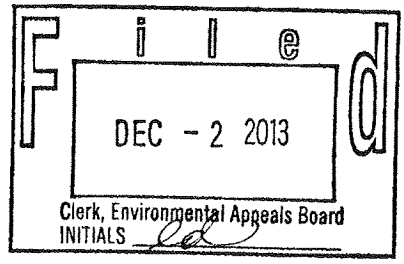

(Slip Opinion)

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BEFORE THE ENVIRONMENTAL APPEALS BOARD
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C.

In re:	)	
Town of Newmarket, New Hampshire	)	NPDES Appeal No. 12-05
NPDES Permit No. NH0100196	)	

[Decided December 2, 2013]

ORDER DENYING REVIEW

Before Environmental Appeals Judges Leslye M. Fraser, Catherine R. McCabe, and Kathie A. Stein.

IN RE TOWN OF NEWMARKET, NEW HAMPSHIRE

NPDES Appeal No. 12-05

ORDER DENYING REVIEW

Decided December 2, 2013

Syllabus

The Great Bay Municipal Coalition, representing the municipalities of Dover and Rochester, New Hampshire ("Coalition"), petitions the Environmental Appeals Board ("Board") to review an effluent limitation for total nitrogen ("TN") in a Clean Water Act National Pollutant Discharge Elimination System permit ("Permit") that the United States Environmental Protection Agency, Region 1 ("Region"), issued on November 16, 2012, to the Town of Newmarket, New Hampshire, for its wastewater treatment plant. The Permit reauthorizes discharges of treated wastewater effluent into the Lamprey River from the Town's treatment plant and includes a nitrogen effluent limit of 3.0 mg/l TN.

The Coalition argues that Board review of the Region's decision is appropriate in this matter on the following four principal grounds: (1) the Region abused its discretion in determining that a permit effluent limit of 3.0 mg/l for TN is necessary to achieve the State of New Hampshire's narrative water quality standards for the Lamprey River and the Great Bay of New Hampshire (in large part, the Coalition asserts that the Region erred by relying on proposed numeric nutrient criteria in a 2009 New Hampshire Department of Environmental Services study referred to as the "*Great Bay Nutrient Report*" because the State's analysis was scientifically flawed); (2) the Region erred by using the State's proposed nutrient criteria without undertaking rulemaking; (3) the Region erred in its consideration of the contribution of nonpoint sources in determining the Permit's nitrogen limits; and (4) the Region did not satisfy applicable procedural obligations in issuing the Permit.

HELD: Upon consideration of the Coalition's arguments, the Board denies review of the Region's Permit decision in all respects.

1. The Region did not clearly err or abuse its discretion in determining that a nitrogen permit effluent limitation of 3.0 mg/l TN is necessary to achieve New Hampshire's narrative water quality standards for the Lamprey River and the Great Bay.

- The Board concludes that the Coalition failed to demonstrate that the Region clearly erred or abused its discretion in selecting an instream water quality target of 0.3 mg/l TN for the Permit. Contrary to the Coalition's assertion, the Region properly considered the numeric

water quality thresholds for nitrogen proposed by the State of New Hampshire in the State's *Great Bay Nutrient Report.* The record contains substantial support for the scientific validity of the *Great Bay Nutrient Report* and demonstrates that the Region's consideration of the Report was consistent with EPA regulations. At most, the Coalition has demonstrated a difference of scientific opinion between the Coalition and the Region. This is insufficient to demonstrate clear error or an abuse of discretion.

- The Board concludes that the Coalition failed to demonstrate that the Region clearly erred or abused its discretion in determining that effluent from the Newmarket wastewater treatment plant had a "reasonable potential to cause or contribute" to an exceedance of the 0.3 mg/l TN instream target.

- The Board concludes that the Coalition failed to demonstrate that the Region clearly erred or abused its discretion in determining that a permit effluent limitation of 3.0 mg/l TN is necessary to achieve the instream water quality target of 0.3 mg/l TN.

2. The Coalition has failed to demonstrate that the Region unlawfully applied the water quality thresholds for nitrogen proposed in the *Great Bay Nutrient Report* as revised water quality standards without undertaking rulemaking.

3. The Coalition has failed to demonstrate that the Region clearly erred or abused its discretion in its consideration of the contribution of nonpoint sources to nitrogen discharges into the Lamprey River in determining the appropriate nitrogen effluent limitation in the Newmarket permit.

4. The Coalition has failed to demonstrate that the Region violated any applicable procedural requirements in issuing the Newmarket permit. In particular, the Board rejects the Coalition's assertion that the Region impermissibly excluded information from the record, changed its rationale for the permit's nitrogen effluent limit after the close of the public comment period, or violated the Coalition's due process rights in conducting the peer review of the *Great Bay Nutrient Report.*

Before Environmental Appeals Judges Leslye M. Fraser, Catherine R. McCabe, and Kathie A. Stein.

Opinion of the Board by Judge McCabe:

I. *STATEMENT OF THE CASE*

The Great Bay Municipal Coalition, representing the municipalities of Dover and Rochester, New Hampshire ("Coalition" or "Petitioner"), petitions the Environmental Appeals Board ("Board") to review an effluent limitation for nitrogen in a Clean Water Act ("CWA" or "Act") National Pollutant Discharge Elimination System ("NPDES") permit ("Permit") that the United States Environmental Protection Agency ("EPA" or "Agency"), Region 1 ("Region"), issued on November 16, 2012, to the Town of Newmarket, New Hampshire ("Town"), for its wastewater treatment plant ("Newmarket Plant"). *See* Petition for Review of a NPDES Permit Issued by EPA Region 1 ("Petition"). The Permit reauthorizes discharges of treated wastewater effluent into the Lamprey River from the Town's treatment plant. The Region, as well as two parties participating in this proceeding as *amicus curiae* (the Conservation Law Foundation, Town of Newington, and New Hampshire Audubon (collectively "CLF") and the New Hampshire Department of Environmental Services ("NHDES")) have filed responses to the Petition. For the reasons discussed below, the Board denies review of the Region's final permit decision for the Newmarket NPDES permit.

II. *ISSUES*

The Coalition's appeal presents the following issues for resolution by the Board:

A. Did the Region clearly err or abuse its discretion in determining that a permit effluent limitation of 3.0 milligrams per liter ("mg/l") total nitrogen ("TN") is necessary to achieve New Hampshire's narrative water

quality standards for the Lamprey River and the Great Bay?

1. Did the Region clearly err or abuse its discretion in determining that an instream target of 0.3 mg/l TN is necessary to achieve the State's narrative water quality standards?

2. Did the Region clearly err or abuse its discretion in determining that effluent from the Newmarket Plant had a "reasonable potential to cause or contribute" to an exceedance of the 0.3 mg/l TN instream target?

3. Did the Region clearly err or abuse its discretion in determining that a permit effluent limitation of 3.0 mg/l TN is necessary to achieve the instream water quality target of 0.3 mg/l TN?

B. Did the Region clearly err by using the State's proposed 0.3 mg/l TN water quality criterion as a revised water quality standard, without undertaking rulemaking?

C. Did the Region clearly err in considering the contribution of nonpoint sources in determining the necessary and appropriate nitrogen effluent limitations for the Newmarket permit?

D. Did the Region satisfy its procedural obligations in issuing the Newmarket permit?

III. *PRINCIPLES GUIDING BOARD REVIEW*

Section 124.19 of Title 40 of the Code of Federal Regulations governs Board review of an NPDES permit. In any appeal from a permit

decision issued under part 124, the petitioner bears the burden of demonstrating that review is warranted. *See* 40 C.F.R. § 124.19.

A. *Standard of Review*

Under 40 C.F.R. § 124.19, the Board has discretion to grant or deny review of a permit decision. *See In re Avenal Power Ctr., LLC*, PSD Appeal Nos. 11-03 to 11-05, slip op. at 14-15 (EAB Aug. 18), 15 E.A.D. ___ (citing Consolidated Permit Regulations, 45 Fed. Reg. 33,290, 33,412 (May 19, 1980)), *appeal docketed sub nom. Sierra Club v. EPA*, No. 11-73342 (9th Cir. Nov. 3, 2011). Ordinarily, the Board will deny review of a permit and thus not remand it unless the permit decision either is based on a clearly erroneous finding of fact or conclusion of law, or involves a matter of policy or exercise of discretion that warrants review. 40 C.F.R. § 124.19;[1] *accord, e.g., In re Prairie State Generating Co.*, 13 E.A.D. 1, 10 (EAB 2006), *aff'd sub. nom Sierra Club v. U.S. EPA*, 499 F.3d 653 (7th Cir. 2007). In considering whether to grant or deny review of a permit, the Board is guided by the preamble to the regulations authorizing appeal under part 124, in which the Agency stated that the Board's power to grant review "should be only sparingly exercised" and that "most permit conditions should be finally determined at the [permit issuer's] level." 45 Fed. Reg. at 33,412; *see also* 78 Fed. Reg. at 5,281.

When evaluating a challenged permit decision for clear error, the Board examines the administrative record that serves as the basis for the permit to determine whether the permit issuer exercised his or her

[1] The EPA recently revised 40 C.F.R. § 124.19 and other related provisions in parts 124 and 270 of the Code of Federal Regulations to clarify practices and procedures in appeals of permit decisions filed before the Board. *See* Revisions to Procedural Rules to Clarify Practices and Procedures Applicable in Permit Appeals Pending Before the Board, 78 Fed Reg. 5281, 5288 (Jan. 25, 2013), available at www.epa.gov/eab (click on Regulations Governing Appeals). The revised part 124 provisions became effective on March 26, 2013, and apply to any filings with the Board on or after this date. *Id.* Because the Petition in this matter was filed before the effective date of the revised provisions, the part 124 provisions cited in this decision correspond to the provisions in effect at the time the petitions were filed.

"considered judgment." *See, e.g., In re Steel Dynamics, Inc.*, 8 E.A.D. 165, 191, 224-25 (EAB 2000); *In re Ash Grove Cement Co.*, 7 E.A.D. 387, 417-18 (EAB 1997). The permit issuer must articulate with reasonable clarity the reasons supporting its conclusion and the significance of the crucial facts it relied upon when reaching its conclusion. *E.g., In re Shell Offshore, Inc.*, 13 E.A.D. 357, 386 (EAB 2007). As a whole, the record must demonstrate that the permit issuer "duly considered the issues raised in the comments" and ultimately adopted an approach that "is rational in light of all information in the record." *In re Gov't of D.C. Mun. Separate Storm Sewer Sys.*, 10 E.A.D. 323, 342 (EAB 2002); *accord In re City of Moscow*, 10 E.A.D. 135, 142 (EAB 2001); *In re NE Hub Partners, LP*, 7 E.A.D. 561, 567-68 (EAB 1998), *review denied sub nom. Penn Fuel Gas, Inc. v. EPA*, 185 F.3d 862 (3d Cir. 1999). On matters that are fundamentally technical or scientific in nature, the Board typically will defer to a permit issuer's technical expertise and experience, as long as the permit issuer adequately explains its rationale and supports its reasoning in the administrative record. *See In re Dominion Energy Brayton Point, LLC*, 12 E.A.D. 490, 510 (EAB 2006) (the Board generally defers to the Region on technical determinations where the Region's approach was rational in light of all the information in the record); *see also In re Carlota Copper Co.*, 11 E.A.D. 692, 708 (EAB 2004); *NE Hub*, 7 E.A.D. at 570-71.

In reviewing an exercise of discretion by the permitting authority, the Board applies an abuse of discretion standard. *See In re Guam Waterworks Auth.*, NPDES Appeal Nos. 9-15 & 9-16, slip op. at 9 n.7 (EAB Nov. 16, 2011), 15 E.A.D. ___. The Board will uphold a permitting authority's reasonable exercise of discretion if that decision is cogently explained and supported in the record. *See Ash Grove*, 7 E.A.D. at 397 ("[A]cts of discretion must be adequately explained and justified."); *see also Motor Vehicles Mfrs. Ass'n v. State Farm Mut. Auto. Ins. Co.*, 463 U.S. 29, 48 (1983) ("We have frequently reiterated that an agency must cogently explain why it has exercised its discretion in a given manner * * * .").

B. *Petitioner's Burden on Appeal*

The burden of demonstrating that the Board should review a permit rests with the petitioner. 40 C.F.R. § 124.19(a)(1)-(2). A petitioner seeking review must demonstrate that any issues and arguments it raises on appeal have been preserved for Board review, unless the issues or arguments were not reasonably ascertainable before the close of the public comment period. 40 C.F.R. §§ 124.13, .19(a); *see In re City of Moscow*, 10 E.A.D. 135, 141, 149-50 (EAB 2001); *In re City of Phoenix*, 9 E.A.D. 515, 524 (EAB 2000).[2] Assuming that the issues have been preserved, the petitioner must specifically state its objections to the permit and explain why the permit issuer's previous response to those comments was clearly erroneous or otherwise warrants review.[3] 40 C.F.R. § 124.19(a); *see, e.g., In re Teck Cominco Alaska, Inc.*, 11 E.A.D. 457, 494-95 (EAB 2004); *In re Westborough*, 10 E.A.D. 297, 305, 311-12 (EAB 2002); *In re City of Irving*, 10 E.A.D. 111, 129-30 (EAB 2001), *review denied sub nom. City of Abilene v. EPA*, 325 F.3d 657 (5th Cir. 2003). The Board consistently has denied review of petitions that merely cite, attach, incorporate, or reiterate comments previously submitted on the draft permit. *E.g., In re City of Pittsfield*,

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[2] In other words, the regulations require that persons who seek review of a permit decision "must raise *all reasonably ascertainable issues* and submit *all reasonably available arguments* supporting their position by the close of the public comment period" on the draft permit. 40 C.F.R. § 124.13 (emphases added).

[3] Federal circuit courts of appeal have upheld this Board requirement that a petitioner must substantively confront the permit issuer's response to the petitioner's previous objections. *City of Pittsfield v. EPA*, 614 F.3d 7, 11-13 (1st Cir. 2010), *aff'g In re City of Pittsfield*, NPDES Appeal No. 08-19 (EAB Mar. 4, 2009) (Order Denying Review); *Mich. Dep't of Envtl. Quality v. EPA*, 318 F.3d 705, 708 (6th Cir. 2003) ("[Petitioner] simply repackag[ing] its comments and the EPA's response as unmediated appendices to its Petition to the Board * * * does not satisfy the burden of showing entitlement to review."), *aff'g In re Wastewater Treatment Facility of Union Twp.*, NPDES Appeal Nos. 00-26 & 00-28 (EAB Jan. 23, 2001) (Order Denying Petitions for Review); *LeBlanc v. EPA*, No. 08-3049, at 9 (6th Cir. Feb. 12, 2009) (concluding that the Board correctly found petitioners to have procedurally defaulted where petitioners merely restated "grievances" without offering reasons why the permit issuer's responses were clearly erroneous or otherwise warranted review), *aff'g In re Core Energy, LLC*, UIC Appeal No. 07-02 (EAB Dec. 19, 2007) (Order Denying Review).

NPDES Appeal No. 08-19 (EAB Mar. 4, 2009) (Order Denying Review), *aff'd,* 614 F.3d 7, 11-13 (1st Cir. 2010); *In re Knauf Fiber Glass, GmbH*, 9 E.A.D. 1, 5 (EAB 2000) ("Petitions for review may not simply repeat objections made during the comment period; instead they must demonstrate why the permitting authority's response to those objections warrants review."); *In re Hadson Power 14*, 4 E.A.D. 258, 294-95 (EAB 1992) (denying review where petitioners merely reiterated comments on draft permit and attached a copy of their comments without addressing permit issuer's responses to comments).

IV. *SUMMARY OF DECISION*

For all the reasons stated below, the Board concludes that Petitioner has failed to establish that: (A) the Region clearly erred or abused its discretion in determining that an instream target of 0.3 mg/l TN is necessary to achieve the State's narrative water quality standards for the receiving waters, effluent from the Newmarket Plant had a "reasonable potential to cause or contribute" to an exceedance of the 0.3 mg/l instream target for TN, and a permit effluent limitation of 3.0 mg/l TN is necessary to achieve the State's narrative water quality standards; (B) the Region clearly erred by allegedly applying the 0.3 mg/l water quality threshold proposed in a 2009 State study as a revised water quality standard, without undertaking rulemaking; (C) the Region clearly erred in considering the contribution of non-point sources in determining the necessary and appropriate nitrogen effluent limitations for the Newmarket permit; or (D) the Region failed to satisfy its procedural obligations in issuing the Newmarket permit.[4]

V. *PROCEDURAL AND FACTUAL HISTORY*

The Permit. On November 16, 2012, the Region issued a renewed NPDES permit to the Town pursuant to section 402 of the CWA, 33 U.S.C. § 1342. The permit authorizes discharges of treated wastewater from the Town's 0.85 million gallons-per-day wastewater

[4] The permittee, Town of Newmarket, New Hampshire, has not sought review of the permit.

treatment plant into the tidal portion of the Lamprey River. The Region issued the Town's existing permit on April 27, 2000, and modified the permit on July 8, 2002. *See* U.S. EPA Region I Fact Sheet ("Fact Sheet") at 3 (Sept. 2011) (Administrative Record ("A.R.") A.8). Although the permit expired on June 11, 2005, it has been administratively extended because the Town filed a timely application for permit re-issuance. *Id.*; 40 C.F.R. § 122.6.

The Receiving Waters. The Lamprey River is one of five tidal rivers discharging directly into the Great Bay of New Hampshire. The Newmarket Plant discharges its wastewater within the tidal, estuarine portion of the river, about 1.6 miles above its mouth, where it enters Great Bay. *See* Fact Sheet at 6, 12. The Great Bay is part of the Great Bay Estuary, one of the estuaries of "national significance" designated for special attention under the Act's National Estuary Program, CWA § 320, 33 U.S.C. § 1330. *Id.* at 11.

The Region explained the environmental importance of the Great Bay Estuary system as follows:

> The centerpieces of the estuary are Great Bay and Little Bay. Great Bay proper is a tidally-dominated, complex embayment on the New Hampshire-Maine border. Great Bay is unusual because of its inland location, more than five miles up the Piscataqua River from the ocean. It is a popular location for kayaking, birdwatching, commercial lobstering, recreational oyster harvesting, and sportfishing for rainbow smelt, striped bass, and winter flounder. Over forty New Hampshire communities are entirely or partially located within the coastal watershed. The estuary receives treated wastewater effluent from 18 publicly owned treatment works (14 in New Hampshire and 4 in Maine).
>
> The Great Bay Estuary is composed of a network of tidal rivers, inland bays, and coastal harbors. The estuary extends inland from the mouth of the Piscataqua

> River between Kittery, Maine and New Castle, New Hampshire, to Great Bay proper. In all, estuarine tidal waters cover 17 square miles with 144 miles of tidal shoreline. Five tidal rivers [including the Lamprey River] discharge into Great Bay and Little Bay.
>
> * * * *
>
> Maintaining water quality within an estuary is important for many reasons. Estuaries provide a variety of habitats, such as shallow open waters, freshwater and saltwater marshes, sandy beaches, mud and sand flats, rocky shores, oyster reefs, tidal pools, and seagrass beds. Tens of thousands of birds, mammals, fish, and other wildlife rely on the sheltered waters of estuaries as protected places to spawn. Moreover, estuaries also provide a number of recreation values such as swimming, boating, fishing, and bird watching. Estuaries in addition have an important commercial value since they serve as nursery grounds for two thirds of the nation's commercial fish and shellfish, and support tourism drawing on the natural resources that estuaries supply.

Fact Sheet at 11-12; *see also*, Office of Water, U.S. EPA, EPA 842-F-98-009 Coastal Watershed Factsheets-Estuaries and Your Coastal Watershed (July 1998) (A.R. M.17).

According to the National Oceanic and Atmospheric Administration ("NOAA") and many scientists, the nation's estuaries, including the Great Bay, are increasingly suffering from "eutrophication." Eutrophication is a process in which the addition of nutrients (largely nitrogen and phosphorus) to water bodies stimulates algal growth, which can lead to low dissolved oxygen and loss of submerged aquatic vegetation, degrading the health of the aquatic habitat. *See* NOAA, *Effects of Nutrient Enrichment on the Nation's Estuaries: A Decade of Change* at 2 ("*2007 NOAA Report*") (2007)

(A.R. L.3). Although some eutrophication occurs naturally, e.g., as a result of geological weathering and inputs from ocean upwelling, NOAA scientists have concluded that "in recent decades, human activities and population growth have greatly increased nutrient inputs to systems, leading to degraded water quality and impairments of estuarine resources for human use." *Id.* The *2007 NOAA* Report further explains that:

> [P]opulation growth and its related nutrient sources, such as agriculture, wastewater treatment plants, urban runoff, and consumption of fossil fuels (atmospheric deposition), have increased nutrient inputs to many times their natural levels, accelerating eutrophication. Nutrient increases can threaten biota, as well as lead to impairment of aesthetics, health, fishing opportunities and success, tourism, and real estate value.

Id. (citation omitted); *see also* NOAA, *National Estuarine Eutrophication Assessment: Effects of Nutrient Enrichment in the Nation's Estuaries* ("*1999 NOAA Report*") (1999) (A.R. L.30).

The *1999* and *2007 NOAA Reports* rated the eutrophic condition of Great Bay as "moderate," and both the 1999 and the 2007 Reports predicted a "large deterioration" in the eutrophic conditions of the Bay in the future. *See 2007 NOAA Report* at 43-44; *1999 NOAA Report* at 21. *See also*, NOAA, *Estuarine Eutrophic Survey, Volume 3: North Atlantic Region* ("1997 NOAA Report") (1997) (A.R. L.29). The *2007 NOAA Report* noted that nitrogen concentrations in Great Bay had increased over the past 20 years and eelgrass biomass had decreased by 70% over the past 10 years. *2007 NOAA Report* at A16. In 2009, the Piscataqua Region Estuaries Partnership ("PREP") observed that nitrogen and other signs of eutrophication in Great Bay had increased significantly, based on a comparison of data from 2001-2008 and monitoring data from 1974-1981. PREP concluded that "[t]here is consensus that the Great Bay Estuary is starting to experience the negative effects of excess nitrogen." *See* Piscataqua Region Estuaries P'ship, *State of the Estuaries 2009*, at 13 (A.R. K.26).

In 2009, the NHDES conducted an analysis of data from the Great Bay Estuary collected between 2000 and 2008, and proposed numeric water quality criteria for nitrogen to protect the designated uses of the Bay. *See* NHDES, *Numeric Nutrient Criteria for the Great Bay Estuary* ("*Great Bay Nutrient Report*") (June 10, 2009) (A.R. K.14). NHDES explained that it developed these criteria because New Hampshire's water quality standards contain only narrative criteria for nutrients to protect designated uses, which are difficult to apply for impairment and permitting decisions. *Id.* at 1. The *Great Bay Nutrient Report* concluded, among other things, that the waters of the estuary must meet a water quality threshold of no more than 0.25-0.30 mg/l TN to prevent the loss of submerged eelgrass, which provides critical habitat for fish and other aquatic life forms.[5] *Id.*

NHDES' *Great Bay Nutrient Report* was developed in consultation with and was reviewed by the PREP's Technical Advisory Committee. *Id.* It was also subjected to public notice and comment before it was finalized, and NHDES received 135 comments from 12 entities, including Coalition communities. In the final report NHDES included a response to public comments. *See id.* at 74-84, and B-1 to B-4. In addition, in 2010, NHDES subjected the Report to a technical peer review by national experts through EPA's Nutrient Scientific Technical Exchange Partnership and Support (N-STEPS) program. These reviews, conducted by scientists at Cornell University and the University of Maryland, generally affirmed the methodology and conclusions of the Report. *See id.* app. C.

The Region's Proposed Effluent Limitation for Nitrogen in the Newmarket Permit. On October 5, 2011, the Region issued a draft renewal NPDES permit for the Newmarket Plant proposing an effluent limitation on nitrogen for the first time. The Region proposed to set the nitrogen limit at 3.0 mg/l TN to protect the eelgrass and aquatic habitat

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[5] NHDES also determined that a slightly higher threshold of 0.45 mg/l TN is necessary to achieve desired levels of dissolved oxygen in the water, which is also critical to the health of the aquatic habitat and the survival of fish and other aquatic species. *Great Bay Nutrient Report* at 1.

of the Lamprey River and the downstream waters of the Great Bay. In the Fact Sheet accompanying the draft permit, the Region explained:

> EPA has concluded that at existing levels, nitrogen in the Newmarket facility's effluent discharge contribute to water quality violations at the point of discharge in the Lamprey River, as well as further downstream in Great Bay. EPA's analysis of available information, including the NHDES report "Analysis of Nitrogen Loading Reductions for Wastewater Treatment Facilities and Non Point Sources in the Great Bay Estuary Watershed-Draft," shows that the facility's nitrogen discharge has a reasonable potential to cause or contribute to a violation of water quality standards and that a total nitrogen effluent limitation of 3 mg/l, coupled with significant reductions in nonpoint source discharges of nitrogen, is necessary to ensure compliance with water quality standards.

Fact Sheet at 10. The Region further explained in detail the available scientific information on eutrophication of the Great Bay and Lamprey River and the basis for its assessment that the nitrogen effluent limitation in the Newmarket permit is necessary to achieve the State's water quality standards. *See* Fact Sheet at 11-19.

Public Comments. The Region provided an opportunity for public comment on the draft permit between October 5 and December 16, 2011, a total of over 60 days.[6] During the public comment period, the Region received written comments from nine interested parties, including the Town (the permittee) and the Coalition. Both the Town and the Coalition raised numerous objections to the proposed new nitrogen limit. Others, including the Conservation Law Foundation, the Nature Conservancy, and the Lamprey River Watershed Association, submitted written comments supporting the proposed nitrogen limit.

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[6] The NPDES permitting regulations require at least a 30-day public comment period. *See* 40 C.F.R. § 124.10(b).

The Town's public comments acknowledged that the Great Bay is showing signs of impairment and that efforts should be made to reduce nitrogen to some degree. The Town, however, urged the Region to adopt a less stringent permit effluent limit of 8 mg/l TN as a seasonal average. *See* Response to Comments on Draft NPDES No. NH0100196, Town of Newmarket Wastewater Treatment Plant, Newmarket, NH ("RTC") at 23 (Nov. 15, 2012) (A.R. B.1). The Town contended this would be adequate to bring nitrogen levels back to the levels of the 1990's when eelgrass in the Bay was healthy. *Id.* The Town also adopted the Coalition's comments by reference. *Id.* at 30.

The Coalition's comments recognized that use impairments exist in the Great Bay but contended that the causes of the impairments are still under investigation and undetermined. *See* Proposed Newmarket Permit Comments of the Great Bay Municipal Coalition ("Coalition's Comments") at 3 (Dec. 15, 2011) (A.R. C.2); RTC at 54. The Coalition further argued that the proposed numeric nutrient criteria in the State's *Great Bay Nutrient Report* are not scientifically defensible. Coalition's Comments at 11-20. In addition to its substantive objections to the 3 mg/l TN Newmarket permit limit, the Coalition raised a number of procedural objections, including a complaint that it had been excluded from participation in the peer review of the *Great Bay Nutrient Report. Id.* at 1-10; RTC at 59.

The Public Hearing. EPA held a public hearing on the draft Newmarket permit on November 30, 2011, at which fourteen individuals made oral comments on the record. *See* RTC at 143-71. Sean Grieg, the water and sewer superintendent for the Town, testified that meeting the 3 mg/l TN limit would cost the Town approximately $16 million in capital costs plus an increase of $265,000 per year for operation and maintenance, while meeting a limit of 8 mg/l TN (the Town's preferred limit) would cost $12.5 million in capital costs plus an increase of $230,000 per year for operation and maintenance. *Id.* at 143. Mr. Grieg agreed, however, that nitrogen discharges to the Great Bay need to be reduced:

> We have some areas of agreement. We agree that Great Bay is impaired and that the causes are many and complex. Nitrogen does need to be reduced to some degree. This is under review as part of the [Memorandum of Agreement] with the New Hampshire DES. We share a common goal to have a healthy Great Bay. It is very important to us.

Id. at 144.

Other commenters included John Hall, identifying himself as the water quality consultant to the Coalition.[7] *Id.* at 151-60. Mr. Hall alleged that there were flaws in the scientific analysis supporting the proposed nutrient criteria in the *Great Bay Nutrient Report. Id.* Fred Short, identifying himself as a research scientist at the Jackson Estuarine Lab on Great Bay, disagreed with Mr. Hall and supported the State's work and conclusions. *Id* at 165-66.

On November 5, 2012, NHDES granted state certification, pursuant to section 401 of CWA, 33 U.S.C. § 1341, that the proposed Newmarket permit contains conditions necessary to assure compliance with state water quality standards.[8] *See* Letter from Harry T. Stewart, Dir., Water Div., NHDES, to David M. Webster, Water Permits Branch Chief, U.S. EPA Region 1 (Nov. 5, 2012) (A.R. F.1).

The Region's Permit Decision and Response to Comments. On November 16, 2012, the Region issued its final permit determination along with a detailed, 177-page written response to public comments. The final permit imposes a permit effluent limitation of 3 mg/l TN on a

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[7] John Hall is also the attorney for Petitioner. *See* Petition at 98.

[8] Under section 401(a) of the CWA, EPA may not issue an NPDES permit to a proposed discharger until the state in which the discharger is located "certifies" that the permit contains conditions necessary to assure compliance with the state's water quality standards. CWA § 401(a)(1), 33 U.S.C. § 1341(a)(1); 40 C.F.R. §§ 124.53(a), .55(a)(2). Alternatively, the state may choose to waive such certification. *See* CWA § 401(a)(1), 33 U.S.C. § 1341(a)(1); 40 C.F.R. § 124.53(a).

seasonal average basis. *See* Authorization to Discharge Under the National Pollutant Discharge Elimination System, Town of Newmarket, NH, Permit No. NH010096, at 2-3 (Nov. 16, 2012) (A.R. A.1). The permit also includes a provision referencing the need to achieve nitrogen loading reductions from nonpoint sources in order to achieve water quality standards in the Lamprey River and specifying that collaboration with the State and other stakeholders, including certain specified steps, is required to accomplish that goal. *Id.* at 12. This provision includes a "reopener condition," which provides:

> Following issuance of the final permit, EPA will review the status of the activities described above * * * at 12 month intervals from the date of issuance. In the event the [nonpoint source] activities * * * are not carried out within the timeframe of this permit (5 years), EPA will reopen the permit and incorporate any more stringent total nitrogen limit required to assure compliance with applicable water quality standards.

Id. The Region explained the reason for this provision in its Response to Comments :

> EPA does not dispute that the majority of the total nitrogen load into the Great Bay Estuary is from nonpoint sources, and it is for this reason (i.e., to provide NHDES and the Town with the framework and opportunity to pursue nonpoint source reductions) that EPA has opted for a nitrogen effluent limit of 3.0 mg/l rather than a more stringent limit equal to the numeric instream threshold that EPA has determined will attain and maintain applicable water quality criteria and fully protect designated uses.

RTC at 28.

Petition for Review. On December 14, 2012, the Coalition filed its Petition challenging the permit's effluent limitation for total nitrogen

and seeking review by the Board and remand of the permit.[9] The Region filed a response to the Petition on February 8, 2013. *See* Respondent Region 1's Memorandum in Opposition to the Petition for Review (Feb. 8, 2013) ("Region's Response"). The Town did not file a petition for review or join the Coalition's petition. The Board also admitted two *amicus* briefs to the record on appeal, one filed by the NHDES and the other by CLF. *See* Amicus Brief of N.H. Department of Environmental Services ("NHDES Amicus Brief"); Brief of Conservation Law Foundation, Town of Newington, and New Hampshire Audubon in Response to Great Bay Municipal Coalition's Petition for Review ("CLF Amicus Brief"). With the permission of the Board, the Coalition filed a reply to the Region's Response on March 1, 2013. *See* Reply to EPA Region 1's Memorandum in Opposition to the Petition fro Review ("Coalition's March 1 Reply"). Also on March 1, 2013, the Coalition filed a motion seeking oral argument in this matter.[10] *See* Motion for Oral Argument.

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[9] In the alternative, the Coalition seeks a stay of the Board's proceedings until EPA Headquarters determines whether to conduct an updated peer review of the 2009 Numeric Criteria Document and a decision is made in the Coalition's FOIA appeal regarding documents it requested from EPA Headquarters and Region 1. Petition at 97. The Coalition has failed to persuade the Board that there is sufficient justification for further delaying the completion of this permit to await the outcome of either the FOIA appeal or the request for an updated peer review of the State's *Great Bay Nutrient Report*. The Coalition cites nothing more than its own speculation that these requests will lead to the discovery of new information that will change or have a material bearing on the issues presented in this appeal. The Board hereby denies the Coalition's request for a stay on these grounds. The Board's consideration of the Petition for review is limited to the administrative record certified by the Region at the conclusion of its current decisionmaking process on the Newmarket permit renewal.

The Coalition also sought a stay of the Board's proceedings in this matter until a decision was made on the Coalition's "mandatory duty" suit in the U.S. District Court for the District of Columbia. *Id.* The District Court dismissed the Coalition's suit on July 30, 2013. *See City of Dover v. U.S. EPA*, No. 12-CV-01994-JDB (D.D.C. July 30, 2013). The request for a stay is therefore moot.

[10] Upon consideration, the Board has determined that, given the substantial amount of briefing already filed in this matter, oral argument will not be of further material assistance to the Board. Accordingly, the Coalition's motion for oral argument is denied.

On March 8, 2013, also with the Board's permission, the Coalition filed a consolidated reply to the NHDES and CLF Amicus briefs. Petitioner's Response to Amicus Briefs of New Hampshire Department of Environmental Services and Conservation Law Foundation, Town of Newington, and New Hampshire Audubon. On March 15, 2013, the Region filed a sur-reply to the Coalition's March 1 Reply. *See* Respondent EPA's Sur-Reply.

On August 28, 2013, the Coalition filed a Motion to Dismiss its Petition, citing plans for a new peer review of NHDES' *Great Bay Nutrient Report.* The Board denied that motion on September 24, 2013. The Board's September 24, 2013 Order Denying Motion to Dismiss is attached as an appendix to today's decision.[11]

VI. STATUTORY AND REGULATORY BACKGROUND

In 1972, Congress enacted the CWA "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters." CWA § 101(a), 33 U.S.C. § 1251(a). To achieve this objective, the Act prohibits the discharge of pollutants into the waters of the United States unless such discharge complies with a CWA permit. CWA § 301(a), 33 U.S.C. § 1311(a). The CWA permitting program relevant to the

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[11] In its Order, the Board stated that it would consider several factors when considering whether to grant or deny a motion to dismiss, including: (1) whether the motion is opposed; (2) whether the motion is untimely in light of the stage of the proceedings; (3) whether the Board is likely to have to address the issues presented in any event; (4) whether a party may be seeking dismissal for improper purposes such as evading Board review or improperly attempting to manipulate the administrative and judicial review system; and (5) other factors as justice may require. *See* Order Denying Motion to Dismiss at 8. The Board's rationale for denying the Coalition's motion included the following: (1) the Region has opposed the motion; (2) the motion was filed eight months after the Coalition filed its petition and the Board had already invested considerable resources in reviewing the legal and factual arguments; (3) the Coalition made clear its intent to continue litigating the key issues raised to the Board; (4) a Board decision on the merits of the key issues could provide guidance and lessen uncertainty as to how EPA will proceed with regard to NPDES permits for other Great Bay communities; and (5) a Board decision could provide helpful analysis for the courts' review of the complex scientific issues in the likely event that the Coalition brings this issue to the courts for resolution. *Id.* at 9-11.

instant case is the NPDES program, set forth at section 402 of the CWA, 33 U.S.C. § 1342, and implementing regulations EPA promulgated at 40 C.F.R. part 122. NPDES permits typically contain provisions that address two central and interrelated CWA elements: (1) water quality standards, which generally are promulgated by states and approved by EPA and (2) effluent limitations, which are established by EPA on an industry-specific basis or developed in the context of individual permit decisions. *See* CWA §§ 301, 303, 304(b), 33 U.S.C. §§ 1311, 1313, 1314(b); 40 C.F.R. pts. 122, 125, 131. The CWA prohibits EPA from issuing a permit that does not "insure" compliance with the water quality standards of both the state where the discharge originates and all affected states. *See* CWA § 401(a)(1), (2), 33 U.S.C. § 1341(a)(1), (2).

State water quality standards are comprised of three distinct components: (1) one or more "*designated uses*" (e.g., public water supply, agriculture, primary- or secondary-contact recreation such as swimming or fishing) for each water body or water body segment in the state; (2) "*water quality criteria*" expressed in (a) numerical concentration levels for short ("acute") or longer ("chronic") exposure times and/or (b) narrative statements specifying the amounts of various pollutants that may be present in the water without impairing the designated uses; and (3) an "*antidegradation*" provision, which prohibits discharges that would degrade water quality below that necessary to maintain the "existing uses" (as opposed to "designated uses") of a water body. CWA § 303(c)(2)(A), 33 U.S.C. § 1313(c)(2)(A); 40 C.F.R. §§ 131.10-.12; *see in re Teck Cominco Alaska, Inc.*, 11 E.A.D. 457, 464 (EAB 2004). States are authorized to establish either numeric or narrative water quality criteria, or both. *See* 40 C.F.R. §§ 131.3(b), .11(b).

Permit effluent limitations control pollutant discharges into the waters of the United States by restricting the types and amounts of particular pollutants a permitted entity may lawfully discharge. CWA § 304(b), 33 U.S.C. § 1314(b); 40 C.F.R. § 122.44. Effluent limitations are either "technology-based" or "water quality-based," whichever is more stringent. CWA §§ 301(b)(1)(C), 302, 33 U.S.C. §§ 1311(b)(1)(C), 1312. Technology-based effluent limitations are generally developed on

an industry-by-industry basis and establish a minimum level of treatment that EPA has determined is technologically available and economically achievable for facilities within a specific industry.[12] CWA §§ 301(b), 304(b), 33 U.S.C. §§ 1311(b), 1314(b); 40 C.F.R. pt. 125, subpt. A; *see* 40 C.F.R. pts. 405-471 (effluent limitations guidelines for various point source categories). Water quality-based effluent limitations ("WQBELs"), on the other hand, are designed to ensure that state water quality standards are met regardless of the decisions made with respect to technology and economics in establishing technology-based limits.

WQBELs, which are at issue in this appeal, are derived on the basis of the second component of water quality standards; i.e., the numeric or narrative water quality criteria for various pollutants established for particular water bodies. Under the federal regulations implementing the NPDES program, permit issuers must determine whether a given point source discharge "causes, has the reasonable potential to cause, or contributes to" an exceedance of the narrative or numeric criteria for various pollutants set forth in state water quality standards. 40 C.F.R. § 122.44(d)(1)(ii). This regulatory requirement, sometimes described as the "reasonable potential analysis," provides in full:

> When determining whether a discharge causes, has the reasonable potential to cause, or contributes to an in-stream excursion above a narrative or numeric criteria within a [s]tate water quality standard, the permitting authority shall use procedures [that] account for existing controls on point and nonpoint sources of pollution, the variability of the pollutant or pollutant parameter in the effluent, the sensitivity of the species to toxicity testing (when evaluating whole effluent toxicity), and where

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[12] In some cases, no industry-specific effluent limitations guidelines exist. In those instances, permit issuers must use their "best professional judgment" to establish appropriate technology-based effluent limitations on a case-by-case basis. CWA § 402(a)(1), 33 U.S.C. § 1342(a)(1); 40 C.F.R. §§ 122.44, 125.3.

> appropriate, the dilution of the effluent in the receiving water.

Id. If a discharge is found to cause, have the reasonable potential to cause, or contribute to such an exceedance, the permit writer must calculate WQBELs for the relevant pollutants. *Id.* § 122.44(d)(1)(i), (iii)-(vi).

Where state water quality standards are based upon narrative (rather than numeric) criteria, the regulations prescribe three options that the permit writer may use to determine the appropriate effluent limitations for particular discharge sources. *See id.* § 122.44(d)(1)(vi)(A)-(C). As relevant here, the first option authorizes the permitting authority to:

> Establish effluent limits using a calculated numeric water quality criterion for the pollutant which the permitting authority demonstrates will attain and maintain applicable narrative water quality criteria and will fully protect the designated use. Such a criterion may be derived using a proposed State criterion, or an explicit State policy or regulation interpreting its narrative water quality criterion, supplemented with other relevant information * * *.

Id. § 122.44(d)(1)(vi)(A).

New Hampshire has not developed final statewide or site-specific numeric water quality standards for nitrogen. It has, however, developed narrative standards. In particular, New Hampshire's state water quality standards, as pertinent to this case, classify the Lamprey River at the point of discharge from the Newmarket Plant as a "Class B" water body and designate the uses thereof as, among other things, fishing, swimming, and other recreational purposes and as habitat for aquatic life. *See* N.H. Rev. Stat. Ann. § 485-A:8 ¶ II. Waters in this category "shall have no objectionable physical characteristics." *Id.* In addition, New Hampshire water quality regulations contain a narrative

nutrient criterion prohibiting instream concentrations of nitrogen in Class B waters "that would impair any existing or designated use, unless naturally occurring" and specifies that discharges of nitrogen that "encourage cultural eutrophication" must be treated to remove nitrogen to the extent necessary "to ensure attainment and maintenance of water quality standards." N.H. Code Admin. R. Ann. DES 1703.14(c), (d) (2013).[13]

The State of New Hampshire has included the Lamprey River on its list of impaired water bodies pursuant to CWA § 303(d), 33 U.S.C. § 1313(d). Section 303(d) of the CWA requires states to, among other things, identify those waters within their boundaries for which effluent limitations implemented through technology-based controls required by CWA sections 301(b)(1)(A) and (B) are not stringent enough to achieve any water quality standard applicable to such waters. 33 U.S.C. § 1313(d) (impaired waters list). Among the impairments to the Lamprey River identified by the State are "dissolved oxygen, as indicated by Chlorophyll *a*, nitrogen, and instream dissolved oxygen monitoring" and biological and aquatic community integrity. Fact Sheet at 27 (citing *Amendment to New Hampshire 2008 Section 303(d) List Related to Nitrogen and Eelgrass in the Great Bay Estuary* (Aug. 13, 2009) (A.R. J.19)).

NHDES conducted a site-specific water quality analysis for the Great Bay Estuary to support development of numeric criteria and published its findings and conclusions in the *Great Bay Nutrient Report.* The Report concluded, among other things, that an instream nitrogen threshold of 0.25 - 0.3 mg/l TN was necessary to fully protect aquatic life uses by preserving and restoring eelgrass habitat. *Great Bay Nutrient Report* at 68. Importantly, the State has not finalized and adopted this proposed criterion as a promulgated numeric state water quality criterion

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[13] The State defines "cultural eutrophication" as "the human-induced addition of wastes containing nutrients to surface waters [that] results in excessive plant growth and/or a decrease in dissolved oxygen." N.H. Code Admin. R. Ann. DES 1702.15 (2013).

or standard.[14] NHDES stated in the Report that it would use the proposed numeric criteria first "as interpretations of the water quality standards narrative criteria for DES' Consolidated Assessment and Listing Methodology for 305(b) assessments." *Id.* at 1.

In considering the Town's renewed NPDES permit application and reviewing the available data, the Region assessed the available scientific evidence and determined that the Lamprey River and the Great Bay exhibit multiple symptoms of cultural eutrophication, including eelgrass loss and increased algal growth. The Region concluded that nitrogen has reached a level where it is adversely affecting the chemical, physical, and biological integrity of the receiving waters, including dissolved oxygen impairments. *See* Fact Sheet at 27. The Region then determined that nitrogen discharges from the Newmarket Plant have a reasonable potential to cause or contribute to an exceedance of the State's water quality standards and concluded that a permit effluent limit of 3.0 mg/l TN, the currently accepted limit of technology, is necessary to meet the State's narrative water quality standards for the Lamprey River. *Id.* at 27-29.

VII. *ANALYSIS*

The key issue presented in this case is whether the record supports the Region's technical determination that a permit effluent limitation of 3.0 mg/l TN in the Newmarket Plant's NPDES permit is necessary to achieve the State of New Hampshire's water quality standards for the receiving waters, the Lamprey River and the

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[14] The term "criteria" is used throughout the record in different ways and contexts, potentially causing confusion. The term is sometimes used to refer to officially promulgated or final water quality criteria, proposed by a state and approved by EPA, which have the force of law and must be adhered to in EPA permitting actions. *See* CWA § 304, 33 U.S.C. § 1314. At other times the term "criteria" is used more loosely to refer to proposed criteria or "thresholds" such as those developed in the State's *Great Bay Nutrient Report.* In an attempt to avoid confusion, in this decision, the Board will use the term "standard[s]" to refer to officially promulgated state water quality standards or criteria, and the terms "proposed criteria" or "thresholds" to refer to the nitrogen thresholds developed in the State's *Great Bay Nutrient Report.*

downstream Great Bay of New Hampshire. The Coalition argues that the scientific record is inadequate to support the Region's selected effluent limit and that the limit is unnecessarily stringent. In order to prevail on this appeal, the Petitioner must demonstrate that the Region's permitting decision is based on a finding of fact or conclusion of law that is clearly erroneous or that constitutes an abuse of discretion. The Board addresses this issue in Part VII.A below and concludes that the Coalition has failed to make this demonstration in this case.

The Coalition also argues that the Region made a legal error by applying the State's proposed water quality criteria for nitrogen as a revised water quality standard, without undertaking rulemaking. The Board addresses this issue in Part VII.B below and concludes that the Region did not commit legal error in using 0.3 mg/l TN as its numeric water quality target for purposes of calculating effluent limits for the Newmarket permit.

The Coalition further argues that the Region erred in its consideration of the contribution of other, nonpoint sources when it selected the 3.0 mg/l TN effluent limit for the Newmarket permit. The Board addresses this issue in Part VII.C below and concludes that the Region did not clearly err or abuse its discretion in considering the contribution of nonpoint sources.

Finally, the Coalition alleges that the Region improperly excluded material from the administrative record and made other procedural errors in determining the appropriate permit conditions for the Newmarket Plant. The Board addresses these issues in Part VII.D below and concludes that Petitioner has failed to demonstrate any legal error or abuse of discretion in the Region's permitting process for the Newmarket permit.

A. *Petitioner Failed to Demonstrate That the Region Based Its Selection of a 3.0 mg/l Total Nitrogen Limit in the Newmarket NPDES Permit on a Clearly Erroneous Finding of Fact or Conclusion of Law or Abused Its Discretion*

The Coalition challenges the Region's selection of a 3.0 mg/l TN numeric effluent limitation in the Newmarket permit on a variety of technical and scientific grounds. Most significantly, the Coalition contends that the scientific record supporting the Region's selection of the 3.0 mg/l TN permit limit is insufficient to demonstrate that this limit is necessary to achieve the State's narrative water quality standards. The Coalition addresses most of its criticisms to the Region's reliance on the State's underlying *Great Bay Nutrient Report*, which the Coalition argues is scientifically flawed. *See* Petition at 56-97.

The State of New Hampshire defends the science underlying its *Great Bay Nutrient Report* and contests the Coalition's allegations in the Petition that NHDES has admitted that the *Great Bay Nutrient Report* was based on erroneous technical assumptions. NHDES Amicus Brief at 1-2. The State reaffirms that "NHDES stands by the thresholds and the scientific evidence that supports them and will continue to use them in developing the list of impaired waters for the Great Bay Estuary." *Id.* at 1-3.

Amicus Conservation Law Foundation, also representing the Town of Newington and New Hampshire Audubon, supports the Region's selected nitrogen permit limit for the Newmarket Plant and the science underlying the *Great Bay Nutrient Report.* CLF alleges that the Petition mischaracterizes NHDES' statements and certain scientific reports. CLF Amicus Brief at 6-18.

The Region also defends the scientific validity of the NHDES *Great Bay Nutrient Report* and points out that the Region also considered other available scientific information to determine the appropriate nitrogen thresholds for the Great Bay, using a "weight of evidence" approach to make its final decision. The Region characterizes the Coalition's objections to the Newmarket permit's nitrogen limit as

reflecting "a technical difference of opinion * * * over the precise numeric instream nitrogen threshold to protect designated uses * * * and * * * to implement New Hampshire's narrative nutrient criterion and comply with the Clean Water Act." Region's Response at 4. In the Region's view, "[i]n the face of unavoidable technical and scientific complexity and some measure of uncertainty, EPA in this case reasonably exercised its technical expertise and scientific judgment." *Id.*

The Coalition's challenge to the 3.0 mg/l TN effluent limit in the Newmarket permit requires examination of whether the Region clearly erred or abused its discretion in selecting this limit. The State of New Hampshire's laws provide only narrative water quality standards for nitrogen. In order to translate those narrative standards into numeric effluent limitations for the Newmarket permit, the Region had to perform a three-step analysis: (1) translate the State's narrative water quality standard into a numeric instream water quality target; (2) determine whether the discharge from the Newmarket Plant has a "reasonable potential" to cause or contribute to an exceedance of that instream water quality target; and (3) if so, calculate the numeric permit effluent limitation that is necessary to achieve the instream water quality target.

The Coalition's criticisms of the Region's determination focus mainly on the first step, in which the Region selected an instream water quality target of 0.3 mg/l TN as its numeric interpretation of the State's narrative water quality standard for nitrogen for purposes of setting the Newmarket permit limits. The Board addresses the Region's determinations in each of the three steps of its analysis leading to the selection of the 3.0 mg/l TN permit limit in Parts VII.A.1 to 3 below and concludes that the Coalition has failed to demonstrate that the Region clearly erred or abused its discretion in making these determinations.

1. *Petitioner Has Failed to Demonstrate that the Region Clearly Erred or Abused Its Discretion in Selecting an Instream Water Quality Target of 0.3 mg/l TN for the Newmarket Permit*

The Act requires that NPDES permits include effluent limitations as necessary to insure compliance with State water quality standards.

CWA §§ 301(b)(1)(C), 402(a)(1), (2); 33 U.S.C. §§ 1311(b)(1)(C), 1342(a)(1), (2). The implementing regulations specify that this requirement includes "narrative" State water quality standards. 40 C.F.R. § 122.44(d)(1)(*i*). The applicable State water quality standards in this case are the State of New Hampshire's narrative standards prohibiting instream concentrations of nitrogen that would impair the existing and designated uses of the Lamprey River for fishing, swimming and other recreation, and as aquatic habitat, or encourage cultural eutrophication. N.H. Rev. Stat. Ann. § 485-A.8 ¶ II., N.H. Code Admin. R. Ann. DES 1702.11, 1703.01, 1703.14 (2013).

Where a state has promulgated only narrative water quality standards, the first task of the permit writer is to determine an appropriate instream numeric water quality target. As the D.C. Circuit explained in *American Paper Institute v. U.S. EPA*, 996 F.2d 346 (D.C. Cir. 1993),

> As long as narrative criteria are permissible * * * and must be enforced through limitations in particular permits, a permit writer will inevitably have some discretion in applying the criteria to a particular case. The general language of narrative criteria can only take the permit writer so far in her task. Of course, that does not mean that the language of a narrative criterion does not cabin the permit writer's authority at all; rather, it is an acknowledgment that the writer will have to engage in some kind of interpretation to determine what chemical-specific *numeric* criteria–and thus what effluent limitations–are most consistent with the state's intent as evinced in its generic standard.

996 F.2d at 351 (emphasis added); *see also In re Upper Blackstone Water Pollution Abatement Dist.*, NPDES Appeal Nos. 08-11 through 08-18 & 09-06, slip op. at 70-71 (EAB May 28, 2010) (citing *Am. Paper*, 996 F.2d at 351), 14 E.A.D. ___; *In re San Jacinto River Auth.*, NPDES Appeal No. 09-09, slip op. at 11-12 (EAB July 6, 2010) (discussing permit issuer's discretion in determining permit conditions

necessary to implement state narrative water quality standards), 14 E.A.D. ___.

a. *The Region's Consideration of the State's Proposed Nutrient Criteria Was in Accordance with EPA Regulations*

EPA regulations specify that, when interpreting narrative state water quality standards, permitting authorities may:

> Establish effluent limits using a calculated numeric water quality criterion for the pollutant which the permitting authority demonstrates will attain and maintain applicable narrative water quality criteria and will fully protect the designated use. *Such a criteria may be derived using a proposed State criterion, or an explicit State policy or regulation interpreting its narrative water quality criterion, supplemented with other relevant information* * * *.

40 C.F.R. § 122.44(d)(1)(vi)(A) (emphasis added).

The plain language of this regulation ("[numeric] criteria may be derived using a proposed State criterion") authorizes the Region to consider the numeric water quality criteria for nitrogen proposed by the State in the *Great Bay Nutrient Report* in calculating a numeric water quality target for purposes of the Newmarket permit. NHDES expressly stated in its Report that it developed the proposed numeric criteria because of the difficulty in applying narrative standards for impairment and permitting decisions and that it would first use the proposed criteria "as interpretations of the water quality standards narrative criteria" for its CWA section 305(b) assessments.[15] *Great Bay Nutrient Report* at 1.

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[15] CWA section 305(b), 33 U.S.C. § 1315(b), requires that states prepare biennial reports describing the condition of water quality in all navigable waters in the state and an analysis of the extent to which navigable waters provide for the protection and propagation of a balanced population of wildlife and allow for recreational activities.

The Coalition objects to the Region's consideration of the State's proposed nutrient criteria because the State has not formally promulgated or sought EPA approval for establishing those criteria as State water quality standards. *See* Petition at 2, 46-49. The language of the regulation, however, does not limit the permitting authority to considering only approved criteria promulgated as standards, but more broadly permits consideration of a state's "proposed" criteria or "interpretation," as well as "other relevant information."

The Board finds no basis under the express language of this regulation for the Coalition's objection to the Region's consideration of the State's proposed nutrient criteria from the *Great Bay Nutrient Report* in setting the water quality target for nitrogen for purposes of the Newmarket permit. The Board considers the Coalition's further objection that the Region should should have engaged in rulemaking before considering the State's proposed nutrient criteria in Part VII.B below.

b. *There is Substantial Support in the Record for the Scientific Validity of the State's* Great Bay Nutrient Report

The Coalition contends that the Region should not have relied on the proposed nutrient criteria in the *Great Bay Nutrient Report* because the State's analysis was scientifically flawed. The Board first reviews the record in this case to determine whether it provides adequate scientific support for the methodology and conclusions of the State's Report. Most significantly, the Board examines the record for support for NHDES' conclusion that a water quality threshold of no more than 0.25-0.30 mg/l TN is necessary to protect eelgrass habitat in the Lamprey River and the Great Bay Estuary. *See Great Bay Nutrient Report* at 1. The Region gave significant consideration to that finding, along with other information, in selecting an instream water quality target of 0.3 mg/l TN for the Newmarket Permit, as discussed further below. *See* Fact

Sheet at 26-27.[16] As the Region and the State explained, protection of the eelgrass habitat is critical to the "aquatic life support" designated use of the Lamprey River and the Great Bay Estuary. The health of the aquatic habitat is essential to the health of the fish and other aquatic species, which in turn support the designated uses of the receiving waters for human activities such as fishing and swimming. *See* Fact Sheet at 14; *Great Bay Nutrient Report* at 1.

Peer Reviews. The State's *Great Bay Nutrient Report* was subjected to independent peer review through EPA's Nutrient Scientific Technical Exchange Partnership and Support program. *See Great Bay Nutrient Report* app. C (attachs. A & B); RTC at 10-11. The peer reviews were performed by two independent experts on the effect of nutrients on estuaries, Dr. Robert Howarth of Cornell University (A.R. M.20) and Dr. Walter R. Boynton of the University of Maryland (A.R. M.1).[17] *See Great Bay Nutrient Report* app. C. Both peer reviewers supported the validity of the State's methodology and conclusions. Dr. Howarth's peer review report states:

> The Great Bay nutrient criteria report was a joy to read and provides an excellent basis for protecting this estuarine ecosystem from nutrient pollution. While many states have narrative nutrient criteria, very few have addressed the difficult challenge of establishing numeric criteria. I applaud the State of New Hampshire for providing some excellent leadership in this area.

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[16] The Region also considered NHDES' recommended criterion of 0.45 mg/l TN for maintaining dissolved oxygen levels. *See* Fact Sheet at 27. The Board focuses here on NHDES' more stringent proposed criterion of 0.25-0.30 mg/l TN for protection of eelgrass as the stricter limit is controlling for purposes of determining the final effluent limitation.

[17] The peer reviews conducted by Drs. Howarth and Boynton are included as Attachments to Appendix C of the *Great Bay Nutrient Report*; they are also identified separately in the record as A.R. M.20 (Howarth) and A.R. M.1 (Boynton).

> *The reliance on a weight-of-evidence approach, using several approaches and sources of information, is a strong point of the report.* Of the approaches analyzed, some worked better than others. For example, the use of the health of the benthic invertebrate community proved problematic, while *relating eelgrass habitat suitability to nitrogen through a relationship to water clarity and penetration worked very well.* Similarly, the use of continuous oxygen data proved much more useful for setting nitrogen criteria than did the use of spot sampling for oxygen. The Great Bay report did a beautiful job of explaining the rationale behind each of the approaches tested, as well as in explaining the reasons for using some over others in setting numeric nitrogen criteria. *I agree with the report's use of low dissolved oxygen and loss of eelgrass habitat as the two most sensitive and appropriate approaches for setting numeric criteria.*
>
> Assumptions in the Great Bay report are well explained and generally well supported by appropriate literature and reasoning. The Great Bay estuary is surprisingly rich in data on nutrient concentrations, dissolved oxygen concentrations, chlorophyll levels, and distribution of seagrasses and macro-algae, and these data were well used in this report.

Robert W. Howarth, *Review of "Numeric Nutrient Criteria for the Great Bay Estuary*" at 1-2 (June 2, 2010) (emphases added).

Dr. Boynton provided a similarly supportive assessment of the State's analysis in the *Great Bay Nutrient Report*:

> The author makes clear at the start that the development of the TN criteria uses a weight of evidence approach. Given the "state of the art" in estuarine science I think this is a very reasonable approach. In addition, the author used multiple analyses in many portions of this work and that provides enhanced confidence in the results. *Simply said, this is a*

> *good approach to use in systems as complicated and variable as estuaries.*
>
> The analysis is very empirical. That is, it is based on local measurements * * * quite a pile of local measurements made at many sites during a 9 year period. In addition, there is good reference to the appropriate scientific literature and to adjacent estuarine areas. *I think this was a well-grounded analysis.*
>
> * * * *
>
> I was very pleased to see that a conceptual model was used to guide the development of these analyses. What I mean here is that there was a mechanistic basis for the variables used in these analyses. The author used many water quality measurements to develop regression models between TN and chlorophyll-a, DO [dissolved oxygen] and water clarity. In addition, continuous monitors were used to estimate DO impairments and finally, relationships between water quality and water clarity were quantified based on light attenuation measurements via in-situ sensors and hyperspectral imagery. *All solid approaches.*

Walter R. Boynton, *Review of "Numeric Nutrient Criteria for the Great Bay Estuary"* at 1-2 (May 29, 2010) at 1-2 (emphases added).

Other Expert Evaluations. In addition to the formal peer review reports, the record contains written evaluations of the State's *Great Bay Nutrient Report* by other experts, almost all of whom supported the methodology and conclusions of the Report. For example, EPA Region 1 biologist Matthew Liebman provided the following assessment of the State's study:

> I like the overall weight of evidence approach, and that they are applying a conceptual model that tests whether there is a dose response relationship in the data. And, most

> importantly, they find secondary, or independent, impacts from increasing concentrations of nutrients. These secondary impacts are independently related to use impairments. Thus, they are following a sound scientific approach to determine nutrient and chlorophyll thresholds above which impairments are likely to occur.

E-mail from Matthew Liebman, Region 1, to Alfred Basile, Phil Colarusso, David Pincumbe, and Jean Brochi, U.S. EPA Region 1 (Nov. 21, 2008, 01:11 EST) (A.R. H.72).[18]

Similarly, Dr. Ivan Valiela and Dr. Erin Kinney of Woods Hole Environmental Associates, reviewing the *Great Bay Nutrient Report* at the request of Conservation Law Foundation, also provided a supportive evaluation:

> We found the NHDES Numeric Nutrient Criteria report to be a well organized and thorough summary of the available nutrient and water quality data for Great Bay. While we would have preferred to see a watershed nutrient load-based approach, as this would provide a better basis for interpretations and comparisons of a variety of land-derived * * * nutrient sources and drivers of eutrophication, it is our opinion that the use of available data on concentrations was appropriate and was strengthened by using multiple lines of evidence to arrive at the numeric nutrient criteria.

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[18] The Region cites this language in its Response to Comments, *see* RTC at 10-11 n.11, but incorrectly attributes the language to a 2010 technical memorandum also authored by Matthew Liebman. *See* Matthew Liebman, *Review of: Numeric Nutrient Criteria for the Great Bay Estuary, in Light of Comments made by John C. Hall and Thomas Gallagher* (Sept.1, 2010) (A.R. M.21) (supporting analysis in *Great Bay Nutrient Report* and suggesting improvements).

Letter from Dr. Ivan Valiela & Dr. Erin Kinney, Woods Hole Envt'l Assocs., to Mr. Tom Irwin, CLF (July 28, 2011) (A.R. H.13).[19]

Additionally, during the public hearing on the Newmarket permit, Dr. Fred Short, identifying himself as "a research scientist at the Jackson Estuarine Lab on Great Bay," stated that "NHDES has done a fabulous job of looking at all the data that we have on the bay" and that "what EPA is putting forward comes from DES and it's what the data says, what the results say." RTC at 165-66.

In contrast to the favorable evaluations described above, members of the Coalition and its consultants provided public comments that were critical of the *Great Bay Nutrient Report* and NHDES' proposed nutrient criteria. For example, John Hall, identifying himself as "the water quality consultant" to the Coalition, objected that there was not an adequate scientific basis for the Report's conclusion. *See id.* at 151-59. Mr. Hall's comments raised many of the same scientific criticisms that are identified in the Petition. *Id.* The record also includes a technical memorandum to John Hall from Thomas W. Gallagher and Christhian Mancilla of Hydroqual Environmental Engineers and Scientists, titled: "Review of New Hampshire DES Total Nitrogen Criteria Development for the Great Bay Estuary" (January 10, 2011) ("Hydroqual Memo"), which identifies alleged data inconsistencies in NHDES' conclusions and proposed nutrient criteria. *See* A.R. H.4. The Hydroqual Memo concluded that "[a]s a consequence of this analysis, total nitrogen load reductions to Great Bay will not substantially improve the water column transparency." Hydroqual Memo at 5.

The Region's Consideration of the *Great Bay Nutrient Report* in the Newmarket permit proceedings. The Region provided a detailed explanation and justification for its consideration of the State's *Great*

[19] The review by Drs. Valiela and Kinney references the permit for the Town of Exeter, New Hampshire's wastewater treatment plant [a previously issued EPA NPDES permit], and was submitted by CLF with its comments on both the Exeter and Newmarket draft permits.

Bay Nutrient Report in its Response to Comments on the Newmarket permit, explaining:

> EPA discerned ample reason to treat the NHDES Great Bay Nutrient Report as relevant and useful technical information for NPDES permitting purposes and for identifying protective instream thresholds for nitrogen, which must be calculated in order to implement New Hampshire's narrative nutrient criterion. In EPA's and other experts' estimation, NHDES performed a disciplined and reasonable investigation of correlations of water quality indicators that would be expected under its conceptual eutrophication model, and ultimately arrived at numerical thresholds that would achieve the narrative nutrient criterion, and would protect primary contact recreation and aquatic life uses * * *. The proposed water quality thresholds were developed with input from a technical advisory committee. NHDES accepted and responded to comments on the draft thresholds. The thresholds were, moreover, peer reviewed through EPA's Nutrient Scientific Technical Exchange Partnership and Support (N-Steps) program, receiving positive reviews from two nationally recognized nutrient experts. (Boynton, 2010; Howarth, 2010). The peer reviewers specifically cited to the comprehensiveness and clarity of the weight-of-evidence approach used to develop the proposed numeric thresholds as well as the vast quantity of site-specific data available and utilized in the analyses * * * Additional comments by experts in the field were submitted on the draft permit and were generally supportive of the NHDES thesholds. (Valiela and Kinney, 2011). Finally, EPA independently reviewed the data and analyses as sources for interpretation of the State's narrative water quality standards, consistent with our obligation under 40 C.F.R. § 122.44(d)(1)(vi).

RTC at 10-11 (footnotes omitted).

In addition to the State's *Great Bay Nutrient Report*, the Region also considered EPA's Nutrient Criteria Technical Guidance Manual for Estuarine and Coastal Marine Waters in determining an appropriate water quality target for nitrogen. *See* Office of Water, U.S. EPA, EPA-822-B-01-003, *Nutrient Criteria Technical Guidance Manual, Estuarine and Coastal Marine Waters* (Oct. 2001) (A.R. M.12); Fact Sheet at 26. The Region also considered a Massachusetts Department of Environmental Protection determination that TN levels for the protection of eelgrass habitats should be less than 0.39 mg/l and ideally less than 0.30 mg/l. *See* Brian L. Howes, Roland Samimy & Brian Dudley, *Massachusetts Estuaries Project Site-Specific Nitrogen Thresholds for Southeastern Massachusetts Embayments: Critical Indicators, Interim Report* 19-24 (2003) (A.R. L.21); Fact Sheet at 26; RTC at 11 n.12; Region's Response at 50-52.

Overall, the Board finds that the record provides substantial support for the scientific validity of the NHDES *Great Bay Nutrient Report* and the Region's consideration of that report and other available information in setting a water quality target of 0.3 mg/l TN for the Newmarket permit. While the record contains comments from the Coalition and its consultants that are critical of the State's conclusions, the vast majority of the expert evaluations in the record are supportive of the State's methodology and conclusions. The Board considers next the Petition's specific allegations of scientific errors in the *Great Bay Nutrient Report* and the Region's consideration of that report in the Newmarket permit proceedings.

c. *The Coalition Has Failed to Demonstrate That the Region Clearly Erred or Abused Its Discretion by Relying on Allegedly Scientifically Erroneous Conclusions in the* Great Bay Nutrient Report

The Petition alleges that there were numerous scientific errors in the methodology and conclusions of the State's *Great Bay Nutrient Report* and therefore in the Region's consideration of that report to establish an instream water quality target of 0.3 mg/l TN. Specifically, the Coalition asserts that: (a) nitrogen control will not achieve

transparency targets due to naturally occurring "color" and turbidity, Petition at 57-62; (b) Great Bay is not a "transparency limited system," *id.* at 62-67; (c) Great Bay is not confirmed to be a macroalgae impaired system, *id.* at 67-72; (d) EPA improperly ignored the significant impact the 2006 extreme weather had on the data sets, *id.* at 72-74; (e) EPA applied an incorrect return frequency to determine the proposed limits, *id.* at 75-77; (f) nitrate levels in Great Bay are not at toxic levels leading to eelgrass decline, *id.* at 77-79; and (g) assuming eelgrass are impaired by nitrogen, EPA is regulating the wrong pollutant form; it should be regulating nitrate not TN, *id.* at 79-82. The Petition further alleges that the Region ignored relevant findings of EPA's Science Advisory Board, *id.* at 89-91, and that EPA's action "fails the Daubert Test," *id.* at 91-95.

The Petition's specific allegations of scientific error are largely based on alleged inconsistencies of certain data with the State's and the Region's conclusions. For example, the Petition asserts that "[p]erhaps the single most important scientific error associated with the development of the numeric criteria was that both EPA and DES ignored repeated expert determinations that Great Bay proper is not a transparency limited system because eelgrass are able to get sufficient light over the tidal cycle." *Id.* at 63. To support this contention, the Coalition points out that eelgrass has rebounded in some areas of the Bay and that areas with poor water transparency are sometimes able to support eelgrass. *See id.* at 62-67.

In its Response to Comments, the Region explained that such alleged inconsistencies in the data must be viewed in light of the long-term trends:

> Many of the Coalition's criticisms of the NHDES Great Bay Nutrient Report are based on short-term data or on subsets of the dataset that do not exhibit the same relationships shown in the long-term data. Because the NHDES approach is based on the central tendencies of the long-term data set, it is to be expected, based on normal variability that there would be subsets of the data that do not show the same relationships seen in the long term data. Therefore, such

> comparisons are not persuasive in showing the long-term relationships are invalid.
>
> * * * *
>
> In EPA's judgment, NHDES employed data in a transparent and rigorous manner over the course of developing their water quality thresholds. NHDES used data collected during 2000 to 2008 throughout the estuary and explored correlations, primarily using the median values for water quality parameters. NHDES used this approach to mute variability in datasets and improve correlation. NHDES selected this approach with the full understanding that spatial and temporal variability is lost, but concluded that on balance the advantages outweigh the disadvantages. (For example, NHDES noted that month-to-month variability is typically confounded by the complexity of phytoplankton dynamics.) (NHDES, 2009a). The same is true regarding eelgrass dynamics, specifically that nitrogen concentration changes and eelgrass responses do not occur on the same time scale given the complexity of eelgrass dynamics, so evaluations of short-term data comparing the two is not meaningful. Using data collected over a long time scale, with numerous data points, compensates for the lag time between cause and effect, presenting a clearer picture of general long-term relationships and conditions.

RTC at 15-16 (footnote omitted). The Region also disagreed with the Coalition's contention that decreasing transparency in the waters of the Great Bay is not causing or contributing to eelgrass loss:

> EPA disagrees with the commenter's assertion relative to the role of transparency on eelgrass loss. Evidence of decreasing trends in transparency is provided by documented increases in factors that reduce transparency. The PREP [Piscataqua Region Estuaries Partnership] *2009 State of the Estuaries Report* showed long-term increasing trends in [total

> suspended solids] and chlorophyll-a (major components that result in decreased transparency) from sampling at Adams Point during the period of eelgrass decline (PREP, 2009a at 13). * * * The more recent PREP data indicate that chlorophyll-a concentrations may be leveling off (no statistically significant trend when data through 2011 are considered) but that there have been significant increases in macroalgae and epiphytes (PREP, 2012 at NUT 3b-2). (See also Short, 2011). Macroalgae effects [sic] eelgrass not only through direct smothering and shading but also by contributing to increased turbidity from particulate organic matter in the water column. NHDES has shown that light attenuation in the Great Bay estuary is more strongly correlated with plant/organic matter in the water than any other factor (NHDES, 2012a).

Id. at 58; *see also id.* at 43-44 (explaining in great detail the relationship between the transparency data and other factors, and the reasoning behind the Region's conclusion that nitrogen reductions are needed to prevent eelgrass loss).

The Region also addressed the Coalition's arguments that nitrate levels in the Great Bay are not at toxic levels and that naturally occurring color and turbidity in the tidal rivers (including the Lamprey River) will prevent reestablishment of healthy eelgrass habitat even if nitrogen is reduced. The Region explained:

> As to nitrogen toxicity, EPA has explained that elevated concentrations of nitrate and ammonia have been shown to have direct impacts on eelgrass by disrupting its normal physiology. Fact Sheet at 15. This disruption of normal physiology can lead to reduced disease resistance and mortality.
>
> * * * *

> [As to color] Estuarine systems have natural background levels of color and turbidity that are fully compatible with a healthy ecosystem that supports eelgrass habitat. The commenter has presented no persuasive evidence to indicate that color has increased over time.

Id. at 44-45.

In addition, the Region addressed the Coalition's argument that TN is the wrong form of nitrogen to control, and instead permit limits for nitrogen should focus exclusively on "dissolved inorganic nitrogen":

> EPA also disagrees that limits should be in terms of dissolved inorganic nitrogen rather than total nitrogen. The NHDES Great Bay Nutrient Report indicates that "Nitrogen cycling results in constant shifts between the different forms of nitrogen. Setting criteria for dissolved inorganic nitrogen is problematic because the concentrations of this species [sic] is drawn down or fully depleted during periods of high productivity. Therefore, DES feels that total nitrogen is a more stable indicator to use for the water quality criteria. In guidance for establishing nutrient criteria for estuaries, EPA identified total nitrogen as the causal variable of specific concern." (NHDES, 2009 at 79 (citing EPA, 2001)). In addition, recent research has documented that forms of nitrogen considered unavailable for plant growth are far more bioreactive than previously thought, further supporting the need to control total nitrogen rather than just DIN [dissolved inorganic nitrogen] * * * Consistent with recommendations in [the] EPA Nutrient Criteria Manual, because of the recycling of nutrients in the environment, it is best to limit total concentrations (i.e. total nitrogen) as opposed to fractions of the total.

Id. at 58-59.

Finally, the Region addressed the Coalition's comments that the Region improperly considered data from "extreme wet weather periods" by explaining that:

> [I]gnoring [wet weather] years is not appropriate because it underestimates the nitrogen contribution from the tributaries. Further, water quality standards are not just intended to be met under average rainfall years. EPA also notes that rainfall data presented by the Coalition show an increasing trend in the amount of rainfall.

Id. at 100. The Region agreed that much of the increase in TN levels between 2002 to 2008 was due to increased rainfall but explained:

> [T]his is part of natural variability in weather patterns, which do have a significant effect on nitrogen loadings and responses, and that is why the NHDES analyses supporting the proposed nitrogen thresholds are based on evaluations of long-term data sets. Also as indicated in the Fact Sheet (page 12) there has been a long term increase in Great Bay concentrations of dissolved inorganic nitrogen, a major component of total nitrogen, of 44 percent in the past 28 years.

Id. at 105.

The Board concludes that the Region responded to the scientific arguments presented in the Petition and that the Region's responses to the Coalition's arguments on all these issues are rational, soundly based in the record, and persuasive. The Coalition has failed to persuade the Board that there is any clear error or abuse of discretion in the Region's responses. At most, the Coalition has demonstrated a difference of scientific opinion between the Coalition and the Region. This is insufficient to demonstrate clear error or an abuse of discretion as a matter of law. *See In re Upper Blackstone Water Pollution Abatement Dist.*, NPDES Appeal Nos. 08-11 through 08-18 & 09-06, slip op. at 44 (EAB May 28, 2010) (explaining that on technical issues, the Board will

defer to the permit issuer where the Board "is satisfied that the permit issuer gave due consideration to comments received and adopted an approach" that is "rational and supportable."), 14 E.A.D. ___; *In re Dominion Energy Brayton Point, LLC*, 12 E.A.D. 490, 510 (EAB 2006) ("'[W]hen issues raised on appeal challenge a Region's technical judgments, clear error or a reviewable exercise of discretion is not established simply because petitioners document a difference of opinion or an alternative theory regarding a technical matter.'") (quoting *In re NE Hub Partners, L.P.*, 7 E.A.D. 561, 567 (EAB 1998), *rev. denied sub nom. Penn Fuel Gas, Inc. v. EPA*, 185 F.3d 862 (3d Cir. 1999)); *see also In re Envotech, L.P.*, 6 E.A.D. 260, 284 (EAB 1996) (stating that the Board generally defers to a Region's determination of issues that depend heavily upon the Region's technical expertise and experience). Moreover, the weight of the scientific evidence in the record clearly supports the Region's determination that the 0.3 mg/l instream target for the Newmarket permit is necessary to achieve the State's narrative water quality standards for nitrogen.

d. *The Coalition Failed to Demonstrate That the Region Relied on Analytical Methodologies That the EPA Science Advisory Board Has Determined to Be Unreliable*

The Petition asserts that the Region "ignored relevant Science Advisory Board ["SAB"] findings that confounded correlations are not a scientifically defensible basis for criteria assessment." Petition at 89. The Petition does not identify the "relevant [SAB] findings," but the Board understands from the record that this most likely refers to the recommendations provided by the EPA SAB on a draft EPA guidance concerning empirical methods for deriving nutrient criteria. *See* Letter from Dr. Deborah L. Swackhamer, Chair, SAB, to Lisa P. Jackson, EPA Adm'r, (Apr. 27, 2010) ("SAB Recommendations") (A.R. M.23). EPA issued final guidance incorporating many of the SAB's recommendations in November 2010 under the title *Using Stressor-Response Relationships to Derive Numeric Nutrient Criteria. See* RTC at 76; Office of Science and Tech., U.S. EPA, *Using Stressor-Response Relationships to Derive*

Numeric Nutrient Criteria (Nov. 2010) ("*Stressor-Response Guidance*") (A.R. M.4).

By way of background, the *Stressor Response Guidance* explains that EPA recommends three types of empirical analyses for developing numeric nutrient criteria: (1) reference condition approaches, (2) mechanistic modeling, and (3) stressor-response analysis. The Guidance addresses the third type of analysis, which uses statistical correlations to analyze the effects of nutrient "stressors" (nitrogen and phosphorus) on environmental "response" variables (e.g. algal growth and water clarity) for particular water bodies. This type of analysis is used when data are available to accurately estimate a relationship between nutrient concentrations and a response measure that is directly or indirectly related to a designated use of the waterbody. RTC at 76. The site-specific data analysis in the State's *Great Bay Nutrient Report* was a stressor-response type of analysis.

The SAB's recommendations to EPA on the draft *Stressor-Response Guidance* regarding the use of stressor-response methodology stated:

> [W]e recognize the stressor-response approach as a legitimate, scientifically based method for developing numeric nutrient criteria if it is appropriately applied (i.e., not used in isolation but as part of a tiered weight-of-evidence approach using individual lines of evidence).

SAB Recommendations at xii. In the cover letter transmitting its recommendations, the SAB further advised:

> The empirical stressor-response framework described in the Guidance is one possible approach for deriving numeric nutrient criteria, but the uncertainty associated with estimated stressor-response relationships would be problematic if this approach were [sic] used as a "stand alone" method because statistical associations do not prove cause and effect. We therefore recommend that the stressor-

> response approach be used with other available methodologies in the context of a tiered approach where uncertainties in different approaches are recognized, and weight-of-evidence is used to establish the likelihood of causal relationships between nutrients and their effects for criteria derivation.

Id. at ii. Consistent with the SAB's recommendations, the final *Stressor-Response Guidance* suggests that stressor-response analysis should include an evaluation of the "accuracy of the estimated relationships * * * with regard to the possible influence of known confounding variables." *Stressor-Response Guidance* at ix.

The SAB recommendations on the draft *Stressor-Response Guidance* are neither binding on the Agency nor directly applicable to the Region's determination of effluent limits for the Newmarket permit. The recommendations were offered for the far more general purpose of developing methodologies to establish nutrient criteria, which have broad applicability and implications. They do not specifically address the case-specific determinations that permitting authorities must make to establish permit effluent limits. Nevertheless, the Board considers the Coalition's citations to the SAB recommendations here for the limited purpose of assessing the Coalition's arguments that the Region's analysis was scientifically flawed.

The record demonstrates that both the State, in the *Great Bay Nutrient Report*, and the Region, in the Newmarket permit proceeding, recognized the uncertainties in determining a conclusive numeric threshold for protecting eelgrass in the Great Bay estuary and used weight-of-the-evidence approaches to reach their conclusions. *See, e.g.*, *Great Bay Nutrient Report* at 66; Fact Sheet at 16-28; RTC at 10-11, 57; Region's Response at 20. Further, although the SAB recommendations were not binding, the Region explained in its Response to Comments on the Newmarket permit why it viewed the State's weight-of-the-evidence approach as consistent with the SAB recommendations:

> The SAB's review of this approach [stressor-response analysis] was very clear in its support by stating "[t]he stressor-response approach is a legitimate, scientifically based method for developing numeric nutrient criteria if the approach is appropriately applied (i.e. not used in isolation but as part of a weight-of-evidence approach)." Thus it is recommended to combine the stressor-response approach with other information that documents cause and effect.
>
> The proposed numeric thresholds developed by the NHDES did not use the stressor-response approach in isolation. It used a weight of evidence approach with multiple lines of evidence. The estuarine eutrophication model used by NOAA (Bricker, 2007) relating external nutrients to primary (phytoplankton blooms and proliferation of macroalgae) and secondary (low dissolved oxygen and loss of submerged aquatic vegetation) symptoms was used as a guide for the analysis. Additionally, the NHDES assessed cause and effect data from the literature, criteria developed in other states, and reference concentration approach * * * in the development of its proposed numeric thresholds.

RTC at 78.

The Coalition concedes in the Petition that a weight-of-the-evidence approach may be appropriate, but contends that the particular weight-of-the-evidence approach used by the State and the Region was not scientifically defensible. Petition at 90. This contention is contradicted by the comments of the two peer reviewers of the State's *Great Bay Nutrient Report*, who specifically commended the State's use of a weight-of-the-evidence approach, as described above. *See Great Bay Nutrient Report* app. C.

The Coalition contends that the Region's and the State's purported weight-of-the-evidence analyses were flawed because they failed to analyze uncertainties and "confounding factors" as the SAB recommended. Petition at 91. Instead, the Coalition claims, "EPA

simply excluded the site-specific information showing that the relationship did not in fact exist." *Id.* at 90. The Petition does not identify what "confounding factors" the Region and State failed to analyze or what analysis was required, other than a footnote generally suggesting that more analysis should be done of the relationship between total nitrogen and transparency. *Id.* at 91 n.79.[20] These vague and unsupported allegations are insufficient to sustain the Petitioner's burden of demonstrating clear error or abuse of discretion. Moreover, the allegations are contradicted by the clear weight of the evidence in the record. The *Great Bay Nutrient Report* and the Region's Response to Comments contain considerable analysis of the relationship between nitrogen and transparency in the Great Bay estuary. *See, e.g., Dominion Energy*, 12 E.A.D. at 510 (explaining that where the Region's rationale is adequately supported and explained, the EAB typically defers to the permit issuer on technical determinations; differences in scientific opinion do not demonstrate clear error or abuse of discretion).

e. *The Coalition Failed to Preserve Its "Daubert Test" Argument for Review*

As explained in Part III.B., Petitioners before the Board are required to demonstrate that any issues and arguments raised on appeal have been preserved for Board review during the public comment period, unless the issues or argument were not reasonably ascertainable before the close of public comment. 40 C.F.R. §§ 124.13, 19. The Coalition failed to demonstrate that it raised the argument that the *Great Bay Nutrient Report* should be excluded from the record under the "Daubert Test" (referring to *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 509 U.S. 579 (1993)) during the comment period. Petition at 91-95. This issue therefore was not preserved for review. Even if this issue had been preserved for review, the *Daubert* test, which delineates standards for evaluating expert scientific testimony in federal evidentiary trials, does

[20] The Petition's allegation that information was excluded contains unexplained citations to "RTC at 2 n.1" and "Exhibit 15 at 9-10." Petition at 90. The Coalition's more specific contentions that the Region excluded relevant information from the record are addressed in Part VII.D below.

not apply to or provide controlling principles for this administrative proceeding. *See In re Solutia Inc.*, 10 E.A.D. 193, 211 n.22 (EAB 2001). As explained in section VII.A.1.a, the governing regulations specifically authorize NPDES permit issuers to consider all available information in determining what effluent limitations are necessary to meet state water quality standards.

f. *Petitioner Failed to Demonstrate That the State Admitted That the Conclusions of the Great Bay Nutrient Report Were in Error*

The Petition alleges that Phillip Trowbridge, the author of the *Great Bay Nutrient Report*, and NHDES admitted that the Report was in error. Petition at 84-88. This allegation is based on deposition testimony from Mr. Trowbridge in a state judicial action[21] and a letter from NHDES Commissioner Burack that postdated the public comment period on the Newmarket permit. *See* Letter from Thomas S. Burack, Comm'r, NHDES, to Thomas J. Jean, Mayor, City of Rochester, et al. (Oct. 19, 2012) ("Burack Letter") (A.R. H.43). The Coalition argues that this information should be considered by the Board because it was not available until after the public comment period closed. Even if it were appropriate to consider this information, a point the Board does not decide, the Board finds that the record does not support the Coalition's argument that Mr. Trowbridge and NHDES admitted that their scientific conclusions were in error.

The Petition does not provide specific testimony by Mr. Trowbridge supporting its assertion. Rather, the Coalition relies on its own characterizations of deposition testimony without explaining the context or specific statements made in the deposition. Such characterizations, without sufficient support in the record, provide no

[21] The deposition was taken in connection with an action brought by the Coalition against NHDES in New Hampshire Superior Court challenging the *Great Bay Nutrient Report*. The case was dismissed on November 7, 2012, and is currently on appeal. *See City of Dover v. NHDES*, No. 2012-CV-00212 (N.H. Super. Ct. Nov. 7, 2012), *appeal docketed*, No. 2013-0119 (N.H. July 16, 2013).

basis for Board review. Further, the Burack letter specifically reaffirmed NHDES' conclusions in the *Great Bay Nutrient Report,* stating:

> In summary, DES maintains that the Great Bay Estuary exhibits all the classic signs of eutrophication and that excessive nitrogen is causing or contributing to the water quality problems in the estuary. Many of the claims in your letter over-simplify the situation, exclude key information, or extrapolate site-specific results to the whole estuary.

Burack Letter at 1. The Board agrees with the State that the Coalition has mischaracterized the Burack letter, as well as the Trowbridge deposition. *See* NHDES Amicus Brief at 3. The Board concludes that the Coalition has failed to support its allegations that the State has admitted that the conclusions of the *Great Bay Nutrient Report* were in error.

g. *Conclusion: Petitioner Has Failed to Demonstrate That the Region's Use of a 0.3 mg/l TN Instream Water Quality Target Was Clearly Erroneous or an Abuse of Discretion*

As stated in Part III.A., when evaluating a challenged permit decision for clear error, the Board examines the administrative record that serves as the basis for the permit to determine whether the permit issuer exercised his or her "considered judgment," *see In re Steel Dynamics, Inc.*, 8 E.A.D. 165, 191, 224-25 (EAB 2000), whether the permit issuer articulated with reasonable clarity the reasons supporting its conclusion and the significance of the crucial facts it relied upon when reaching its conclusion, *see In re Shell Offshore, Inc.*, 13 E.A.D. 357, 386 (EAB 2007), and whether the record as a whole demonstrates that the permit issuer "duly considered the issues raised in the comments" and ultimately adopted an approach that "is rational in light of all information in the record," *In re Gov't of D.C. Mun. Separate Storm Sewer Sys.*, 10 E.A.D. 323, 342 (EAB 2002). The record here demonstrates, and the Board finds, that the Region had a rational basis for its decision to use an instream water quality target of 0.3 mg/l TN for

the Newmarket permit, duly considered the issues raised in the comments, articulated the reasons supporting its conclusions with reasonable clarity, and adopted an approach that is rational in light of all the information in the record.

As the Region acknowledges, there is some degree of scientific uncertainty involved in determining the precise numeric water quality target for nitrogen that is necessary to meet the State's narrative water quality standards. The Coalition urges EPA to wait for additional scientific testing and analysis before imposing nitrogen effluent limitations on the Newmarket Plant. The Board agrees with the Region that further delay would be contrary to the Agency's legal obligations. Further, as the Region explained in its Response to Comments, further delay is imprudent in light of the receiving water conditions in the Lamprey River:

> The Coalition also cites to the existence of scientific uncertainty or complexity – two undeniable attributes of this permit proceeding – as a reason to forego reliance on currently available data and peer-reviewed studies such as the NHDES Great Bay Nutrient Report in lieu of *future* studies and data collection and *further* peer review processes, specifically, to establish a causal link between nitrogen loading from the watershed and cultural eutrophication in the receiving waters. EPA finds no merit in this objection, not only because it misapprehends the legal standard for imposing necessary pollutant controls, but also because additional delay would be imprudent in light of receiving water conditions, particularly in tidal tributaries such as the Lamprey River, which are already impaired and showing clear signs of nutrient-induced water quality problems; because of the magnitude of the Facility's discharge, especially as it impacts the Lamprey River; because of the nature of nutrient pollution (i.e., the eutrophication cycle, once begun, can be difficult to address, as nutrients tend to recycle in the ecosystem); because the scientific and technical record in this case is more than sufficient to support

> the limits in the judgment of EPA and impartial experts; and because additional analyses will always still leave some irreducible scientific uncertainty given the complexity of the environmental context.

RTC at 16 (footnote omitted).[22]

The existence of some scientific uncertainty does not absolve the Region of its responsibility to establish a permit effluent limitation for nitrogen in the Newmarket permit based on the best scientific information that is currently available. The U.S. Court of Appeals for the First Circuit made this clear in *Upper Blackstone Water Pollution Abatement District v. EPA*:

> As in many science-based policymaking contexts, under the CWA the EPA is required to exercise its judgment even in the face of some scientific uncertainty. The Supreme Court has recognized this dimension of EPA decisionmaking in the context of the Clean Air Act. In *Massachusetts v. EPA*, 549 U.S. 497 * * * (2007), the court held that the EPA cannot "avoid its statutory obligation by noting the [presence of] uncertainty." *Id.* at 534 * * * *See also Miami-Dade County v. EPA*, 529 F.3d 1049, 1065 (11th Cir. 2008) (holding that the "EPA is compelled to exercise its judgment in the face of scientific uncertainty unless that is so profound that it precludes any reasoned judgment"); *Ethyl Corp.*, 541 F.2d [1, 28 (D.C. Cir. 1976) (en banc)] ("[R]ecognizing . . . the developing nature of [the field] . . . [t]he [EPA] Administrator may apply his expertise to draw conclusions

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[22] The Coalition specifically requested during the public comment period that the Region defer setting permit limits for nitrogen until further studies and peer reviews are conducted under a memorandum of agreement ("MOA") between the Coalition and NHDES. The Region declined to delay its determination for the Newmarket permit, for the reasons explained above, and further noted that the Coalition had failed to live up to its MOA commitment to conduct additional monitoring and modeling and had made "extremely minimal progress in developing a model and indeed appears to have abandoned that effort for the time being." RTC at 54.

> from suspected, but not completely substantiated, relationships between facts, from trends among facts, from theoretical projections from imperfect data, from probative preliminary data not yet certifiable as 'fact,' and the like.").
>
> * * * *
>
> "[A]dmission of uncertainties where they exist, public exposure of the assumptions and data incorporated into the analysis, the acceptance and consideration of public comment," and, ultimately, a decision that reflects the rule of reason, are the structural features of reasoned, publicly accountable science-based agency decisionmaking.

690 F.3d at 23-24, 27-28 (1st Cir. 2012) (footnote and citation omitted), *cert. denied*, 133 S.Ct. 2382 (2013).

In the Board's view, the Region has met the First Circuit's expectations for "reasoned, publicly accountable science-based agency decisionmaking" in its selection of the 0.3 mg/l TN instream water quality target for the Newmarket permit. The Region has acknowledged the uncertainties that exist regarding the precise numeric criterion for nitrogen that is necessary to meet the State's narrative water quality standards, publicly explained the assumptions and data on which its analysis relies, accepted and responded to public comments, and ultimately reached a decision that reflects the rule of reason. *See In re City of Attleboro*, NPDES Appeal No. 08-08, slip op. at 20 (EAB Sept. 15, 2009) ("[S]cientific uncertainty provides no basis for the Region to refrain from exercising its judgment."), 14 E.A.D. ___; *In re Dominion Energy Brayton Point, LLC,* 13 E.A.D. 401, 426 (EAB 2007) (rejecting suggestion that, when presented with scientific uncertainty, the permitting authority should not exercise its discretion.).

2. *The Region Did Not Clearly Err or Abuse its Discretion in Determining That Effluent from the Newmarket Plant Had a "Reasonable Potential to Cause or Contribute" to an Exceedance of the 0.3 mg/l TN Instream Target*

The second step in the Region's consideration of permit limitations for the Newmarket Plant was to determine whether effluent from the plant has a "reasonable potential to cause or contribute" to an exceedance of the instream water quality target of 0.3 mg/l TN. Federal regulations require that NPDES permits include effluent limitations "which the [permit issuer] determines are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any State water quality standard, including State narrative criteria for water quality." 40 C.F.R. § 122.44(d)(1)(i). Therefore, upon concluding that an instream water quality target of no more than 0.3 mg/l TN is necessary to achieve the State's narrative criteria for the Lamprey River, the Region was required to determine whether effluent from the Newmarket Plant has a "reasonable potential to cause or contribute" to an exceedance of that instream numeric limit. *See* RTC at 25.

The regulations direct permit issuers to consider the following factors in determining whether a discharge has the "reasonable potential" to cause or contribute to an exceedance of a narrative or numeric water quality criterion:

> [T]he permitting authority shall use procedures which account for existing controls on point and nonpoint sources of pollution, the variability of the pollutant or polluting parameter in the effluent, the sensitivity of the species to toxicity testing (when evaluating whole effluent toxicity), and where appropriate, the dilution of the effluent in the receiving water.

40 C.F.R. § 122.44(d)(1)(ii).

The Region explained its analysis of the "reasonable potential" for the Newmarket Plant's discharge to "cause or contribute" to an exceedance of the water quality target as follows in the Fact Sheet accompanying the draft permit:

> [A]ll available water quality data for the Lamprey River collected between 2000 and 2008 were analyzed by NHDES. The median total nitrogen concentration in the river was 0.45 mg/l.
>
> * * * *
>
> The average total nitrogen concentration from the Newmarket discharge from February - November 2008 was 30 mg/l. The average discharge flow for this time period was 0.68 [million gallons per day] * * *.
>
> The increase in receiving water total nitrogen concentration currently caused by the Newmarket treatment plant at the point of discharge can be estimated by dividing the effluent concentration by the dilution factor. At a discharge concentration of 30 mg/l and a dilution factor of 55, *the resulting receiving water concentration after initial mixing is 0.55 mg/l, which exceeds the target instream concentration of 0.3 mg/l.* Since this value only represents the *increase* in receiving water total nitrogen concentration due to the discharge, the actual receiving water concentration at the point of discharge would be the sum of the existing background plus the increase caused by the discharge. Instream data collected upstream of the tidal dam on the Lamprey River, upstream of and uninfluenced by the Newmarket discharge but downstream of the effluent discharge from Epping, shows that median total nitrogen concentration in the Lamprey River is 0.39 mg/l (PREP, 2010 and 2009).

Fact Sheet at 27-28 (first emphasis added). This calculation demonstrates conclusively that the untreated nitrogen in the Newmarket Plant's effluent has a "reasonable potential to cause or contribute" to an exceedance of the 0.3 mg/l TN water quality target. As the Region noted, the calculations show that the waters of the Lamprey River at the location of the Newmarket Plant have reached and exceeded their assimilative capacity for nitrogen. *Id.* at 27.

The Petition does not challenge the Region's analysis of the "reasonable potential" for the Newmarket Plant's effluent to cause or contribute to an exceedance of the 0.3 mg/l TN instream water quality target. Indeed, the term "reasonable potential" never appears in the Petition. Rather, the Coalition's objections are largely addressed to the Region's underlying determination of the instream numeric water quality target, as described in Part VII.A.1 above. Therefore, the Coalition has provided no basis for the Board to review the Region's "reasonable potential" analysis for the Newmarket Plant effluent.[23]

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[23] The Coalition's repeated objections that NHDES' *Great Bay Nutrient Report* does not demonstrate "cause and effect" between nitrogen levels, water transparency and eelgrass growth appear to be addressed to the Region's use of the 0.3 mg/l TN instream water quality target, rather than to the facility-specific determination of the "reasonable potential" of the Newmarket Plant to cause or contribute to an exceedance of that target. To the extent that the Coalition contends that this argument also extends to the Region's "reasonable potential" determination for the Newmarket Plant, the Coalition is simply wrong about the applicable legal standard. The plain language of the regulatory requirement (that a permit issuer determine whether a source has the "reasonable potential to cause or contribute" to an exceedance of a water quality standard) does not require a conclusive demonstration of "cause and effect." *See In re Upper Blackstone Water Pollution Abatement Dist.*, NPDES Appeal Nos. 08-11 through 08-18 & 09-06, slip op. at 31-34 & n.29 (EAB May 28, 2010), 14 E.A.D. ___.