



Connecticut Department of Environmental Protection

Amey Marrella, Commissioner

79 Elm Street
Hartford, CT 06106-5127



Westport WPCF

Report of the Nitrogen Credit Advisory Board for Calendar Year 2008 To the Joint Standing Environment Committee Of the General Assembly

September 30, 2009

**REPORT OF THE NITROGEN CREDIT ADVISORY BOARD
FOR CALENDAR YEAR 2008**

**TO THE JOINT STANDING ENVIRONMENT COMMITTEE
OF THE GENERAL ASSEMBLY**

Concerning the

NITROGEN CREDIT EXCHANGE PROGRAM

**As required by
Section 22a-523(c) of the
Connecticut General Statutes**

September 30, 2009

This report has been prepared by the Nitrogen Credit Advisory Board and is respectfully submitted to the Joint Standing Environment Committee of the General Assembly pursuant to the requirement of Section 22a-523(c) Connecticut General Statutes. Such section requires that the Nitrogen Credit Advisory Board submit to the Joint Standing Environment Committee of the General Assembly a report that addresses issues associated with the implementation of the Nitrogen Credit Exchange Program. This report covers the period from January 1, 2008 to December 31, 2008.

This report provides a summary of the technical progress and financial requirements that the Nitrogen Credit Advisory Board deems necessary to achieve progress in this important program in reducing nitrogen loads to Long Island Sound. The continued success of this program is only possible if adequate funding is provided through the Clean Water Fund each year to construct new projects and through the development and application of innovative approaches and management techniques to meet nutrient reduction goals for Long Island Sound.

Cover photograph courtesy of town of Westport, CT

Highlights of the Nitrogen Program for Calendar Year 2008

- All 79 municipalities regulated under the General Permit for Nitrogen Discharges cooperated fully in implementing the program. Aggregate treatment plant performance for 2008 was 13,187 equalized pounds of nitrogen per day, which exceeded the 2008 Nitrogen General Permit limit of 11,066 equalized pounds of nitrogen per day.
- The Nitrogen Credit Advisory Board recommended value of \$4.50 per equalized pound of nitrogen in 2008 was approved by DEP Commissioner McCarthy. The price of a credit in 2007 was \$4.36.
- In 2008, the value of credits purchased by the Nitrogen Credit Exchange was \$2,660,688 and the value of those sold was \$6,148,327. Forty-nine facilities were required to purchase credits to meet their permit limits, while 29 facilities had credits to sell.
- Although nitrogen loads exceeded the aggregate permit limit in 2008, project construction schedules and performance trends indicate that the program is on track to meet the 2009 load requirements under the Total Maximum Daily Load (TMDL) management plan.
- The key to the success of the program is the implementation of nitrogen removal projects. Two “project facilities” were added in 2008 (Shelton and Westport (phase 2)). Two more project facilities will be added in 2009 (Plainville and Hartford (interim)).
- Project construction schedules indicate that the 2014 nitrogen load target under the TMDL may not be met as matter of course. The Department, with the assistance of the NCAB, will need to evaluate the program to assure compliance with the 2014 limit.
- Project implementation depends on a consistent and adequate infusion of bond funds to support Connecticut’s Clean Water Fund (CWF). CWF received a large boost in FY08 and FY09 when \$90 million in general obligation bonds were authorized and approved for both years and \$235 million and \$180 million in revenue bonds were available in FY08 and FY09, respectively.
- The Clean Water Fund Advisory Work Group established by Governor Rell estimated that General Obligation bonding will need to be approximately \$130 million per FY to keep Clean Water financing programs, including nitrogen removal, on track during ensuing fiscal years.

Executive Summary

In accordance with Sec 22a-523(c) CGS, the Nitrogen Credit Advisory Board (NCAB) submits this 2008 Annual Report of the Nitrogen Credit Advisory Board on the progress of the Nitrogen Credit Exchange for the calendar year 2008.

The NCAB highlights these key findings and concerns regarding the continuing success of the program:

- Success of the program relies on implementing nitrogen removal projects through Connecticut's Clean Water Fund (CWF).
 - a. Four denitrification projects were completed in 2008 – Plainville, Hartford (interim project), Shelton and Westport (phase 2).
 - b. Shelton and Westport were completed early enough in the year to be considered “project facilities” in 2008. A project facility is defined as any facility with a fully operational nitrogen removal system on or near January 1 of the trading year. Plainville and Hartford will be considered as project facilities in 2009.
 - c. Five more projects will be completed in 2009 –Milford Beaver Brook (phase 2), Milford Housatonic (phase 2), Danbury, Groton Town and Stratford (phase 2).
- Project implementation depends on continued bonding authorization for the CWF, is imperative to avoid backlogging projects and to ensure the 2014 nitrogen reduction goal is met .
 - a. The Legislature and the Governor authorized \$235 million and \$180 million for FY08 and FY09, respectively, in revenue bond authority actions, supported by \$90 million in general obligation bonds each year.
 - b. It is estimated that authorizations for CWF General Obligation bonding in FY10 and FY11 in the area of \$130 million per FY to keep the program on track is necessary.

Major accomplishments and activities relative to the 2008 program operations include:

- All 79 municipalities regulated under the General Permit for Nitrogen Discharges cooperated fully in implementing the program. The nitrogen general permit limit for 2008 was 11,066 equalized pounds of nitrogen per day (eq lbs N/day). Treatment plant performance for 2008 was 13,187 eq lbs N/day. This is the fourth consecutive year of the seven year program where more nitrogen was discharged than targeted in the permit.
- The Nitrogen Credit Advisory Board recommended a value of \$4.50 per equalized pound of nitrogen in 2008 based on capital and operational costs and nitrogen removal at project facilities. The price of a credit in 2007 was \$4.36. This is the fourth consecutive year of increases in the price of a credit.
- In 2008, 49 facilities were required to purchase credits to remain in compliance with the General Permit. Municipalities purchasing credits contributed a total of \$6,148,327. Twenty-nine facilities received payments totaling \$2,660,688 from the sale of nitrogen credits. One facility, Bridgeport West, had a \$0.00 balance. Hence, the Nitrogen Credit Exchange netted \$3,487,639 from credit purchases and sales in 2008.

- Although nitrogen loads exceeded the aggregate permit limit in 2008, based on project construction schedules, performance is on track to meet the 2009 load requirements in the Total Maximum Daily Load (TMDL) for nitrogen of 13,149 eq lbs N/day. It is uncertain whether the 2014 final TMDL limit of 9,164 eq lbs N/day will be met. The Department, with the assistance of the NCAB, will need to reevaluate the program and make recommendations for change that will assure compliance with the 2014 limit, including capitalization levels of Connecticut's Clean Water Fund.
- With the revision of the TMDL anticipated in 2010, and the understanding that dissolved oxygen criteria attainment will require nitrogen reductions from all sources throughout the watershed, the NCAB has been monitoring permit renewals for sewage treatment facilities in Massachusetts, New Hampshire and Vermont. The NCAB met with EPA to review concerns about the facilities. During those discussions and in letters from DEP, the NCAB has advised EPA of the need for more aggressive nitrogen reductions outside of Connecticut and New York.

I. Introduction

Background

Long Island Sound's (LIS) most pressing water quality problem is caused by over enrichment of nutrients, specifically nitrogen, that leads to greatly reduced levels of dissolved oxygen in the bottom waters of western LIS. The overload of nitrogen fuels excessive growth of algae, which eventually dies, sinks to the bottom and decays. During decay, oxygen is consumed and the dissolved oxygen in the water falls to levels well below those allowable in State Water Quality Standards. Low oxygen levels, or "hypoxia" typically occur during the July through September period. These conditions are inadequate to support healthy populations of fish and shellfish because they create an ecosystem imbalance by disrupting the feeding, growth and reproduction of nearly all forms of aquatic life. Primary sources of nitrogen include municipal wastewater treatment plant discharges, atmospheric deposition and runoff from urban, suburban and agricultural areas.

The federal Clean Water Act requires that the State establish Total Maximum Daily Loads (TMDLs) for all waterbodies that do not meet minimum State Water Quality Standards, such as Long Island Sound. Once the State establishes a TMDL, federal law requires that the TMDL be reviewed and approved by the federal Environmental Protection Agency (EPA). In April 2001, EPA approved Connecticut and New York's jointly submitted TMDL to address the impairment to Long Island Sound water quality that results from excessive nitrogen loading. The TMDL establishes the maximum loading for nitrogen that Long Island Sound can assimilate without causing impaired water quality, apportions that maximum loading among sources, and lays out a plan to achieve the loading reductions necessary to meet Water Quality Standards.

In the TMDL, discharges from municipal sewage treatment plants (STPs), stormwater runoff and atmospheric deposition, the primary sources of nitrogen enrichment in LIS, are targeted for control. The TMDL requires the two states, by 2014, achieve a 58.5% collective reduction of nitrogen loading from point discharges and urban and agricultural runoff sources to LIS from an established baseline. A 64% reduction goal was set for Connecticut STPs through a wasteload allocation process.

Nitrogen "trading" was identified as a mechanism for cost-effectively attaining the aggregate goal for Connecticut STPs. Public Act 01-180, codified in the Connecticut General Statutes in Sections 22a-521 through 527, established a Nitrogen Credit Exchange (NCE) overseen by a Nitrogen Credit Advisory Board (NCAB – Attachment A), and authorized issuance of a Nitrogen General Permit (NGP). Collectively, the NGP, the NCE and the NCAB form the foundation for the nitrogen-trading program instituted by Connecticut in 2002.

2008 Performance of the Nitrogen Credit Exchange

The aggregate nitrogen discharge for the 79 treatment facilities participating at the Nitrogen Credit Exchange was 13,187 equalized pounds per day (eq. lbs/day), which exceeded the equalized aggregate permit limit of 11,066 by 2,121 eq. lbs/day (Attachment B). Findings from 2008 indicate:

- In general, there has been a downward trend in aggregate end-of-pipe loads of nitrogen statewide on an annual basis (Attachment C).
- The intense rainfalls and snow melt in February, March and April were the primary factors adversely impacting nitrogen removal in 2008; however, excursions were not as large as previous years. The load in March (17,070 eq. lbs/day) was the highest during the year. The effect can be seen in Figure 1.

- The drier and warmer weather that occurred during the summer and fall of 2008 enhanced nitrogen removal. The summer of 2008 had the second lowest 11,904 equivalent lbs removed since program started and, from May through November, the aggregate discharge of nitrogen came very close to meeting the 2008 aggregate permit limit.

A second important effect on the ability to remove nitrogen is the level of funding available for the Clean Water Fund. The general permit limits are based on the anticipated ability of sewage treatment plants to remove additional nitrogen, which is a direct result of the number of nitrogen removal upgrade projects that become operational during the year. Although four plants came on line in 2008 with nitrogen process upgrades, several more projects, some at critical facilities, will need to be implemented if the final 2014 permit limit is to be met on schedule.

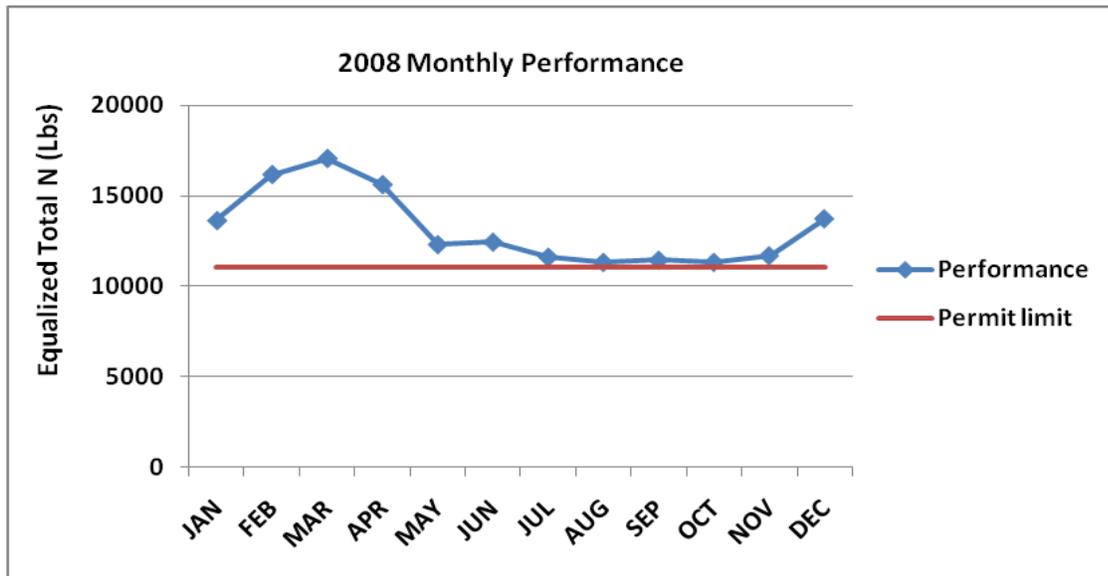


Figure 1. Monthly aggregate performance of 79 facilities during 2008.

Condition of Long Island Sound

Nitrogen trading has led to measurable reductions in Connecticut’s nitrogen load to the Sound. Signs of improvement in hypoxia are evident, but more reductions are needed to meet management goals to attain a healthy Long Island Sound. Added attention must be directed towards sources from outside of Connecticut, including atmospheric sources, and stormwater and nonpoint source runoff.

The area affected by hypoxia in Long Island Sound, which is monitored each summer by DEP staff, provides a good indicator of overall condition, and the long term trend (Figure 2). Although annual variation is large, subject to changing weather conditions that affect the severity of hypoxia each year, the underlying trend in hypoxic area is downward, although slight. That change is best illustrated by the direction of the 5-year moving average (Figure 2). Since 1987, the affected area has averaged about 200 square miles; however, during the last 10 years, only the 2003 event was significantly higher than the long term average. Taking into consideration that several of the warmest years on record have occurred in the last 12 years which exacerbates hypoxia, the areal indicator appears to be benefitting from nitrogen management.

In the 2007 report to the Committee, which was completed in the fall of 2008, the NCAB reported that 2008 was shaping up to be one of the most severe hypoxia events on record. While the area of severe hypoxia (less than 1 mg/L (ppm)) was the most extensive since 2003, the area less than 3.0 mg/L was below average (Figure 2). However, the duration of hypoxia in 2008 was 79 days, the longest on record since 1989 (82 days). Although wet weather can deliver a surplus of nitrogen to the Sound, the cooler summer weather through July of 2009 appears to have offset the potential impact of hypoxia, which was not observed until late in July. By late August, with warmer and more stable weather conditions, the areal extent of hypoxic waters had exceeded the area observed during the same period in 2007.

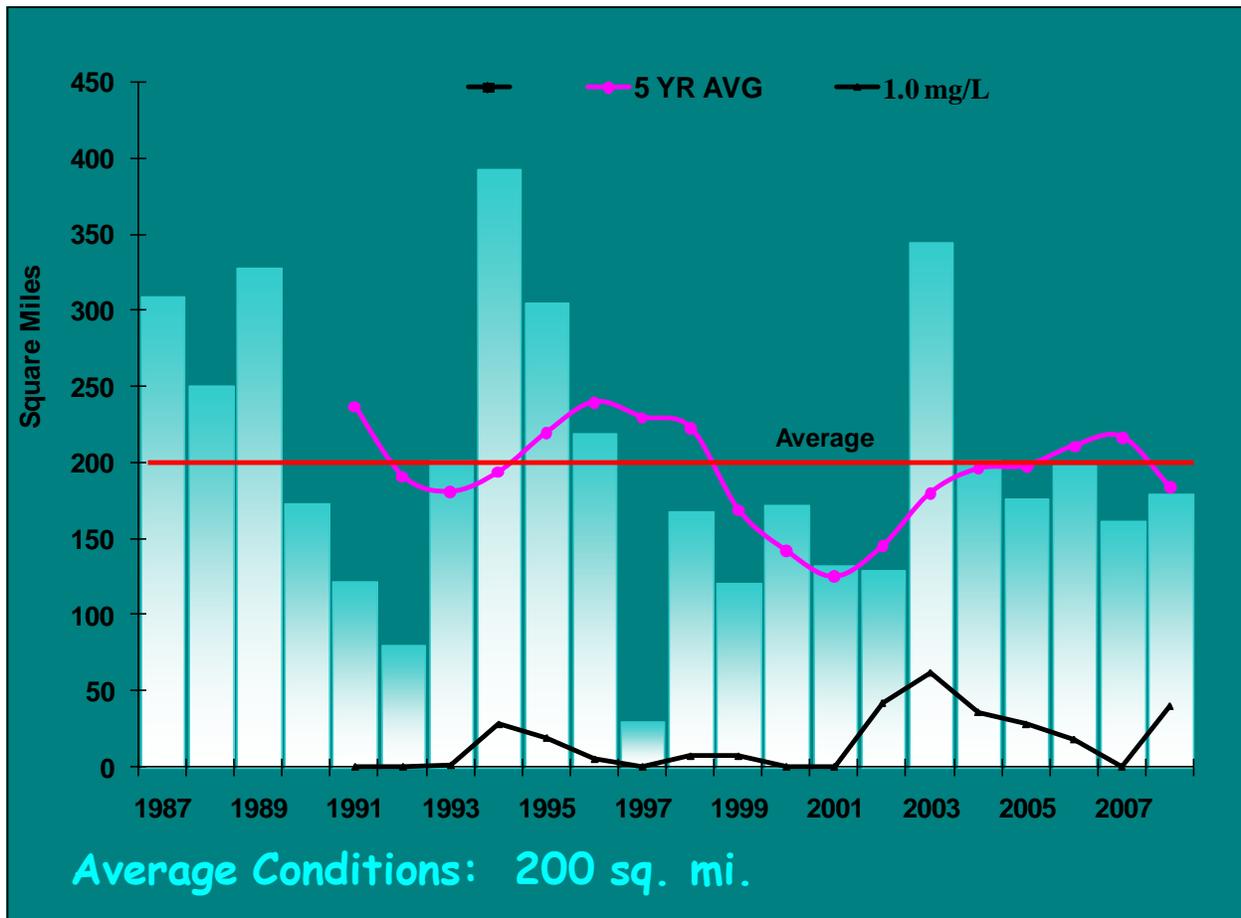


Figure 2. Area and trend of hypoxia in Long Island Sound, 1987-2008.

II. The 2008 Nitrogen Credit Exchange

Credit Price

A major task of the NCAB each year is to establish the value, or price, of an equalized nitrogen credit, and propose the annual value to the Commissioner of the DEP for approval. The Board calculates this value as follows:

$$\text{The value of an equalized credit} = \frac{\text{Capital Costs} + \text{Operational Costs}}{\text{Total amount of equalized nitrogen reduced from project facilities}}$$

The statute further identifies the total project cost as: 1) capital expenditures for construction of nitrogen removal at project facilities and 2) ongoing operation and maintenance costs for nitrogen removal treatment.

A "Nitrogen Removal Project" is defined as any alteration of the physical structure of a wastewater treatment facility specifically constructed to remove nitrogen that was financed by the Clean Water Fund. A "Project Facility" is further defined as any facility with a fully operational nitrogen removal system of any scale on January 1 of the trading year. Under this definition, 39 facilities were considered to be Project Facilities during 2008 (see Attachments D, E, F and G). Westport (Phase 2) and Shelton are the two projects facilities added in 2008.

"Capital Costs" were established by the Board as the annual Clean Water Fund repayment amount associated with construction of nitrogen treatment facilities as set forth in the loan agreement between the municipality and DEP. Financing derived from grants to municipalities are not considered to be a capital cost for purposes of setting credit prices. Using this procedure, the Board established the annual capital cost for nitrogen treatment in 2008 at \$7,510,888 (Attachment F). This figure represents the annual interest and repayment of principal on the 2% loans for nitrogen removal processes.

"Operation and maintenance costs" were estimated by means of a survey sent to all Project Facilities. Department staff reviewed all survey data for consistency and reasonableness and an estimate of \$10,706,334 was adopted by the Board as the annual operation and maintenance cost for nitrogen removal in 2008. Combining capital and operation and maintenance costs yielded a total cost for nitrogen removal in 2008 of \$18,217,222 (Attachment F). Operation and maintenance costs didn't increase substantially in 2008 because by the end of 2007 some of the facilities had updated electrical components, making the plants more energy efficient, and the price of fossil fuels had declined in 2008 making energy less expensive.

The reduction in equalized pounds of nitrogen was calculated by subtracting the actual end-of-pipe pounds of nitrogen discharged by each of the Project Facilities from the "baseline" loading established for the facility in the TMDL for Long Island Sound. The baseline loading represents the loading of nitrogen each facility would have discharged if no nitrogen treatment were provided. Load reductions for each facility were multiplied by the equalization factor for the facility (converting the pounds reduced to equalized pounds reduced) and the statewide reduction calculated by summing the equalized pounds reduced for all Project Facilities. Using this procedure, a total of 11,080 equalized pounds per day of nitrogen was reduced by the 39 project facilities that were on line in 2008 (See Attachment E). Based on these analyses, the cost was determined by dividing the Total Project Cost of \$18,217,222 by 11,080 pounds per day of equalized nitrogen removed during the year times 365 days in the year.

The Board formally submitted a recommendation to the Commissioner that she establish the value of an equalized nitrogen credit at \$4.50 for trading in 2008. The Commissioner accepted this recommendation and issued a draft ruling pursuant to CGS Section 22a-527 (Attachment H). No municipality petitioned for a review of the Commissioner's draft ruling during the statutory 15-day review period and the draft ruling became final establishing the value of an equalized nitrogen credit at \$4.50 for 2008.

Numbers of Credits Traded and Final Balances

In 2008, 49 facilities were required to purchase credits in order to remain in compliance with the General Permit. Municipalities purchased 1.37 million equalized credits at a total cost of \$6,148,327 (Table 1). Twenty nine facilities received payments totaling \$2,660,688 from the sale of 591 thousand equalized nitrogen credits. One facility, Bridgeport West had a \$0.00 balance. To date, nearly 14 million credits

have been bought and sold on the NCE at a total value of nearly \$39 million. Because less nitrogen was removed than required in the nitrogen general permit in 2008, payments from credit purchasers are greater than monies paid out by sellers. (Attachment D).

Table 1. Credit Price and Value of Sales and Purchases, 2002 - 2008.

Year	Credit Price	Credits Bought by the NCE	Credits Sold by the NCE	Surpluses/ (Deficits) ⁽¹⁾
2002	\$1.65	\$2,757,323	\$1,317,223	\$1,440,100
2003	\$2.12	\$2,429,419	\$2,116,758	\$312,661
2004	\$1.90	\$2,659,804	\$1,786,736	\$873,068
2005	\$2.11	\$1,315,392	\$2,466,725	(\$1,151,333)
2006	\$3.40	\$2,394,956	\$3,828,114	(\$1,433,158)
2007	\$4.36	\$2,072,001	\$5,159,019	(\$3,087,018)
2008	\$4.50	\$2,660,688	\$6,148,327	(\$3,487,639)

⁽¹⁾Surplus= surplus value of credits purchased by the NCE. Deficits = excess value of credits sold by the NCE.

Credit prices have risen from \$1.65 to \$4.50 over the seven years of operation of the NCE (Table 1). From 2002 through 2004, there were surpluses of credits purchased by the NCE, but during the last four years, the NCE ran deficits of \$1,151,333 in 2005, \$1,433,158 in 2006, \$3,087,018 in 2007 and \$3,487,639 in 2008 as overall facilities performance based on projections did not meet the nitrogen general permit targets. Fluctuations above and below the aggregate limits are expected and acceptable in the trading program provided the conditions of the TMDL are met.

III. Progress towards TMDL goal

Nitrogen Loading Trend and Scheduled Projects

Despite the effect of intense storms, wet weather, and cold periods that impair nitrogen removal capability at municipal facilities and the financial limitations that have reduced the number of nitrogen removal projects below anticipated levels, steady progress has been made towards achieving the 2009 and 2014 TMDL allocations.

Data reported for the last six and one half years indicate that during 2009 the aggregate nitrogen removal performance will be below the 2009 TMDL target of 13,149 equalized lbs/day, provided that extreme weather conditions and operational failures are not encountered. The twelve month moving nitrogen load average through December 2008 was 13,164 lbs/day (yellow line in Figure 3) and has continued its downward trend into 2009.

Overall, the total equalized pounds of nitrogen discharged during the first six months of 2008 was slightly lower than during 2007; however, the rate of improvement in 2008 performance was not as good as in 2007 because only two project facilities came on line in 2008 and there was some increase due to wet-

weather. In 2008 the equalized load during the second half of the year rose because of heavy rain. The aggregate discharge volume in 2008 was 18% higher than in 2007. Nevertheless, good performance was observed for the two new 2008 project facilities: Shelton removed more equalized pounds of nitrogen during the second half of the year than it was designed to remove; Westport removed 74 eq lbs N/day during the year.

The principal factor moderating the rate of progress in reducing nitrogen loads is the availability of financing through the Clean Water Fund to complete nitrogen removal upgrades to municipal sewage treatment facilities. The improved performance necessary to achieve future limits will require construction of upgraded treatment technology at a number of facilities in Connecticut. The final waste-load allocation (WLA) limit to be achieved in 2014 for nitrogen is 9,141 eq lbs/day (Red line in Figure 3). Rainfall during the first six months of 2009 was heavy, but the warmer summer temperatures helped the facilities to remove more nitrogen than might otherwise have been expected. The twelve-month moving load average through June 2009 was 11,925 eq lbs N/day, which is well below the 2009 target (Orange line in Figure 3).

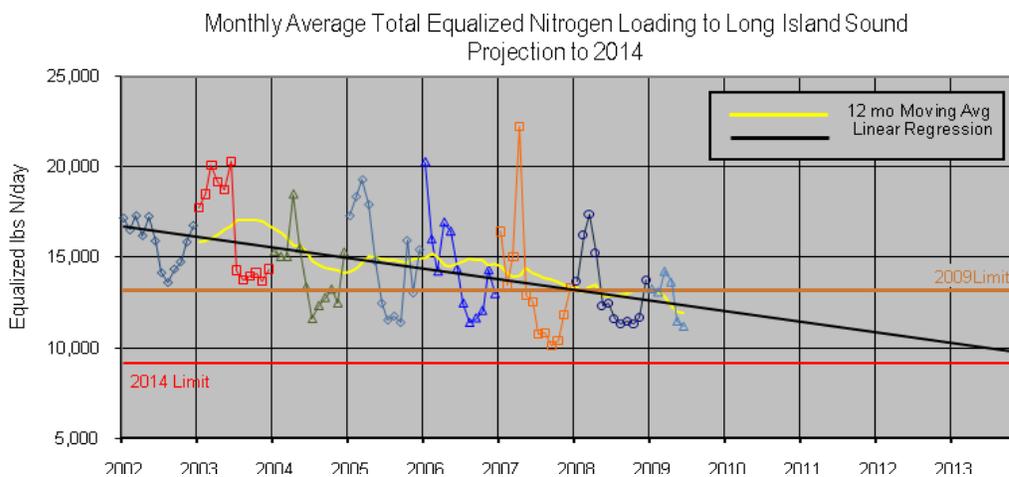


Figure 3. Monthly average total nitrogen loading to Long Island Sound, 2002-2009

Meeting the 2014 Wasteload Allocation and Permit Limits

The Department developed projections to determine whether the 2014 TMDL target load allocation will be attained. Assumptions included:

- The project facilities to be added for the 2009 trading year (Hartford (interim project) and Plainville) will remove approximately 130 eq lbs N/day.
- The completion of the five projects in 2009 that will become project facilities for the 2010 trading year (Milford Beaver Brook (Phase 2), Milford Housatonic (Phase 2), Stratford (Phase 2), Danbury and Groton Town) will remove approximately 894 eq lbs N/day.
- Facility upgrades for nitrogen removal to be completed in 2010 include, but may not be limited to, Southington (interim project), Stafford, Windham, Ansonia, Glastonbury, South Windsor, Meriden, West Haven, and Cromwell-Mattabassett. By the end of 2012, with these project facilities in operation, it is estimated that nitrogen loads will be reduced by an additional 1,753eq lbs N/day.

- With these reductions the state aggregate nitrogen load will be around 10,747 eq lbs N/day, which is about 1,500 eq lbs N/day short of the 2014 goal of 9,164.

Clearly, additional projects will need to become operational, and nitrogen removal will need to be optimized at existing project facilities if the 2014 limit is to be successfully met each year.

With all of the identified projects listed above for construction through 2012 and other facilities that are currently planning to remove more nitrogen before 2014, such as Greenwich, Bridgeport East and West (combined), New Haven and Norwalk, it is estimated that the aggregate discharge of nitrogen may approach 9,934 eq lbsN/day by 2014. At that load, the facilities will not be in compliance with the final TMDL target and permit limit of 9,141 eq lbs N/day. This prediction is based on project facilities that are planned for completion provided there is adequate funding through 2014, and cannot account for variations in weather that can affect nitrogen removal operations.

Proposed Revisions to the Program

Since it appears that the program with current project upgrade plans may not be on track to meet the aggregate 2014 wasteload allocation required under the Nitrogen General Permit, some additional assessments and revisions to the program may be necessary.

The Department and Nitrogen Credit Advisory Board members will continue to work with municipalities that plan to host projects to ensure their projects are implemented. If warranted, the DEP and NCAB members will evaluate the potential benefits of adjusting the price of the nitrogen credit and other actions that will help maintain progress towards the goal. Strategies including either incentive or enforcement may be needed to encourage municipalities with key projects to initiate and complete improvements to their facilities in a timely manner.

The Nitrogen General Permit (NGP) is due to expire at the end of 2010 and will need to be renewed for the next five-year permit cycle. This process will have to begin early in 2010. By then, it is expected that more will be known about potential changes in the revision of the TMDL, planned for 2010, that may affect nitrogen reduction targets, trading ratios, and the role of out of state sources. Before finalizing the renewed permit, consideration will be given to changes in the TMDL that might affect goals and schedule for the NGP.

In the interim, the NCAB will continue to emphasize providing training to the wastewater treatment operators to better manage wet and cold weather conditions that have had an adverse impact on nitrogen removal (See Section IV – Use of NCE Surplus Funds). This will help ensure that the maximum benefit from existing upgrades.

In 2009 the NCAB also approved a monitoring equipment funding program for dissolved oxygen and nitrogen sampling equipment purchases by municipal treatments plants. The equipment will help optimize the denitrification process. By constantly monitoring dissolved oxygen and nitrate levels facilities will be better able to control the amount of dissolved oxygen entering the anoxic zones and optimize nitrate recycles and supplemental carbon. It is estimated that an additional 1,374 eq lbs N/day will be removed from the facilities that acquire analyzers to be used for process control.

For the 2007 trading year, the program was modified to include a private discharger category. Although Cytec Corp. expressed interest in becoming the first private entity to trade on the NCE, and were admitted into the program under the sponsorship of the Town of Wallingford, they were ineligible to trade in both 2007 and 2008 because their expired permit disqualified them for trading.

IV. Finances

Clean Water Fund Advisory Work Group

The difficult process of adopting the FY06 and FY07 Priority List due to limited Clean Water Funds, led Governor M. Jodi Rell to request that Commissioner Gina McCarthy convene a work group to “evaluate the Clean Water Fund with due consideration for the potential impact to the environment and the possible ramifications in the State.” A Clean Water Fund Advisory Work Group (CWFAWG) was convened in 2006 to evaluate creative options for the CWF to provide a sustainable level of funding to assist municipalities in addressing known and emerging water quality issues and the enhancement of wastewater infrastructure. Their evaluation gave due consideration to nitrogen removal needs and attainment of the 2014 TMDL goal for nitrogen.

The CWFAWG published its final report in February 2007 titled “The Clean Water Fund Dilemma: Increasing Demands with Diminishing Fiscal Resources” http://www.ct.gov/dep/lib/dep/water/municipal_wastewater/cwf_a_g_report.pdf. With respect to funding needs, and essential to progress towards meeting the goals for nitrogen management as well as development of the fiscal years 2008 and 2009 priority list, the CWFAWG concluded and recommended among other things:

- Additional general obligation bond authority would be necessary to provide grants for new projects (CSO, denitrification, small community, etc.) financed each year. Best estimates for the next five years are general obligation needs of \$130 million/year.
- Lack of adequate state funding drives up inflationary costs, saps resources, and shifts responsibility onto the municipalities with further reliance on the property tax as the revenue source.
- Lack of adequate subsidized funding results in the overall degeneration of publicly owned facilities and the corresponding ongoing, unaddressed threat to the environment and public health.
- The achievement of water quality goals for Long Island Sound by 2014 will not be met without a significant increase in CWF funding.

With respect to funding needs, and essential to progress towards meeting the goals for nitrogen management as well as development of the fiscal years 2008 and 2009 priority list, the CWFAWG concluded that the state must re-prioritize its obligations and place the CWF much higher in the order of expenditure of the state bonding capacity if the 20-year needs for clean water infrastructure projects are to be met. The DEP and the State’s municipalities were fortunate to receive a significant funding increase in FY08 to \$90 million in general obligation bonds and \$235 million in revenue bonds, which approached the recommendations of the CWFAWG. General obligation bonds of \$90 million and revenue bonds of \$180 million were authorized in the State’s FY 09 capital budget and were approved by the State Bond Commission for awards to municipal wastewater projects.

Funding for FY09 CWF, including funds from the American Recovery and Reinvestment Act of 2009

In addition to the state funding, the State of Connecticut has been awarded approximately \$48.5 million in federal economic stimulus funding from the American Recovery and Reinvestment Act of 2009 (ARRA) for wastewater infrastructure. Consistent with the Clean Water Fund Regulations and the ARRA program requirements of EPA, the DEP amended its FY 09 Priority List to reflect the additional funding, make necessary changes to projects that had previously been listed, including costs and schedules, and add

potential new projects to the list. This \$48.5 million in new federal funding will be deposited into the Clean Water Fund and \$24.25 million will be used for grants.

The DEP, through the efforts of the Treasurer's Office, is able to leverage the stimulus funds and create a purchasing power of \$85 million in new project value. As it relates to nitrogen removal projects, with this \$85 million, the amended priority list extends funding for the construction of two treatment plant upgrades in New Milford and South Windsor and provides supplementary construction funding to fully fund treatment plant upgrades in Meriden, Southington and Groton.

Cost of Projects on Line

Four additional nitrogen removal projects came on line during 2008 – Shelton and Westport (phase 2) at the beginning of the year, Plainville in the summer and Hartford (interim project) in the fall, (Attachment G). Shelton and Westport are the only two project facilities that were added in the 2008 trading year because they were the only two facilities that were in full operation since the beginning of the year. Plainville and Hartford (interim project) will become project facilities in for the 2009 trading year. Collectively, these projects cost over \$90 million to construct, with \$25.7 million going towards nitrogen removal.

There are five facilities expected to be finished in 2009 that will become project facilities for the 2010 trading year: Danbury, Groton Town, Milford Beaver Brook (phase 2), Milford Housatonic (phase 2) and Stratford (Phase 2). Total upgrade cost for these five facilities amounts to about \$122 million with denitrification portion at \$31.6 million. The complete list of nitrogen removal projects that have been completed or currently approved for funding by the Clean Water Fund is provided as Attachment G.

Through 2008, Connecticut and its municipalities have invested more than a half billion dollars in upgrade projects at facilities involved in the NCE. Almost \$200 million of that investment has gone towards nitrogen control. Currently, it is estimated that total upgrade costs to meet the nitrogen control target will exceed \$1 billion, with more than \$400 million of that relevant to nitrogen control upgrades. However, the trading of nitrogen credits with its economic efficiencies is estimated to save the state in the range of \$300 - \$400 million compared to a traditional individual permit program where every facility would be required to meet its individual limit.

Use of NCE Surplus Funds

As noted above, 2008 was the fourth consecutive year that the limit in the general permit has been exceeded. According to Sec. 22a-524(b)(11) of the Connecticut General Statutes, the Commissioner, in consultation with the NCAB, shall: "Establish accounts of funds created from the purchase and sale of equivalent nitrogen credits to be used for administration of the nitrogen credit exchange program and which may be used for nitrogen removal projects, habitat restoration projects and research". Further, in Sec. 22a-524(b)(12) of the Connecticut General Statutes, the Commissioner, in consultation with the NCAB, shall: "Establish any other policies or procedures the commissioner may deem necessary to carry out the nitrogen credit exchange program; and Sec. 22a-524(b)(13) "establish a technical assistance program" to educate and assist municipalities in implementing the nitrogen credit exchange program".

Over the past two years, the NCAB recommended that surplus funds be used for:

- Training and providing technical assistance \$240,000 assigned in 2007. New England Interstate Water Pollution Control Commission (NEIWPCC) has been retained to work with CT DEP and selected municipalities to train operators on the topics of nitrogen removal, the Biological Nitrogen Removal process, and better management of wet weather/cold weather conditions that

have an adverse impact on nitrogen removal. This has helped ensure that the maximum benefit from existing upgrades is attained. The money assigned to this project it was not all spent, the balance will be used to continue work in 2009 – 2010.

- Providing supplemental funding to the USGS for enhanced Connecticut River monitoring. \$160,000 had been allocated on November 2007, but the Board requested an addition of \$20,000 to continue with monitoring in 2008. Because the Connecticut River is tidal, the loads along the river from Thompsonville to Long Island Sound are poorly understood.
- The NCAB is funding enhanced nutrient monitoring statewide by partnering with the USGS. In 2008, \$240,000 was provided for supplemental monitoring to be conducted on rivers throughout the state to better determine nitrogen loads from within and outside of Connecticut. Using those data along with their existing database, USGS will comprehensively analyze and report on nitrogen loads and trends to Long Island Sound for 1999 – 2008.
- The NCAB has previously set aside \$100,000 in 2007 as a placeholder for a study of combined sewer overflows (CSO), sanitary sewer overflows (SSO) and stormwater separation effects on nitrogen loads and other urban stormwater and sewage pollutants. In 2008, total project funding of \$741,854 was recommended by the Board and approved by the Commissioner. DEP has partnered with the University of Connecticut center for Environmental Science and engineering (CESE) to evaluate the relative benefits and impacts of sewer separation and delivery of nitrogen to the receiving water via the POTW and direct storm sewer discharge.
- The Advisory Board has also recommended a second year's membership (2008-2009) in the Water Environment Research Foundation (WERF) at a cost of \$10,000 per year. WERF keeps members informed on the latest technology, technical discussion groups, seminars, and workshops relevant to treatment plant operations and nitrogen removal. WERF is also embarking on a nitrogen research initiative that will be very useful to nitrogen management in Connecticut and plans to use the NCE's data and experiences in their evaluations.

The Advisory Board continues to explore ideas for the use of the surplus funds for training and improvements in treatment plants for the benefit of the NCE program and to ensure that the program achieves the TMDL limit.

V. Revisions to the TMDL/Upper Connecticut River

The Total Maximum Daily Load (TMDL) for nitrogen, adopted in 2001, was scheduled for revision in 2003 to include changes related to anticipated changes in Connecticut and New York water quality standards, a new System-wide Eutrophication Model (SWEM) being developed for Long Island Sound, and to include more specific nitrogen reduction targets for Upper Connecticut River Sources in Massachusetts, New Hampshire and Vermont and for atmospheric deposition. Lengthy delays in the completion of and scenario testing with the SWEM model, as well as implementation of studies of nitrogen loading and delivery in the Upper Connecticut River have put off the TMDL revision until the 2010. At this time, as negotiations proceed among the watershed states, it appears a revised TMDL may not be forthcoming until 2010.

With coordination by the New England Interstate Water Quality Pollution Control Commission (NEIWPCC), the watershed states have been meeting regularly and evaluating the data being generated by the studies of the Upper Connecticut River to develop an equitable and reasonable nitrogen management plan. In particular, a new watershed model has been developed that allows managers to identify nitrogen loads from all point and nonpoint sources, the delivery efficiency of that nitrogen to Long Island Sound, and the costs and feasibility of reductions.

While the studies and evaluations were being completed, EPA Region I, which has permitting authority over the states of Massachusetts and New Hampshire, began taking some initial steps to regulate nitrogen loads from permitted Publicly-Owned Treatment Works in Massachusetts based on the preliminary targets for out of state sources set in the 2001 TMDL. Upon renewal, permits now include requirements for monitoring, plant process evaluations, and an eventual cap on nitrogen loads once the monitoring and evaluations have been conducted for a year. This will help set the stage for eventual permit limits that may require modification based on the revised TMDL.

VI. Recommendations for Statutory Change

Until there is further assessment of the program, and ramifications of the revised TMDL, there were no recommendations to make any statutory changes raised by the Board during 2008.

VIII. Attachments

- A. Nitrogen Credit Advisory Board Members 2008
- B. Total nitrogen Balance Sheet - Monthly Averages by plant 2008
- C. Total nitrogen Balance Sheet 2002 - 2008
- D. Nitrogen Exchange Balance Sheet 2008
- E. Equalized lbs reduced by project facilities 2008
- F. Total Annual Project Costs 2008
- G. Nitrogen Removal Projects Financed by the CWF through 2010
- H. Draft Ruling
- I. Nitrogen Credit Advisory Board 2009 Meeting Schedule

Attachment A
LIST OF APPOINTEES 2008

Name	Current Appointing Authority	Term	Term Expires	
1.	Vacant	Martin M. Looney Senate Majority Leader	3 Years	
2.	John Mengacci Under Secretary Office of Police Management 450 Capitol Avenue Hartford, CT 06106 Phone: (860) 418-6374	Robert M. Genuario Secretary Office of Policy and Management	No specific Term	
3.	Robert Moore The MDC PO Box 800 555 Main St. Hartford, CT 06142-0800 Phone: 278-7850	Donald E. Williams, Jr. Senate President Pro Tem (Sullivan appointee)	3 year	November 2005 *
4.	Betsey Wingfield Bureau Chief DEP 79 Elm St Hartford, CT 06016 Phone: (860) 424-3704	Amey Marrella Commissioner Environmental Protection		No specific term

5.	Sharon Dixon-Peay Office of the Treasurer 55 Elm Street Hartford, CT 06106 Phone: (860) 702-3134	Denise Nappier Secretary Office of the Treasurer	No specific Term	
6	Astrid T. Hanzalek 31 Abraham Terrace Suffield, CT 06078 Phone: (860) 668-2739	Lawrence F. Cafero, Jr. House Minority Leader (Ward Appointee)	3 years	September 2010
7.	Brian Armet Executive Director Mattabassett Director 245 Main Street Cromwell, CT 06416 Phone: (860) 635-5550	Denise Merrill House Majority Leader (Pudlin Appointee)	3 years	June 2008 *
8.	Richard Cellar 83 Lawrence Road Fairfield, CT 06824-3039 Phone: (203) 255-5017	John McKinney Senate Minority Leader (DeLuca Appointee)	3 year	November 2005 *
9.	Carl Almquist Town of Groton WPCA 134 Groton Long Point Road Groton, CT 06340 - 4873 Phone: (860) 448-4083	M. Jodi Rell Governor	3 year	November 2007*

10.	Jeanette Brown Stamford WPCF Harbor View Avenue Stamford, CT 06902 (203) 977-5809	Denise Merrill House Majority Leader (Donovan Appointee)	3 years	November 2009
11.	William Norton, Director City of West Haven WPCA 355 Main Street West Haven, CT06516 (203) 937-3706	Christopher G. Donovan Speaker of the House (Amann Appointee)	3 year	February 2008*
12.	Vacant	Martin M. Looney Senate Majority Leader	3 years	

* Appointees remain active until removed by their appointees authority

Total Nitrogen Balance Sheet - Monthly Averages by Plant, 2008

	Limit '08	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
<u>ZONE: 1</u>													
GROTON CITY WPCF	120	137	108	116	104	108	117	116	96	108	106	98	107
GROTON TOWN WPCF	186	588	649	598	577	573	478	367	218	249	319	405	391
P JEWETT CITY WPCF	19	17	16	14	9	8	4	3	2	10	10	17	40
KILLINGLY WPCF	159	228	281	231	228	268	249	171	167	80	74	152	165
P LEDYARD WPCF	9	4	7	5	5	13	5	3	4	5	7	11	10
MONTVILLE WPCF	143	58	89	88	131	71	68	69	81	85	81	68	94
P NEW LONDON WPCF	468	407	541	509	409	374	257	296	326	293	369	302	441
NORWICH WPCF	243	518	1055	823	790	907	634	505	515	566	529	378	850
PLAINFIELD NORTH WPCF	42	137	154	136	104	83	84	105	95	83	88	81	115
PLAINFIELD VILLAGE WPCF	29	46	65	70	49	37	35	21	15	32	44	46	49
PUTNAM WPCF	64	236	373	232	216	238	162	99	132	162	189	215	220
SPRAGUE WPCF	9	12	25	14	8	7	4	14	17	28	20	19	15
STAFFORD SPRINGS WPCF	73	147	190	186	165	130	153	157	162	175	169	110	171
STONINGTON BOROUGH WP	16	18	30	37	13	16	27	19	32	10	11	10	7
STONINGTON MYSTIC WPCF	33	26	36	34	45	34	32	32	30	27	23	17	21
STONINGTON PAWCATUCK	29	15	23	27	13	12	11	13	10	11	28	35	32
THOMPSON WPCF	12	29	36	30	23	23	9	4	10	36	14	9	34
P UCONN WPCF	53	57	184	104	182	55	94	71	90	43	43	241	75
WINDHAM WPCF	152	251	474	420	412	324	216	111	120	197	205	175	189
<u>ZONE: 2</u>													
P BRISTOL WPCF	483	570	601	667	667	414	279	305	391	600	508	519	610
CANTON WPCF	29	82	149	105	104	90	88	96	85	84	101	95	113
P EAST HAMPTON WPCF	65	149	163	161	106	130	130	112	135	140	126	117	157
EAST HARTFORD WPCF	354	424	590	432	452	283	348	388	430	365	442	409	435
P EAST WINDSOR WPCF	72	24	40	33	23	23	19	23	25	24	20	35	38
ENFIELD WPCF	338	202	338	366	273	232	270	263	234	240	237	297	310
FARMINGTON WPCF	215	345	392	507	288	329	261	207	200	290	261	287	337
GLASTONBURY WPCF	119	364	389	422	418	340	434	284	295	404	392	348	275
HARTFORD WPCF	2881	6523	5554	4539	5430	5284	5319	6073	6312	4867	3974	4703	5336
MANCHESTER WPCF	378	693	842	877	670	640	537	542	650	608	719	777	903
MATTABASSETT WPCF	1011	1179	1407	1191	849	879	1014	904	861	1018	1055	1048	1233
MIDDLETOWN WPCF	269	412	526	586	520	434	275	216	305	564	502	446	565

P = Project Facility

Report Date: 7/22/2009

Total Nitrogen Balance Sheet - Monthly Averages by Plant, 2008

	Limit '08	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
PLAINVILLE WPCF	123	351	554	453	406	380	333	216	207	248	146	242	241
PLYMOUTH WPCF	50	69	87	77	48	67	55	77	104	160	124	94	82
P PORTLAND WPCF	38	26	55	69	30	34	24	22	16	19	22	22	53
ROCKY HILL WPCF	349	556	423	524	348	348	582	415	574	528	479	508	518
SIMSBURY WPCF	130	43	94	104	57	64	66	45	62	73	56	80	101
SOUTH WINDSOR WPCF	128	299	326	357	350	370	355	296	263	321	320	321	303
SUFFIELD WPCF	54	114	79	55	40	47	85	91	119	104	97	97	131
VERNON WPCF	223	405	400	417	439	453	420	370	426	380	462	441	497
P WINDSOR LOCKS WPCF	80	93	160	156	132	86	81	79	103	102	93	111	125
WINDSOR POQUONOCK WPC	119	436	451	471	459	440	517	479	472	419	473	473	389
WINSTED WPCF	77	99	100	129	92	91	96	79	63	56	43	51	89
ZONE: 3													
P BRANFORD WPCF	233	143	249	127	110	91	63	60	70	63	67	102	109
CHESHIRE WPCF	124	176	130	84	56	39	40	44	86	39	62	56	93
MERIDEN WPCF	544	1024	1670	1473	780	656	851	1009	878	759	828	773	1392
P NEW HAVEN EAST WPCF	1900	1188	2152	2810	2506	1172	1625	1449	1466	1433	1293	1205	1496
P NORTH HAVEN WPCF	192	226	380	350	174	191	167	161	214	227	230	253	416
SOUTHINGTON WPCF	246	865	973	816	964	970	808	813	801	1071	826	895	1135
P WALLINGFORD WPCF	326	372	628	680	407	317	256	250	280	266	307	339	466
P WEST HAVEN WPCF	428	605	745	1132	1112	974	862	921	522	496	613	709	652
ZONE: 4													
ANSONIA WPCF	139	253	266	355	418	240	194	173	209	218	243	281	267
BEACON FALLS WPCF	15	60	64	61	63	61	60	37	54	50	61	56	58
DANBURY WPCF	536	1741	1777	1885	1660	2192	1668	1903	1766	2010	2090	1980	1945
P DERBY WPCF	86	48	118	52	56	45	63	52	55	49	46	60	125
P LITCHFIELD WPCF	28	61	83	51	51	47	32	18	23	34	29	38	67
P MILFORD BEAVER BROOK W	114	124	110	144	131	103	109	114	116	116	108	140	132
P MILFORD HOUSATONIC WPC	373	875	877	938	1200	1059	1200	828	821	258	199	261	389
NAUGATUCK TREATMENT C	299	298	510	441	392	256	239	237	189	237	464	439	431
NEW MILFORD WPCF	29	79	108	103	70	93	88	95	90	96	110	160	147
P NEWTOWN WPCF	20	16	19	24	21	15	9	10	16	25	27	24	26
NORFOLK WPCF	13	43	55	26	23	46	39	8	11	14	13	33	41
NORTH CANAAN WPCF	16	20	29	31	27	23	21	17	18	25	23	25	28
SALISBURY WPCF	26	31	42	34	30	31	30	25	29	43	35	34	41

P = Project Facility

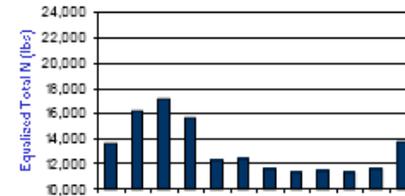
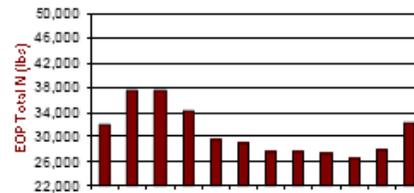
Report Date: 7/22/2009

Total Nitrogen Balance Sheet - Monthly Averages by Plant, 2008

	Limit '08	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
P SEYMOUR WPCF	74	52	87	113	77	58	61	29	26	35	34	36	87
SHELTON WPCF	128	177	315	282	331	407	404	147	134	114	111	81	119
SOUTHURY TR. SCHOOL W	18	10	17	15	12	6	7	5	4	7	5	4	7
P STRATFORD WPCF	431	1128	1438	1217	1077	1127	1415	1475	1547	1537	1775	1830	1531
P THOMASTON WPCF	50	54	103	47	33	37	32	28	24	39	38	23	50
TORRINGTON WPCF	301	307	295	334	279	357	197	231	265	259	214	258	301
P WATERBURY WPCF	1224	903	1532	1939	1047	759	799	547	435	466	501	470	1035
ZONE: 5													
P BRIDGEPORT EAST WPCF	438	201	357	308	377	182	203	148	208	229	265	281	281
P BRIDGEPORT WEST WPCF	1262	1606	1500	2306	2314	986	791	758	744	901	1044	1185	1009
P FAIRFIELD WPCF	492	466	473	536	549	377	497	442	478	514	428	423	676
P WESTPORT WPCF	105	74	66	63	43	39	36	38	40	39	33	26	32
ZONE: 6													
P GREENWICH WPCF	581	643	516	446	487	442	593	550	449	494	356	351	418
P NEW CANAAN WPCF	77	42	51	46	26	19	20	18	18	28	20	23	35
P NORWALK WPCF	870	864	904	1055	1207	737	761	625	567	693	573	502	708
P RIDGEFIELD SOUTH ST. WPC	35	40	47	45	29	26	32	26	24	29	37	35	39
P STAMFORD WPCF	1122	722	771	690	502	440	434	454	410	495	487	498	702
End-Of-Pipe Total		31,925	37,504	37,425	34,322	29,353	28,927	27,500	27,534	27,215	26,573	27,789	32,354
Equalized Total		13,620	16,180	17,070	15,621	12,292	12,427	11,594	11,305	11,426	11,308	11,678	13,726

End-Of-Pipe Permit = 22,339
End-Of-Pipe Avg. = 30,702

Equalized Permit = 11,066
Equalized Avg. = 13,187



Attachment C

Total Nitrogen Balance Sheet – Annual Averages of Monthly End-of-Pipe Nitrogen Loads (lbs/day) by Plant, 2002 - 2008

	<u>2002</u>	<u>2003</u>	<u>2004</u>	<u>2005</u>	<u>2006</u>	<u>2007</u>	<u>2008</u>
ZONE:1							
GROTON CITY WPCF	210	161	179	132	118	129	110
GROTON TOWN WPCF	566	465	447	444	470	421	451
JEWETT CITY WPCF	36	40	39	13	10	13	13
KILLINGLY WPCF	162	147	159	177	152	158	191
LEDYARD WPC	5	3	4	5	7	5	7
MONTVILLE WPCF	187	153	222	92	98	69	82
NEW LONDON WPCF	449	405	332	434	423	414	377
NORWICH WPCF	758	986	769	748	828	684	673
PLAINFIELD NORTH WPCF	50	87	78	90	119	108	105
PLAINFIELD VILLAGE WPCF	32	44	41	49	54	42	42
PUTNAM WPCF	163	170	174	193	205	206	206
SPRAGUE WPCF	15	7	10	13	22	14	15
STAFFORD SPRINGS WPCF	135	131	121	131	114	120	160
STONINGTON BOROUGH WPCF	55	55	42	47	37	22	19
STONINGTON MYSTIC WPCF	36	43	49	48	51	31	30
STONINGTON PAWCATUCK	46	34	46	30	25	18	19
THOMPSON WPCF	21	35	29	33	28	28	21
UCONN WPCF	78	70	107	65	94	67	103
WINDHAM WPCF	265	243	216	165	167	174	258
END OF PIPE TOTAL	3269	3279	3064	2909	3022	2723	2882
ZONE:2							
BRISTOL WPCF	949	1121	793	567	575	532	511
CANTON WPCF	70	87	101	106	113	92	99
EAST HAMPTON WPCF	86	119	96	85	140	110	136
EAST HARTFORD WPCF	755	749	812	803	902	391	417
EAST WINDSOR WPCF	20	34	31	45	32	32	27
ENFIELD WPCF	914	839	275	535	331	218	272
FARMINGTON WPCF	386	354	401	398	440	433	309
GLASTONBURY WPCF	263	307	340	214	290	295	364
HARTFORD WPCF	5978	5900	6529	6831	7408	5839	5326
MANCHESTER WPCF	822	762	755	772	785	715	705
MATTABASSETT WPCF	2120	1795	1453	1408	1202	1129	1053
MIDDLETOWN WPCF	392	385	424	486	440	397	446
PLAINVILLE WPCF	252	304	311	285	301	280	315
PLYMOUTH WPCF	73	69	68	76	80	71	87
PORTLAND WPCF	24	28	36	33	34	26	33
ROCKY HILL WPCF	631	767	780	919	787	610	484
SIMSBURY WPCF	344	316	323	368	206	84	70
SOUTH WINDSOR WPCF	298	324	317	340	298	322	323
SUFFIELD WPCF	34	37	38	72	88	74	88
VERNON WPCF	483	663	538	488	580	469	426
WINDSOR LOCKS WPCF	131	116	100	143	98	94	110
WINDSOR POQUONOCK	427	422	441	467	432	419	457
WINSTED WPCF	250	187	201	206	223	120	82
END OF PIPE TOTAL	15701	15683	15163	15647	15785	12752	12140
ZONE:3							
BRANFORD WPCF	142	79	129	135	103	111	105
CHESHIRE WPCF	468	492	536	480	171	74	75
MERIDEN WPCF	860	917	882	781	827	810	1008
NEW HAVEN EAST WPCF	1400	1630	1408	1703	2271	2201	1650

**Total Nitrogen Balance Sheet – Annual Averages of Monthly End-of-Pipe
Nitrogen Loads (lbs/day) by Plant, 2002 - 2008**

	<u>2002</u>	<u>2003</u>	<u>2004</u>	<u>2005</u>	<u>2006</u>	<u>2007</u>	<u>2008</u>
NORTH HAVEN WPCF	534	502	489	424	226	214	249
SOUTHINGTON WPCF	819	798	768	754	761	868	911
WALLINGFORD WPCF	549	601	627	657	522	340	381
WEST HAVEN WPCF	796	668	511	601	546	498	779
END OF PIPE TOTAL	7570	7690	7353	7540	7433	7123	7166
ZONE:4							
ANSONIA WPCF	273	307	260	287	289	237	260
BEACON FALLS WPCF	41	45	38	42	44	50	57
DANBURY WPCF	1866	1875	1825	1766	2072	1778	1885
DERBY WPCF	53	64	58	59	65	63	64
LITCHFIELD WPCF	67	54	35	49	39	38	45
MILFORD BEAVER BROOK	130	180	120	127	130	132	121
MILFORD HOUSATONIC	439	429	431	479	574	662	742
NAUGATUCK TREATMENT	479	440	234	279	263	250	344
NEW MILFORD WPCF	76	52	56	91	86	88	103
NEWTOWN WPCF	34	50	32	24	36	26	19
NORFOLK WPCF	9	13	12	20	29	32	29
NORTH CANAAN WPCF	18	22	21	31	23	25	24
SALISBURY WPCF	27	27	23	28	29	28	34
SEYMOUR WPCF	55	56	61	69	66	62	58
SHELTON WPCF	452	545	509	501	480	413	219
SOUTHBURY TR. SCHOOL	17	18	16	14	10	7	8
STRATFORD WPCF	535	646	431	539	537	616	1425
THOMASTON WPCF	35	51	45	45	44	32	42
TORRINGTON WPCF	283	299	287	254	265	247	275
WATERBURY WPCF	778	1335	913	965	1001	1034	869
END OF PIPE TOTAL	5667	6508	5407	5669	6082	5820	6623
ZONE:5							
BRIDGEPORT EAST WPCF	568	615	459	470	468	271	253
BRIDGEPORT WEST WPCF	2305	2306	1158	1564	1145	1146	1262
FAIRFIELD WPCF	735	453	417	383	530	408	488
WESTPORT WPCF	140	133	152	148	153	70	44
END OF PIPE TOTAL	3748	3508	2186	2565	2296	1895	2047
ZONE:6							
GREENWICH WPCF	410	459	443	556	520	697	479
NEW CANAAN WPCF	21	24	20	30	30	38	29
NORWALK WPCF	605	888	784	818	755	1043	766
RIDGEFIELD SOUTH ST.	23	27	28	35	28	32	34
STAMFORD WPCF	1652	1645	1523	1418	1029	726	550
END OF PIPE TOTAL	2711	3044	2798	2857	2362	2536	1858
STATE END OF PIPE TOTAL	36664	37708	33966	33182	34974	30842	30702

LIS Total Nitrogen Credit Exchange Final Balance - 2008

SELLING Credits		BUYING Credits	
<u>Facility Name</u>		<u>Facility Name</u>	
STAMFORD WPCF	\$939,510	STRATFORD WPCF	\$1,093,872
WATERBURY WPCF	\$349,853	DANBURY WPCF	\$1,019,237
BRIDGEPORT EAST WPCF	\$258,283	HARTFORD WPCF	\$803,183
NEW HAVEN EAST WPCF	\$246,375	SOUTHINGTON WPCF	\$535,209
NORWALK WPCF	\$170,820	MILFORD HOUSATONIC WPCF	\$406,075
GREENWICH WPCF	\$167,535	MERIDEN WPCF	\$373,439
BRANFORD WPCF	\$126,144	WEST HAVEN WPCF	\$345,911
WESTPORT WPCF	\$85,164	ANSONIA WPCF	\$133,157
NEW CANAAN WPCF	\$78,840	NORWICH WPCF	\$127,130
CHESHIRE WPCF	\$39,436	WINDSOR POQUONOCK WPCF	\$105,481
NEW LONDON WPCF	\$26,904	MANCHESTER WPCF	\$102,049
TORRINGTON WPCF	\$25,623	SHELTON WPCF	\$100,143
DERBY WPCF	\$24,210	GLASTONBURY WPCF	\$80,483
ENFIELD WPCF	\$20,597	GROTON TOWN WPCF	\$78,347
MONTVILLE WPCF	\$18,035	VERNON WPCF	\$63,351
SIMSBURY WPCF	\$17,739	SOUTH WINDSOR WPCF	\$60,855
SEYMOUR WPCF	\$17,608	MIDDLETOWN WPCF	\$58,145
EAST WINDSOR WPCF	\$14,043	PLAINVILLE WPCF	\$56,765
THOMASTON WPCF	\$7,884	NORTH HAVEN WPCF	\$56,174
SOUTHBURY TR. SCHOOL WPCF	\$7,556	NEW MILFORD WPCF	\$55,911
FAIRFIELD WPCF	\$5,585	WALLINGFORD WPCF	\$54,203
GROTON CITY WPCF	\$2,957	BEACON FALLS WPCF	\$46,220
STONINGTON PAWCATUCK WPCF	\$2,792	NAUGATUCK TREATMENT Co.	\$44,348
JEWETT CITY WPCF	\$1,675	ROCKY HILL WPCF	\$44,348
PORTLAND WPCF	\$1,643	PUTNAM WPCF	\$32,653
RIDGEFIELD SOUTH ST. WPCF	\$1,643	FARMINGTON WPCF	\$27,791
STONINGTON MYSTIC WPCF	\$887	WINDHAM WPCF	\$26,116
NEWTOWN WPCF	\$756	EAST HAMPTON WPCF	\$23,324
LEDYARD WPCF	\$591	STAFFORD SPRINGS WPCF	\$21,435
BRIDGEPORT WEST WPCF	\$0	CANTON WPCF	\$20,696
		EAST HARTFORD WPCF	\$19,661
		PLAINFIELD NORTH WPCF	\$14,487
		MATTABASSETT WPCF	\$13,797
		UCONN WPCF	\$12,319
		PLYMOUTH WPCF	\$10,939
		SUFFIELD WPCF	\$10,611
		LITCHFIELD WPCF	\$9,773
		WINDSOR LOCKS WPCF	\$9,362
		NORFOLK WPCF	\$9,198
		BRISTOL WPCF	\$8,278
		MILFORD BEAVER BROOK WPCF	\$7,703
		KILLINGLY WPCF	\$7,358
		NORTH CANAAN WPCF	\$4,599
		SALISBURY WPCF	\$4,599
		PLAINFIELD VILLAGE WPCF	\$2,989
		THOMPSON WPCF	\$2,661
		SPRAGUE WPCF	\$1,577
		WINSTED WPCF	\$1,478
		STONINGTON BOROUGH WPCF	\$887
TOTAL	\$2,660,688	TOTAL	\$6,148,327

Difference: Selling - Buying = (\$3,487,639)

BOLD = Clean Water Fund Nitrogen Project Facility

The final balance (annual dollar amount) for each facility was calculated by subtracting the facility's 2008 TN loading as reported to DEP, from the facility's General Permit 2008 limit. The difference was then multiplied by the E-factor for that facility to determine the number of credits available to sell or needed to purchase. Credits were then multiplied by the value of a credit (\$4.50) to calculate the annual balance shown above.

Eq Pounds/day Reduced by Project Facilities - 2008

Project Facilities	Baseload	Average TN	EOP Reduced	E Factor	E Pounds Reduced
BRANFORD WPCF	526	105	421	0.60	252.60
BRIDGEPORT EAST WPCF	991	253	738	0.85	627.30
BRIDGEPORT WEST WPCF	2852	1226	1626	0.85	1,382.10
BRISTOL WPCF	1091	511	580	0.18	104.40
CHESHIRE WPCF	281	75	206	0.49	100.94
DERBY WPCF	195	64	131	0.67	87.77
EAST HAMPTON WPCF	148	136	12	0.20	2.40
EAST HARTFORD WPCF	801	417	384	0.19	72.96
EAST WINDSOR WPCF	163	27	136	0.19	25.84
ENFIELD WPCF	763	272	491	0.19	93.29
FAIRFIELD WPCF	1113	488	625	0.85	531.25
GREENWICH WPCF	1313	479	834	1.00	834.00
JEWETT CITY WPCF	42	13	29	0.17	4.93
LEDYARD WPCF	20	7	13	0.18	2.34
LITCHFIELD WPCF	64	45	19	0.35	6.65
MILFORD BEAVER BROOK WPCF	258	121	137	0.67	91.79
MILFORD HOUSATONIC WPCF	844	742	102	0.67	68.34
NEW CANAAN WPCF	175	29	146	1.00	146.00
NEW HAVEN EAST WPCF	4294	1650	2644	0.60	1,586.40
NEW LONDON WPCF	1057	377	680	0.18	122.40
NEWTOWN WPCF	45	19	26	0.46	11.96
NORTH HAVEN WPCF	433	249	184	0.60	110.40
NORWALK WPCF	1967	766	1201	1.00	1,201.00
PORTLAND WPCF	86	33	53	0.20	10.60
RIDGEFIELD SOUTH ST. WPCF	80	34	46	1.00	46.00
SEYMOUR WPCF	167	58	109	0.67	73.03
SHELTON WPCF	290	219	71	0.67	47.57
SIMSBURY WPCF	293	70	223	0.18	40.14
STAMFORD WPCF	2536	550	1986	1.00	1,986.00
STRATFORD WPCF	974	1425	-451	0.67	-302.17
SUFFIELD WPCF	123	88	35	0.19	6.65
THOMASTON WPCF	114	42	72	0.60	43.20
UCONN WPCF	120	103	17	0.15	2.55
WALLINGFORD WPCF	737	381	356	0.60	213.60
WATERBURY WPCF	2766	869	1897	0.60	1,138.20
WEST HAVEN WPCF	967	779	188	0.60	112.80
WESTPORT WPCF	238	44	194	0.85	164.90
WINDSOR LOCKS WPCF	180	110	70	0.19	13.30
WINSTED WPCF	175	82	93	0.18	16.74

TOTAL:	11,080.17
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Projects Cost 18,217,222

Credit Cost:	\$4.50
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Attachment F
Total Annual Project Cost
2008

Project Facilities	Project Year	Total Annual Capital Cost	Total Annual O&M Cost	Total Annual Project Cost
BRANFORD WPCF	2004	\$168,661	\$345,324	\$513,985
BRIDGEPORT EAST WPCF	2005	\$51,755	\$615,468	\$667,223
BRIDGEPORT WEST WPCF	2005	\$155,266	\$1,088,120	\$1,243,386
BRISTOL WPCF	2005	\$28,759	\$103,269	\$132,028
CHESHIRE WPCF*	2008	\$317,316	\$370,000	\$687,316
DERBY WPCF	2001	\$31,785	\$71,181	\$102,966
EAST HAMPTON WPCF	2002	\$30,144	\$113,097	\$143,241
EAST HARTFORD WPCF*	2008	\$82,707	\$165,127	\$247,834
EAST WINDSOR WPCF	1997	\$61,136	\$35,745	\$96,881
ENFIELD WPCF*	2005	\$0	\$220,000	\$220,000
FAIRFIELD WPCF	1997	\$514,885	\$411,757	\$926,642
GREENWICH WPCF	1997	\$0	\$155,726	\$155,726
JEWETT CITY WPCF	2006	\$65,659	\$101,180	\$166,839
LEDYARD WPCF	1998	\$18,062	\$21,500	\$39,562
LITCHFIELD WPCF	2005	\$45,829	\$27,369	\$73,198
MILFORD BEAVER BROOK WPCF	1997	\$9,074	\$37,000	\$46,074
MILFORD HOUSATONIC WPCF	1997	\$0	\$201,330	\$201,330
NEW CANAAN WPCF	2001	\$56,656	\$60,685	\$117,341
NEW HAVEN EAST WPCF	1998	\$151,122	\$1,059,823	\$1,210,945
NEW LONDON WPCF	2003	\$54,978	\$315,164	\$370,142
NEWTOWN WPCF	1998	\$72,954	\$250,000	\$322,954
NORTH HAVEN WPCF	2007	\$54,418	\$268,492	\$322,910
NORWALK WPCF	2001	\$276,853	\$622,240	\$899,093
PORTLAND WPCF	2002	\$44,740	\$74,430	\$119,170
RIDGEFIELD SOUTH ST. WPCF	1997	\$0	\$52,641	\$52,641
SEYMOUR WPCF	1994	\$14,654	\$252,000	\$266,654
SIMSBURY WPCF*	2008	\$211,063	\$25,863	\$236,926
SHELTON	2008	\$21,642	\$355,482	\$377,124
STAMFORD WPCF	2007	\$2,238,236	\$1,295,000	\$3,533,236
STRATFORD WPCF	2010	\$0	\$336,154	\$336,154
SUFFIELD WPCF*	2008	\$0	\$41,795	\$41,795
THOMASTON WPCF	2002	\$56,408	\$114,890	\$171,298
UConn WPCF	1997	\$0	\$42,377	\$42,377
WALLINGFORD WPCF	2007	\$122,125	\$203,174	\$325,299
WATERBURY WPCF	2001	\$737,935	\$476,357	\$1,214,292
WEST HAVEN WPCF	1997	\$0	\$465,374	\$465,374
WESTPORT WPCF*	2008	\$1,688,193	\$50,600	\$1,738,793
WINDSOR LOCKS WPCF	2004	\$84,200	\$175,029	\$259,229
WINSTED WPCF*	2008	\$43,673	\$85,571	\$129,244
TOTAL		\$7,510,888	\$10,706,334	\$18,217,222

BOLD=ESTIMATED

Attachment G

Nitrogen Removal Projects Financed by the CWF through 2010

City or Town	Total Project Cost (\$)	Nitrogen Cost Portion (\$)	Year project Completed	Baseline lbs/day	2007 lbs/day
Seymour	9,800,000	250,000	1993	167	62
East Windsor	10,000,000	1,000,000	1996	163	32
Fairfield Phase 1	4,700,000	4,700,000	1996	1113	408
Greenwich	500,000	500,000	1996	1313	697
Milford BB Phase 1	1,000,000	1,000,000	1996	258	132
Milford H Phase 1	650,000	650,000	1996	844	662
Norwalk Phase 1	1,100,000	1,100,000	1996	1967	1043
Ridgefield	200,000	200,000	1996	80	32
Stratford Phase 1	800,000	800,000	1996	974	120
Univ. of Conn	12,000,000	1,058,000	1996	120	67
West Haven Phase 1	750,000	750,000	1996	967	498
Westport Phase 1	400,000	400,000	1996	238	70
Ledyard	3,500,000	3,500,000	1997	20	5
New Haven Phase 1	8,200,000	8,200,000	1997	4294	2201
Newtown	12,000,000	1,058,000	1997	45	26
Stamford Phase 1	3,500,000	3,500,000	1997	2536	726
Derby	2,763,000	2,763,000	2000	195	63
New Canaan	14,000,000	1,235,000	2000	175	38
Norwalk Phase 2	56,000,000	5,538,000	2000	1967	104
Waterbury	120,000,000	17,359,000	2000	2766	1034
East Hampton	690,000	690,000	2001	148	110
Thomaston	9,313,000	1,164,000	2001	114	32
New London	3,069,000	2,889,000	2002	1057	414
Portland	5,200,000	1,047,000	2002	86	26

City or Town	Total Project Cost (\$)	Nitrogen Cost Portion (\$)	Year project Completed	Baseline lbs/day	2007 lbs/day
Branford	21,542,000	3,158,000	2003	526	111
Fairfield Phase 2	40,551,000	12,046,000	2003	1113	697
Windsor Locks	2,349,000	1,841,000	2003	180	180
Bridgeport E Phase 1	2,090,000	2,090,000	2004	991	991
Bridgeport W Phase 1	2,375,000	2,375,000	2004	2852	1146
Bristol Phase 1	584,000	584,000	2004	1091	532
Enfield	2,390,000	2,390,000	2004	763	218
Litchfield	4,000,000	1,000,000	2004	64	38
Jewett City	10,000,000	1,500,000	2005	42	11
Stamford Phase 2	97,223,000	59,500,000	2006	2536	726
North Haven	1,000,000	1,000,000	2006	433	214
Wallingford	2,276,000	2,276,000	2006	737	340
East Hartford	1,965,000	1,965,000	2007	801	391
Cheshire	5,775,000	5,775,000	2007	281	74
Simsbury Phase 1	21,231,000	4,044,000	2007	293	84
Suffield	4,075,000	3,370,000	2007	122	74
Winsted	1,100,000	1,100,000	2007	175	120
Westport Phase 2	37,131,000	8,253,000	2008	238	70
Shelton	21,642,000	4,293,000	2008	290	413
Hartford Interim Project	6,900,000	6,900,000	2008	6512	5839
Plainville	25,541,000	6,217,000	2008	277	280
Milford BB Phase 2	11,700,000	1,613,000	2009	258	132
Milford H Phase 2	34,900,000	10,038,000	2009	844	662
Stratford Phase 2	54,000,000	10,116,000	2009	974	616
Danbury	5,000,000	5,000,000	2009	1211	1778
Groton Town	16,551,000	4,842,000	2009	420	421
Southington Interim Project	13,000,000	13,000,000	2010	433	868

City or Town	Total Project Cost (\$)	Nitrogen Cost Portion (\$)	Year project Completed	Baseline lbs/day	2007 lbs/day
Stafford	12,100,000	1,581,000	2010	164	120
Windham	22,917,000	1,638,583	2010	344	174
Glastonbury	30,611,000	6,671,854	2010	268	295
Meriden	42,455,000	32,517,000	2010	1230	810
West Haven	55,000,000	13,200,000	2011	967	498
Ansonia	41,731,000	10,015,000	2012	314	237

Commissioner's Memo on Price of Credit for 2008.



STATE OF CONNECTICUT
DEPARTMENT OF ENVIRONMENTAL PROTECTION



Notice of Proposed Value of an Equivalent Nitrogen Credit for 2008

To: Connecticut Municipalities with Sewage Treatment Facilities
From: Gina McCarthy, Commissioner Department of Environmental Protection
Betsey Wingfield, Chair, Nitrogen Credit Advisory Board

The Connecticut Department of Environmental Protection, working with the Nitrogen Credit Advisory Board, implements a nitrogen credit exchange program and General Permit for nitrogen discharges to reduce nitrogen loadings from sewage treatment plants.

Under the exchange program, the cost of a credit is calculated on an annual basis. Accordingly, pursuant to Section 22a-527(b), the Nitrogen Credit Advisory Board hereby gives notice that it proposes an annual value for an equivalent nitrogen credit of \$4.50 for calendar year 2008. This value was derived, as specified in Section 22a-527(b), by dividing the total annual project cost for nitrogen removal projects at Connecticut sewage treatment facilities by the reduction in equivalent pounds of nitrogen achieved.

The Commissioner of the Department of Environmental Protection hereby issues a draft ruling accepting the Board's proposal of a value of \$4.50 for an equivalent nitrogen credit in calendar year 2008. Pursuant to Section 22a-527(c), the Commissioner's draft ruling shall become final if no municipality or group of municipalities petition for a review of the proposed value of an equivalent nitrogen credit within 15 business days after the issuance date of the Commissioner's draft ruling.

Enclosed with this notice is a table that lists the facilities that will be buying and selling nitrogen credits under this program for the year 2008. Should you have any questions please contact Ms. Iliana Ayala of the Department's Water Protection and Land Reuse Bureau at 860-424-3758 or email Ms. Ayala at iliana.ayala@ct.gov

Sincerely,

Betsey Wingfield
Chairman, Nitrogen Credit Advisory Board

Sincerely,

Gina McCarthy
Commissioner

Date 2/2/09

Carl Almquist, Groton
Brian Arnet, Mattabassett District
Jeannette Brown, Stamford
Richard Cellar, Fairfield
Astrid T. Hanzalek, Suffield
John Mengacci, Connecticut Office of Policy and Management
Robert Moore, Metropolitan District Commission
William Norton, West Haven
Sharon Dixon-Peay, Connecticut Office of the Treasurer

Attachment I

Nitrogen Credit Advisory Board 2010 Meeting Schedule

All meetings are schedule for 10:00 am in the Holcombe Room on the 5th floor at 79 Elm Street, Hartford

January 27, 2010

February 24, 2010

March 17, 2010

April 21, 2010

May 19, 2010

June 16, 2010

July 21, 2010

August 18, 2010

September 15, 2010

October 20, 2010

November 17, 2010

December 15, 2010