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Coastal Resources Management Center



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[Meeting the TMDL for Dissolved Oxygen in Long Island Sound: Using the Nitrogen Credit Exchange Program](#)

Overview of the TMDL Program

The Total Maximum Daily Load (TMDL) Program, established by §303(d) of the Clean Water Act of 1972, requires states, territories, and authorized tribes to develop lists of "impaired" waters. "Impaired" waters are waters that do not meet state water quality standards even after point sources of pollution such as sewage treatment plants, have installed the best practicable control technology. States must establish priority rankings for impaired waters and identify the TMDL for pollutants that are impairing water quality. The TMDL is established as a calculation of the maximum amount of all point and nonpoint sources of pollution that a waterbody can receive and still meet the water quality standards, taking into account seasonal variations. States are then required to submit this list of impaired waters and TMDLs to the U. S. Environmental Protection Agency (EPA). The EPA has 30 days to approve or deny the list or TMDLs. If the EPA disapproves the TMDL, it has an additional 30 days to establish the necessary TMDL.

While the TMDL program has been required by the Clean Water Act since 1972, states have generally been slow to identify impaired waters and establish TMDLs for those waters. However, in 1996 and 1997, citizen and environmental organizations began bringing legal

actions to force EPA and the state to meet their obligation to list impaired waters and establish TMDLs where the state has failed to meet this obligation. EPA has been brought into more than 40 court cases, approximately half of which led to court orders or consent decrees requiring states or EPA to establish TMDLs.

Despite these lawsuits, many states, including Connecticut, have established successful TMDL programs. As discussed in more detail below, Connecticut's TMDL program for nitrogen removal from Long Island Sound is one creative approach to improve water quality.

TMDL Program to Control Nitrogen in Long Island Sound

Long Island Sound (the "Sound") often suffers from "hypoxia," or low dissolved oxygen levels. The principal pollutant causing hypoxic conditions is nitrogen where high levels cause significant algal blooms in the Sound. As the algae dies and decomposes, it consumes oxygen, thus reducing the amount of oxygen available to other aquatic species and causing hypoxic conditions.

In December 2000 and in accordance with §303(d) of the Clean Water Act, the Connecticut Department of Environmental Protection (DEP) and the New York State Department of Environmental Conservation submitted to EPA a report entitled "*A Total Maximum Daily Load Analysis to Achieve Water Quality Standards for Dissolved Oxygen in Long Island Sound.*" The report identified sewage treatment plants as the primary point source of nitrogen loading to the Sound. To implement the TMDL, DEP set a goal to remove 6,670 tons of nitrogen discharged from 81 municipal, state and private sewage treatment plants each year. An additional 400 tons of nitrogen will be eliminated from nonpoint sources. The EPA approved the TMDLs for the Sound on April 3, 2001, requiring a 58.5% reduction in human-generated nitrogen from point and nonpoint sources by the year 2014.

Nitrogen Credit Exchange Program

The 58.5% reduction goal is a lofty one. In order to assure its implementation in a fair and equitable way that does not over burden the financial resources of municipalities, DEP proposed a "Nitrogen Credit Exchange Program" pursuant to Public Act No. 01-180 (the "PA 01-180"). The credit program applies to public sewage treatment plants often called "publicly owned treatment works" or POTWs, which are the primary point source of nitrogen entering the Sound. Under PA 01-180, the DEP is authorized to issue a General Permit to establish effluent limits for nitrogen and establish a compliance schedule for the POTWs. The General Permit, issued on January 2, 2002, establishes individual annual nitrogen discharge limits for 79 POTWs. This individual waste load allocation incorporates certain equivalency factors (discussed in more detail below) and takes into account schedules for completion of nitrogen reducing projects. General Permit holders are expected to meet the annual permit limit or acquire the appropriate number of credits to offset any non-compliance. The General Permit is violated if the permittee exceeds its annual permit limit and fails to acquire credits. The General Permit also establishes monitoring and

reporting requirements assisting DEP in auditing POTW performance and assessing the program's progress.

Flexibility, in terms of where and when nitrogen reductions take place, has contributed to credit trading program's success. The program provides financial incentives for the least costly and most effective nitrogen-removing projects to move forward quickly. A POTW that reduces its nitrogen discharges below its permitted levels earns credits that it can sell to the Nitrogen Credit Exchange. These credits are purchased, either by other POTWs that failed to, or elected not to, reduce nitrogen below their permitted levels, or by DEP.

Not all nitrogen credits are created equal. DEP established an equivalency factor for each POTW to account for the percentage of nitrogen from the POTW that actually reaches the Sound and the impact that the nitrogen has on the Sound's dissolved oxygen levels. For example, New London, located in southeastern Connecticut and directly on the Sound, has 18% of the impact on dissolved oxygen levels as Norwalk, which is located in southwestern end of the Sound. Similarly, Farmington and other interior Connecticut towns not located directly on the Sound contribute lower levels of nitrogen to the Sound since most of the nitrogen leaving the watershed of these interior towns is naturally attenuated as it flows downriver toward the Sound. This equivalency factor is used when determining individual waste load allocations in the General Permit and when establishing the price of credits in the Nitrogen Credit Exchange Program.

The Nitrogen Credit Advisory Board, established pursuant to PA 01-180, proposes the price of an equivalent nitrogen credit based on the cost of the eligible projects undertaken in that year to reduce nitrogen discharges from permitted POTWs compared to the "equalized" nitrogen reductions resulting from those projects. DEP finalizes the Nitrogen Credit Advisory Board's proposed credit price and notifies POTWs of their credit balance. All POTWs then have until July 31 to attain a zero balance. Those facilities that exceeded the permit limit must purchase credits. DEP must purchase all credits from facilities that discharged below their permit levels since credits cannot be banked by POTWs. They must be sold to the Nitrogen Credit Exchange Program. This ensures that there will be no backsliding of the nitrogen load going into the Sound by preventing multiple facilities from using their "banked" credits in the same year. This year, 2003, will be the first time the credit system is used. The cost of an equalized credit is expected to be approximately \$1.65. Objections to the price are settled by an arbitration board.

As the program continues, the permit limits will decrease and the least expensive projects will become less available; thus, the price of credits will tend to increase. Over time, DEP expects the larger, more complex nitrogen reduction projects will become cost effective compared to the increasing expense of purchasing credits. Opportunities to offset the cost of these projects will likely be greatest on the western end of the Sound, where the proceeds from selling equivalent nitrogen credits will most closely approximate the cost incurred to reduce nitrogen below the POTW's limit.

Recent Accounting

The Nitrogen Credit Advisory Board is in the process of establishing the credit price and determining whether each POTW has met the permit limits. Most of the 79 plants met their permit limits, many by a large margin. The POTWs issued their final monitoring report of 2002 to the DEP on January 15, 2003. The total end-of-pipe nitrogen discharge to the Sound averaged 36,226 lbs/day. The total end-of-pipe discharge limit allowed under the General Permit was 36,767 lbs/day in 2002. Thus, the POTWs averaged 514 lbs/day below the permitted limit. While this on its own is notable, the equalized average was 15,603 lbs/day, while the equalized permitted limit was 18,220 lbs/day – the POTWs reduced their equalized nitrogen discharges by 2,617 lbs/day below the general permit. Overall, 2002 was an extraordinary year for nitrogen reduction in the Sound. The price of credits is expected to increase over the next 12 years, as POTWs address more complex and costly projects to even further reduce their nitrogen discharges.

Conclusion

The Nitrogen Credit Exchange Program offers many lessons to other states. The most obvious candidates for a similar TMDL approach are waterbodies impaired by specific pollutants discharged by defined sources. In these scenarios, trading programs can be easily combined with general permit or similar regulatory restrictions to create a demand for pollutant reduction and a credit market that either satisfies the demand or offsets the cost of reduction projects. States considering TMDLs that combine permit or regulatory restrictions with credit exchanges are not limited to one type of source, like the Connecticut POTW program. The general permit demand and trading program market for pollutant reduction can extend to varied sources, although the drafting and rulemaking process likely becomes more complex and subject to greater scrutiny. In instances where the impact from some sources is greater than others, equivalency factors can be applied to level the playing field. The challenge for any state developing or expanding this type of TMDL program is to identify and include the significant sources in the watershed in a manner that each source will be motivated to either achieve their fair share of pollutant reduction or fund such reduction elsewhere in the watershed. Based on the early results, DEP's Nitrogen Credit Exchange Program seem positioned to meet that challenge, and is expected to expand to other point and nonpoint sources. However, no specific source categories have yet been identified; nor has a timeline been developed for program expansion.

Robert S. Melvin and Sally R.K. Fisk are attorneys with the firm's LandLaw Section. Please email [Bob](#) or [Sally](#) if you have any questions about this article.

Policy Issued for Evaluation of Conservation Efforts When Making Listing Decisions Under the ESA

On March 28, 2003, the Interior Department's Fish and Wildlife Service (FWS) and the Commerce Department's National Marine Fisheries Service (NMFS) (the "Services") issued a final "[Policy for the Evaluation of Conservation Efforts When Making Listing Decisions](#)" (PECE) under the federal Endangered Species Act (ESA). The PECE is intended to guide FWS and NMFS personnel when evaluating State or local conservation efforts to determine

whether those efforts contribute to a finding that listing of a species as "threatened" or "endangered" is unnecessary. The PECE is also meant to assist groups that are interested in developing conservation efforts, plans, or agreements that are intended to help avoid the need for a species listing.

ESA Background

The ESA provides "a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved, . . . [and] provide[s] a program for the conservation of such endangered and threatened species. . . ." 16 U.S.C. § 1531 (ESA § 2). An "endangered species" is one that is "in danger of extinction throughout all or a significant portion of its range." 16 U.S.C. § 1532 (ESA § 3). A "threatened species" is "any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range." *Id.* The ESA prohibits the "taking" of any species that has been placed on the list of endangered species. 16 U.S.C. § 1538 (a)(1) (ESA § 9). Under the act, the term "take" is broadly defined as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." 16 U.S.C. § 1532 (ESA § 3). Although the absolute prohibition on take is limited to species listed as endangered, "threatened species" are protected by regulations "deem[ed] necessary and advisable" by the appropriate federal implementing agency, either the FWS or the NMFS. 16 U.S.C. § 1533(d) (ESA § 4(d)). Under the ESA § 4(d) rule, regulations to protect threatened species may include, among other things, a take prohibition, like that applied to endangered species through ESA § 9. *Id.*

Section 4(a)(1) of the Act requires the Services to determine whether any species should be listed as threatened or endangered based on any of five factors: (1) the present or threatened destruction, modification, or curtailment of habitat or range; (2) overutilization for commercial, recreational, scientific, or educational purposes; (3) disease or predation; (4) the inadequacy of existing regulatory mechanisms; and (5) other natural or manmade factors affecting the continued existence of a species. Section 4(b)(1)(A) requires that listing decisions be based on the "best scientific and commercial data available," but also requires that conservation efforts undertaken by States, foreign nations, and political subdivisions of States be taken into account. The Services have construed Sections 4(a)(1) and 4(b)(1)(A) to together require that formal conservation efforts by any entity, including groups and individuals, be considered during the listing decision-making process. See 68 Fed. Reg. 15113.

Policy Specifics

The PECE "applies to those formalized conservation efforts that have not yet been implemented or have been implemented, but have not yet demonstrated whether they are effective at the time of a listing decision." 68 Fed. Reg. 15113. Formalized conservation efforts are those that have been "identified in a conservation agreement, conservation plan, management plan, or similar document." *Id.* The PECE defines "agreements and plans" as "conservation agreements, conservation plans, management plans, or similar documents

approved by Federal agencies, State and local governments, Tribal governments, businesses, organizations, or individuals." Id.

The PECE specifies two factors that Services staff must consider when evaluating the impact of formalized conservation agreements during an ESA listing process. First, personnel must consider whether a formalized conservation effort is "sufficiently certain to be implemented." The PECE outlines a set of criteria to guide this determination. Among these criteria are: (1) whether the conservation effort and all parties to the agreement are adequately identified; (2) whether authorizations needed to implement the effort are likely to be obtained; (3) the type and level of voluntary participation anticipated; (4) whether funding sources are adequately identified and the level of certainty that funding will be obtained; (5) whether an implementation schedule for the conservation effort is provided; and (6) whether the conservation agreement or plan has been approved by all parties.

The second factor specified requires Services staff to consider the degree of "certainty that the conservation effort will be effective" in achieving the desired protection. In order to evaluate this factor, the PECE provides criteria that include: (1) how the conservation effort will reduce a described threat; (2) whether explicit incremental objectives are defined; (3) whether implementation steps are described in detail; (4) whether quantifiable, scientific parameters to evaluate project progress are identified; (5) whether project monitoring and reporting provisions are included; and (6) whether "principles of adaptive management are incorporated."

According to the PECE, these two sets of criteria are not intended to be all-inclusive. The PECE acknowledges that "the certainty of implementation and effectiveness of a formalized conservation effort may also depend on species-specific, habitat-specific, location specific, and effort-specific factors." 68 Fed. Reg. 15115. Ultimately, the PECE requires Services staff "[t]o consider that a formalized conservation effort(s) contributes to forming a basis for not listing a species or listing a species as threatened rather than endangered, . . . [if] the conservation effort is sufficiently certain to be implemented and effective so as to have contributed to the elimination or adequate reduction of one or more threats to the species identified through the section 4(a)(1) analysis." 68 Fed. Reg. 15115.

Pamela A. Welty is an attorney with the firm's LandLaw Section. Please [email](#) her if you have any questions about this article.

Coastal eNews and Notes

Marina Association Studying Marinas' "Image" Problem

The International Coalition of Marine Industry Associations' (ICOMIA) has been working over the past year to develop a strategy to improve the image of marinas and address misperceptions about marinas. Some surveys have indicated that most people believe that only the wealthy have access to marinas and that most marinas harm the environment. However, ICOMIA's has identified numerous benefits of marinas including: (1) protecting coastal environmental resources by implementing "best management practices"

and "clean marina" programs; (2) providing increased public access to coastal waters with promenades and boardwalks or educational and entertainment centers in marinas; (3) boosting the local and regional economy by providing full-time and seasonal marina jobs and expanding retail sales in restaurants, hotels, shops and other businesses near marinas; (4) increasing a municipality's tax base due to direct spending by boaters for marina supplies and services such as food, clothing and entertainment; and (5) attracting boating tourists and non-boating tourists who enjoy looking at congregations of boats on the water, engendering civic pride in the waterfront.

To dispel the myths and misperceptions about marinas and marina users, the ICOMIA is collecting and analyzing demographic facts and figures about the nature of today's recreational boat owners, including average income, size of family, and size of boat, and the bearing this has on the number and size of slips in marinas.

Update on U.S. Coastal Legislation

Reps. Delahunt (D-MA) and Saxton (R-NJ) introduced the *Coastal Zone Renewable Energy Promotion Act of 2003*. The legislation, H.R. 1183, amends the Coastal Zone Management Act (CZMA) to promote the sensible development of energy facilities that use renewable energy resources in the marine environment by establishing a licensing regime and permitting process to ensure due consideration of the public trust issues involved in resource allocation, multiple use, and impacts on the marine environment. The legislation encourages coastal States to amend their CZMA plans to include policies and procedures that address issues arising from the location of renewable energy facilities in the marine environment, conflicting and competing resource allocation and multiple use issues, and any adverse impacts from such facilities on the marine environment, commercial and recreational fishing, the boating community and aesthetic, cultural and historic values. In another bill, Senators Hollings (D-SC) and Gregg (R-NH), along with 24 additional cosponsors, introduced the *Coastal and Estuarine Land Protection Act* (CELP) (S. 861), which is similar to S. 2608, the CELP bill introduced in the last session of Congress. The legislation would authorize a \$60 million land conservation program administered by the National Oceanic and Atmospheric Administration to coordinate land acquisition and protection efforts among non-governmental entities and federal, state and local governments to protect coastal and estuarine resources. The bill also authorizes the Secretary of Commerce to make grants to coastal states with approved coastal management programs or to National Estuarine Research Reserves (NERRS) to acquire coastal properties, with at least 15% of the funds being reserved for NERRS acquisitions. Grants will be based on the demonstrated need for protection, ability to effectively manage and protect land in perpetuity for conservation purposes, and ability to leverage the matching share of non-federal funds. Click [here](#) for more information on these bills.

In addition to the above proposed new bills, U.S. House of Representatives Resources Committee is considering setting deadlines for federal consistency appeals. The draft Energy Security Act includes a provision amending Section 319 of the CZMA to require the Secretary of Commerce to issue a final decision within 180 days of the notice of filing of a

federal consistency appeal. The Secretary would have 30 days after filing of an appeal to publish a notice of the appeal in the Federal Register. Thereafter, the Secretary shall issue a final decision within 120 days or publish a notice of extension for an additional 60 days. If no final decision is issued within 180 days, then any activity that is the subject of the appeal shall be deemed consistent with the coastal management program. In related Senate action, the the U.S. Senate Energy and Natural Resources Committee released a draft Energy Bill revising existing Outer Continental Shelf (OCS) provisions to: (1) require an inventory using “any available technology” of all potential oil and gas resources in the OCS, and a report identifying how programs or processes restrict or impede the development of these resources, including moratoria and delays caused by state reviews; (2) grant the Secretary of the Interior permitting and rights-of-way authority for traditional and non-traditional energy projects such as wind, wave and solar as well as liquid natural gas and staging facilities in OCS; (3) authorize coastal impact assistance grants to states with oil and gas production off their coasts from 10% of qualified OCS revenues, subject to appropriations; and (4) create the Office of Federal Energy Permit Coordination to assist federal agencies in coordinating the permitting of energy projects on federal land. The U.S. House version on this legislation provides additional language to streamline the review of interstate natural gas pipeline construction projects and places restrictions on federal consistency review and appeals. Click [here](#) for more information on the draft bill.

Federal Agencies Collaborating with Port Cities to Redevelop “Portfield” Sites

The U.S. Environmental Protection Agency (EPA) is providing funds to several U.S. port cities to clean up contaminated lands known as "brownfields" in an effort promote redevelopment of the nation's urban ports and harbors. This effort is part of an ongoing brownfields federal partnership program created in 1996 between EPA and more than 20 federal agencies including the National Oceanic and Atmospheric Administration, the U.S. Army Corps of Engineers, the Economic Redevelopment Administration, the Department of Housing and Urban Development, and the Department of Defense to encourage the redevelopment of brownfields into viable economic land uses. The National Oceanic and Atmospheric Administration (NOAA) will lead the “portfields” project which will focus on the redevelopment and reuse of brownfields in and around ports, harbors, and marine transportation hubs. For example, EPA and NOAA have signed a memorandum of agreement to assist the City of New Bedford, Massachusetts, an important and historic commercial fishing port in southeastern Massachusetts. Specifically, EPA is remediating brownfield sites within the port area, NOAA is funding several coastal restoration projects, and the U.S. Economic Redevelopment Administration is funding the construction of a seafood processing plant which will generate jobs in the community. This is the first agreement under the "portfields" project program and EPA is hoping this agreement will serve as a model for future portfield projects. Click [here](#) for more information on the brownfields federal partnership program.

Great Lakes Sea Grant Program Produces CD on Aquatic Nuisance Species

The Great Lakes Sea Grant Network has produced a compact disk with a wealth of

information about aquatic nuisance species (ANS). The compact disk, entitled "*Exotics To Go! Presentations and Publications to Prevent the Spread of Aquatic Nuisance Species*", will help associations, natural resource agency staff, extension educators, and teachers distribute information about ANS. The compact disk contains 22 publications in PDF format, lists of people to contact about ANS concerns, and offers seven adaptable powerpoint presentations. Click [here](#) for more information.

This is an archive of past issues. As a result, it may contain information that is not current.

The logo for Robinson & Cole LLP is a dark blue, horizontal rectangular bar with a slightly wavy top edge. The text "ROBINSON & COLE LLP" is written in white, uppercase, sans-serif font across the bar.

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