station is not responsible for the decline in kelp abundance (NAI, 2010; NAI, 2011). Possible reasons for the large scale kelp decline are: 1. a regional increase in water temperature (NAI, 2009; NAI, 2010) 2. turbidity, suspended solids and nutrient enrichment (McDowell, 2009; NAI, 1999) 3. changes due to storm action in 1991 (Hurricane Bob and the "Perfect Storm") and large scale biological disturbances, and 4. the effect of introduced species, particularly the bryozoan *Membranipora membranacea*.

D-25. *NHFGD Comments on SEIS:* The NH Fish and Game Department (NHFGD) provided comments on the SEIS in 2011 when a draft was issued for public comment. A copy of their comments is provided in Appendix A of the 2015 SEIS. A summary is provided below:

According to the NHFGD winter flounder and rainbow smelt are two species that were identified early on in the required environmental monitoring as species of special concern as they support both commercial and recreational fisheries in New Hampshire. Winter flounder is a species targeted by mobile and fixed gear commercial fishers as well as being a very popular target for recreational hook fishers and spearfishers. Rainbow smelt supports an ice fishing activity enjoyed by our states recreational anglers. In addition, smelt are an important prey item for Atlantic cod, striped bass, bluefish and seals and are listed as a Species of Concern by the National Marine Fishery Service. The loss of these fish as a result of Seabrook Station by entrainment and impingement should be addressed and NHF&G offered two mitigation ideas that they believe deserve further consideration. These are provided below.

1. The Applicant should fund activities and projects that would reduce the point and non-point sources of nitrogen loading in the Great Bay Estuary System (GBES). Increased levels of nitrogen have been identified as a potential cause of recent reductions in abundance of eelgrass in the GBES and eel grass is an important habitat for both juvenile winter flounder and rainbow smelt. Providing financial assistance to programs directed at reducing non-point sources of nitrogen and to municipal projects that reduce nitrogen input into GBES would be appropriate mitigation as it would improve conditions for growth and survival of eel grass that are important habitat for the species.
2. The Applicant should compensate businesses that rely on winter flounder catch for a portion of their annual income. A possible mechanism could be

financial donation to the permit bank for Xi Northeast Fisheries Sector Inc. This permit bank is used to purchase federal fishing permits with quota for groundfish species including flounder. The groundfish quotas associated with the permits purchased by the permit bank would be distributed to members of the New Hampshire commercial groundfish sectors to help maintain the economic viability of the State's small boat commercial fishing fleet. In addition, party and charter boat businesses with documented historical winter flounder harvest via federal vessel trip reports, could also be compensated.

With regards to the localized loss of certain kelp species, NHF&G indicated that some form of mitigation for this seems to be of little importance because of the replacement of these species by somewhat comparable kelps in the area (*Agarum clathratum* and *Alaria esculenta*). These replacement kelps probably provide comparable ecological services in comparison to the loss of abundance of *L. digitata* and *S. lattisima* including habitat formation, primary productivity and as forage for coastal herbivores.

D-26. *NMFS Comments on SEIS:* The National Marine Fisheries Service (NMFS) also provided comments on the SEIS in 2011 when a draft was issued for public comment. A copy of their comments is provided in Appendix A of the 2015 SEIS. With regards to additional studies, the NMFS recommended that the Applicant conduct additional studies to determine the causative agent for the decline in macroalgae near Seabrook. For example, various studies could be conducted to better understand whether the decline was due to Seabrook's thermal discharge or other activities. Similarly, NMFS suggested that the Applicant conduct studies that test whether changes in benthic fish communities near the Seabrook discharge "are the result of thermal effects from the discharge plume, such as avoidance of the thermal plume by juvenile and adult life stages or from mortality reduced fitness of egg and larval stages that may settle to the bottom in this area, or a result of eggs and larvae that are lost to the general area from impingement and entrainment in the cooling water system."

D-27. *Compliance with Env-Wq 1703.19 Biological and Community Integrity:* NHDES has reviewed the information submitted by the Applicant, including the 2015 SEIS (see D-23) and comments on the SEIS presented by the Applicant, the NHFGD and others (see D-24 and D-25), and has determined the impacts on "Biological and Community Integrity" (Env-Wq 1703.19) are inconclusive at this time. As noted by NMFS, additional studies are needed to determine the impacts on microalgae. Further, while the statistical differences between the preoperational data for smelt and winter flounder are significant, it is unclear that the causes of such differences can be remedied by potential operational changes undertaken by the Applicant. Additional studies are needed to determine the following: 1) other potential causative factors leading to the statistical differences; 2) if subpopulations exist of winter flounder and rainbow smelt in the vicinity of the discharge; and 3) the opportunities to mitigate the impacts of the Activity on these fish species and kelp. Because the Activity will

require an NPDES discharge permit and CWA Section 316 determination, the completion of these studies will help to inform those permitting actions.

D-28. *Water Use Registration:* In accordance with RSA 488:3 (see C-46), the Applicant has registered its water use with the NHDES Water Use Registration and Reporting program.

E. WATER QUALITY CERTIFICATION CONDITIONS

Unless otherwise authorized by NHDES, the following conditions shall apply:

E-1. **Compliance with Water Quality Standards:** The Activity shall not cause or contribute to a violation of surface water quality standards. NHDES may modify this 401 Certification to include additional conditions to ensure the Activity complies with surface water quality standards, when authorized by law, and after notice and opportunity for hearing.

E-2. **Inspections:** In accordance with applicable laws, the Applicant shall allow NHDES to inspect the Activity and affected surface waters to monitor compliance with the conditions of this 401 Certification.

E-3. **Proposed Modifications to the Activity:** The Applicant shall consult with NHDES regarding any proposed modifications to the Activity, including construction or operation, that could impact surface water quality standards, to determine whether this 401 Certification requires modification in the future. Proposed modifications to the Activity that may impact surface water quality standards shall not be made until NHDES has either made a determination that modification to this 401 Certification is not necessary, or until after a modified 401 Certification is issued.

E-4. **Transfer of Certification:** Should this Certification be transferred to a new owner, contact information for the new owner (including name, address, phone number and email) shall be provided to NHDES within 30 days of the transfer.

E-5. **NPDES MSGP and SWPPP:** Unless the Activity is no longer required to be covered under the MSGP, the Applicant shall comply at all times with the EPA Stormwater Multi-Sector General Permit (MSGP) (see D-19) that is in effect at that time. The current and future versions of the MSGP and 401 Certifications issued for the MSGP are considered part of this Certification.

Within 90 days after issuance of this Certification (or other time period acceptable to NHDES), the Applicant shall provide NHDES with evidence that they are in compliance with the EPA 2015 Stormwater Multi-Sector General Permit (MSGP) (see D-19). Should EPA amend or issue a new MSGP, the Applicant shall provide NHDES with evidence that they are in compliance with the new or amended MSGP within 180 days (or other time period acceptable to NHDES) from the effective date the new or amended MSGP. If requested by NHDES, the Applicant shall provide a copy of the SWPPP prepared for the MSGP

within 14 days (or other time period acceptable to NHDES) of receiving a request.

E-6. **NPDES NH0020338 and State Discharge Permit for Seabrook Station:** The Applicant shall comply at all times with NPDES Permit NH0020338 and the State Discharge Permit issued in accordance with RSA 485-A:13 (see D-20) that is in effect at that time. These permits cover the once-through cooling water intake system and the discharge of heated cooling water (and other constituents) through the approximate 3 mile-long discharge tunnel to the Atlantic Ocean. The current and any future versions of these permits and 401 certifications issued for NPDES Permit NH0020338 are considered a part of this Certification.

E-7. **Ambient Monitoring:** Unless otherwise authorized by NHDES, the Applicant shall continue with the chemical, physical and biological monitoring plan currently required under NPDES Permit NH0020338. Should additional monitoring be necessary to determine if the Activity is causing or contributing to violations of state surface water quality standards, the Applicant shall consult with NHDES and submit a revised plan to NHDES for approval. The Applicant shall then implement the approved plan.

E-8. **Additional Studies:** The Applicant shall consult with NHDES, NHFGD and NMFS and submit plans to NHDES for approval regarding additional studies and mitigation opportunities necessary to determine if the Activity complies with Env-Wq 1703.19 "Biological and Community Integrity". At a minimum, the study /mitigation plans shall address the items in D-27 of this Certification. The Applicant shall implement the approved study/mitigation plans.

E-9. **Pesticides (Insecticides and Herbicides):** The Applicant shall minimize use of all pesticides to the maximum extent practicable and shall comply with all applicable state, federal and local laws and regulations regarding application of pesticides, including, but not limited to, Pes 1001.01 and 1001.02 (see C-51 and D-16). If requested by NHDES, the applicant shall provide NHDES with a list of pesticides applied, the name of the applicator and their NH pesticide license or permit number within 30 days of receiving the request.

E-10. **Certification of Road Salt Applicators and Tracking of Road Salt:** All applicators of road salt containing chloride that are retained to de-ice impervious surfaces associated with the Activity that drain to fresh surface waters shall be certified per the Green SnowPro program (see http://t2.unh.edu/green-snowpro-training-and-certification) within two years of the issuance date of this Certification and shall maintain records of road salt use on the web-based tracking system available at http://www.roadsalt.unh.edu/Salt/. Within 60 days of the issuance date of this Certification, the Applicant shall provide NHDES with the location of impervious surfaces that drain to fresh surface waters where road salt is or will be applied for de-icing. If requested by NHDES the Applicant

shall provide the names of all road salt applicators and proof they are certified within 30 days of receiving a request.

E-11. **Fertilizer Minimization:** The Applicant shall minimize the application of fertilizers containing nitrogen and or phosphorus to the maximum extent practicable. Should fertilizers be used they shall comply with section C-43 of this Certification.

E-12. **Water Use Registration:** In accordance with RSA 488:3 (see C-46), the Applicant shall continue to register its water use with the NHDES Water Use Registration and Reporting program.

F. APPEAL

Any person aggrieved by this decision may appeal to the N.H. Water Council ("Council") by filing an appeal that meets the requirements specified in RSA 21-O:14 and the rules adopted by the Council, Env-WC 100-200. The appeal must be filed directly with the Council within 30 days of the date of this decision and must set forth fully every ground upon which it is claimed that the decision complained of is unlawful or unreasonable. Only those grounds set forth in the notice of appeal can be considered by the Council.

Information about the Council, including a link to the Council's rules, is available at http://nhec.nh.gov/ (or more directly at http://nhec.nh.gov/water/index.htm). Copies of the rules also are available from the NHDES Public Information Center at (603) 271-2975.

If you have questions regarding this Certification, please contact Owen David at (603) 271-0699 or Owen.David@des.nh.gov

Eugene Forbes

Eugene J. Forbes, P.E.
Director, NHDES Water Division

cc (via email):
Christopher G. Miller, NRC
Fred Welch, Town Manager for Hampton, NH
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Laura A Ruest, Town Administrator for Hampton Falls, NH
Board of Selectmen via Town Clerk (Andrea Condon), South Hampton, NH
Board of Selectmen via Town Clerk (Dawn Frost), Kensington, NH
Wilma McDonald, Chair, Board of Selectman for Salisbury, MA
Ken Gray, Mayor for Amesbury, MA
Ralph Abele, EPA Region 1
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