The Clean Water Fund Dilemma:

Increasing Demands with Diminishing Fiscal Resources

February 2007

A Report from the Clean Water Fund Advisory Work Group to DEP Commissioner Gina McCarthy

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A Report from the Clean Water Fund Advisory Work Group:

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Introduction

The Department of Environmental Protection's biennial adoption of the Clean Water Fund's Priority List, which governs the state funding of wastewater infrastructure projects through the Clean Water Fund, is generally a routine procedure. However, the process leading up to the adoption of the FY06 & 07 Priority List, in sharp contrast to its predecessors, was a difficult and competitive progress pitting one municipality against another. This intense competition was the result of historically unprecedented low bonding authorizations during the preceding 5 years. Four out of every five projects that were ready for construction and would normally have received Clean Water Fund assistance were either stalled or had to pursue other, more expensive, funding alternatives.

As a result of the renewed focus brought on to the Clean Water Fund through the Priority List adoption process, Governor M. Jodi Rell requested that Department of Environmental Protection 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 fiscal ramifications for municipalities in the State."

Therefore, a Clean Water Fund Advisory Work Group was created with the charge to evaluate creative options for the Clean Water Fund to provide a sustainable level of funding to assist municipalities in addressing both known and emerging water quality issues and enhancement of their wastewater infrastructure, all with an end goal of protecting water quality.

The membership of the work group was deliberately diverse, with members representing environmental organizations, municipalities, financial experts, engineering professionals, and other state agencies.

As the advisory group met numerous times throughout the summer and fall of 2006, it became apparent that the majority of the work group saw no need for significant legislative changes to the program structure, but strongly felt that adequate funding needed to be pursued. Therefore, the scope of the study was redirected by the Advisory Work Group.

This report represents the work effort of the Clean Water Fund Advisory Work Group and is respectfully submitted to DEP Commissioner McCarthy in February of 2007.

EXECUTIVE SUMMARY

The Clean Water Fund program is not "BROKEN." The dilemma is a lack of adequate federal and state financing. What is needed is not significant statutory change but rather financial support. It is this lack of funding that needs to be addressed by state policy and fiscal decision makers.

The Clean Water Fund program is a nationally recognized program administered by the Office of the Treasurer and the Department of Environmental Protection that provides grants and low interest loans to municipalities for wastewater infrastructure improvement projects. Since its inception in 1986 through FY 2002, the CWF program was supported with an average annual authorization of $48 million in General Obligation bonds, which support the grants. This investment has reaped great benefits to public health, water quality, economic development, and the beginning of restoring an oxygen depleted area in western Long Island Sound.

However, from FY03 through FY07, the CWF program lost its priority with policy and fiscal leaders of the state, with only $40 million in new General Obligation bonds authorizations and rescissions of $78 million. This resulted in an annual loss of nearly $8 million over the last 5 years.

During this time period, projects with an estimated value of $300 million were designed and ready to proceed to construction. Unfortunately, sufficient CWF funds were not authorized to fund these projects, resulting in a large financial backlog for the program.

Looking forward over the next 20 years, the Department of Environmental Protection estimates that over $5 billion is needed to fund wastewater infrastructure projects. Identified priorities include the Long Island Sound nitrogen reduction program, mitigation of combined sewer overflows, and elimination of sanitary sewer overflows. In addition, funds should be ideally available for other water quality improvement initiatives such as storm water management and decentralized wastewater management programs. Fiscal support for the CWF must be adequate and predictable in order to allow municipalities and the state to work together to bring these large infrastructure projects from planning to design to construction.

Additional fiscal support for the CWF is immediately needed to meet both the backlog of existing projects and the demands of new projects. An infusion of $100 million from the current budget surplus would support grants needed to address the backlog, while $130 million per year of new General Obligation bonds in each of the next 5 years is needed for new projects.

Revenue bonds, which support the loan component of the Clean Water Fund, can be sustained by the CWF at a rate of $90 million per year without additional debt service subsidy (general obligation bonds). Additional revenue bond authorizations, estimated at $80 million beyond the annual $90 million sustainable revenue bonds, will be necessary to address program peak demands.

In addition to the recommendations above, the State should focus efforts to attract federal dollars to assist in financing regional programs such as the Long Island Sound Program and the Connecticut River.

In conclusion, the fiscal stature of the Clean Water Fund must be re-established. Adequate funding must be made available if the State is to accomplish, in a timely manner, its environmental goals of allowing Connecticut citizens to utilize this state's natural resources to sustain and improve the quality of their lives.

The Clean Water Fund Dilemma:
Increasing Demands with Diminishing Fiscal Resources

At no time in the 20 year history of the Clean Water Fund (CWF) has the demand for construction funding been higher. The DEP estimates wastewater infrastructure needs of nearly 5 billion dollars over the next twenty years. The projects include combined sewer overflow (CSO) correction projects to eliminate the discharge of nearly 2 billion gallons of combined sewage into Connecticut's waterways each year, denitrification projects necessary to restore the health of Long Island Sound, emerging water quality issues such as phosphorus removal, the need for increased treatment capacity for the state's growth and economic development and the continued maintenance of existing wastewater infrastructure.

Combined Sewer Overflow Correction

Combined sewers, designed to carry both sanitary sewage and stormwater in a single pipe, existed in 13 Connecticut municipalities in the 1970's. During heavy precipitation, untreated discharges called combined sewer overflows (CSOs) occur at defined locations in the sewer system. Over the last three decades, substantial progress has been made in reducing CSOs. In 6 of the 13 municipalities, CSOs have been eliminated through projects which separated the stormwater and sanitary flow into separate pipes. Two additional communities were able to eliminate CSOs by providing additional treatment plant capacity. In the remaining five, efforts have reduced the frequency and duration of overflows, but significant additional work is needed to eliminate the problem.

In spite of the steady progress, the pace of correction is unacceptable when one looks at the negative consequences of CSOs. There remains more than 2 billion gallons of combined sewage discharged annually from the 5 remaining systems in Hartford (MDC), New Haven, Norwich, Middletown and Bridgeport. As a result, more than 80 miles of streams and 266 square miles of harbor areas are not meeting water quality standards. "Not meeting water quality standards" is a polite way of saying that, 30 to 50 times per year, untreated sewage overflows into our waterways that

- prevents Connecticut citizens from utilizing the state's natural resources,
- may lead to water borne illnesses,
- contributes other pollutants that the river must assimilate, and
- is aesthetically displeasing.

Not all CSO discharges make their way into the state's waterways. Combined sewer lines sometimes become surcharged with flow and cause back-ups into basements of homes and businesses or flood streets. Sources from the 5 remaining CSO systems indicate that more than 250 basements receive sewage on an annual basis and that street flooding with combined sewage is a common situation in certain neighborhoods after heavy rains.

These hazardous conditions were more understandable in the beginning of the environmental movement in the 1970's; but today in 2007, to have these same conditions present in Connecticut, with no end in sight, is unacceptable. Combined sewer overflow

correction projects have reduced the volume of overflows in the five remaining systems by 40% since the 1970s, at a cost of approximately $300 million. Cost estimates to complete the CSO correction include $350 million for New Haven and $1.3 billion for the Hartford MDC with numbers for Norwich, Middletown and Bridgeport still in development. However, current estimates indicate that the cost to adequately ameliorate the wastewater problems in the five major CSO communities will total more than $2 billion.

While CSO communities are willing to step up and implement the necessary corrective work, the issue of affordability is a limitation. Affordability is defined in federal (EPA) policies as a relationship between median household income and the annual cost of the project in question. Under this criteria, projects whose cost to the individual users exceeds 2% of the median household income are considered unaffordable. An increase in the amount of grant and loan availability for CSO projects would dramatically increase the number of projects and shorten the time period for correction of CSOs.

Long Island Sound Hypoxia

The goal of eliminating hypoxia in Long Island Sound was set jointly by Connecticut, New York and EPA. With a target date of 2014 to attain this goal, substantial progress has been made in Connecticut with the construction of denitrification facilities at 33 water pollution control facilities (WPCFs) thus far, at a cost of over $650 million. At the initiation of the program, Connecticut WPCFs discharged approximately 25,008 equalized pounds of nitrogen per day. To reach the level of reduction recommended by the Long Island Sound Study, a reduction of 15,348 pounds of nitrogen must be achieved. As of the end of 2006, 10,371 pounds per day have been removed through upgrades and operational changes, leaving 4,977 equalized pounds to be removed to reach the defined goal. The remaining costs for achieving the final nitrogen reductions are significant. Seventeen additional construction projects with a combined value of $340 million will be ready to proceed before 2009. Additional projects with costs exceeding $263 million will be necessary in order to meet the 2014 limits for nitrogen discharges contained in the General Permit for Nitrogen.

Since Public Act 01-180 was enacted into law, Connecticut has enjoyed the benefits of the most successful effluent trading program in the country. Under this program, municipalities are allowed to buy nitrogen credits from the State at a subsidized rate while waiting for funding for their own projects. The program was instituted as a viable alternative to the establishment of individual permit limits in each municipality's NPDES permit. It was projected to save as much as $200 million over 15 years in construction funds by funding the most cost-effective projects first.

Failure to continue to make progress toward meeting the State's obligations under the Total Maximum Daily Load (TMDL) may result in a federally imposed mandate for nitrogen limits in all NPDES permits. As a result, all municipalities without adequate nitrogen reduction could be compelled to install such treatment immediately or face fines and penalties for permit violations. Only a significant increase in the funding for the Long Island Sound nitrogen reduction program will keep this issue from reverting into the control of the federal government.

Phosphorus Removal

The DEP has identified phosphorus as the next emerging issue in municipal wastewater to be addressed. The "2006 List of Connecticut Waterbodies Not Meeting Water Quality Standards" also known as the "303(d) Report" or the "Impaired Waters List" has identified 31 inland water body segments as potentially impaired due to nutrient enrichment. As this program is in its infancy as compared to CSOs and denitrification, it is not yet possible to identify which sewage treatment plants will be required to remove phosphorus nor is it possible to summarize costs accurately.

The phosphorus issue demonstrates that, as we learn more about how our actions impact the environment, additional issues and concerns requiring remedial action are likely to emerge. One such issue which is expected to generate substantial activity during the next decade concerns the impacts of pharmaceuticals and personal care products. These compounds have been detected in some waters now that the presence of other, more egregious, pollutants has been substantially reduced.

Rehabilitation of Existing Infrastructure

Maintenance of existing wastewater infrastructure includes rehabilitation of sewer lines, pump stations and treatment plants. Sewage conveyance systems have a design life of 40 years whereas treatment plants are 20 years. At or near the end of a design life, the facility needs to be rehabilitated or upgraded in order to provide reliable service for the next design period. Rehabilitation of existing infrastructure, including secondary treatment, infiltration / inflow correction, and sewer and pump station rehabilitation, is estimated to cost $2.146 billion.

Total Infrastructure Needs

The combined fiscal needs (in 2006 dollars) for all currently identified wastewater infrastructure categories over the next 20 years are shown in Table 1 below. Individual category needs are identified in Appendix A with explanatory text on how the calculations were derived. These numbers are presented to make decision makers aware of the immense magnitude of wastewater infrastructure and to contrast those needs to the recent (2003-2007) bonding history of the CWF.

Table 1: 20 Year Infrastructure Needs

	(millions)
CSO correction	$1,544
Denitrification	$603
Phosphorus Reduction	$55
Decentralized Management	$107
Infiltration / Inflow Correction	$513
Secondary Treatment	$1,203
Stormwater & Non-point	$84
Sewer & PS Rehabilitation	$430
Sewer Extensions	$409
Total	$4,948

The past five years of bonding for the CWF has shown that the priorities for public health and water resources through wastewater infrastructure have been lost in competing demands. It is time for a renewed priority for the CWF that becomes a commitment of the State for the next generation. That renewed priority should be driven by recognition that

- municipalities can not afford corrective action based solely upon local property taxes,
- public health impacts from combined sewage are unacceptable,
- Connecticut's natural resources are being stressed and become unavailable for public use, and
- economic development for the State's benefit can be stifled without proper wastewater infrastructure.

The benefits of wastewater infrastructure are multi-faceted and impact all state citizens both directly and indirectly.

There have been unintended consequences from the lack of sufficient funding in the last 5 years. There has been a serious negative fiscal impact caused by inflationary impacts on construction that go far beyond the Consumer Price Index (CPI) inflation figures. Within the last five years, construction bids have risen at rates of 10%-12% per year, driven by price increases in steel, fuel and concrete, in particular. Municipalities should not be in a position to design wastewater projects and then not construct the project due to a lack of CWF financing. A two year delay in construction due to funding delays can negate the benefit of the grant portion of CWF financing. In addition, project delays cost the state additional financing and slowly diminish the capacity of the program. Several municipalities have recognized the financial disincentive of waiting for CWF financing and have sought concurrence from the

Commissioner of DEP to construct the project without CWF financing with the hope of being refinanced by the CWF before the municipality permanently finances the project. To date, the Commissioner has granted 5 deviations allowing the municipalities to initiate construction without a CWF Agreement while retaining eligibility to compete for funding should additional funds become available. However, many municipalities cannot afford this option. As a last resort, a few municipalities may seriously consider a moratorium on new development pending resolution of inadequate sewage collection and treatment issues.

Decision makers on the financial health of the CWF need to be aware that DEP is not the sole driver on environmental projects. The Federal EPA has primacy on enforcing the Federal Clean Water Act. Within the last 5 years, EPA has successfully negotiated Consent Decrees with 4 Connecticut municipalities regarding sanitary sewer overflows. Not only did each Consent Decree include a penalty ($350,000 to $840,000), but each included strict compliance deadlines for construction projects. The compliance deadlines were negotiated on how rapidly the project could be developed and were not able to consider fiscal impacts on the municipality or whether CWF financing was available.

It should be noted that the fiscal impacts on the state's largest urban centers for wastewater infrastructure needs are daunting. While upgrades and expansions of the water pollution control facilities have kept the levels of treatment generally within that required by their discharge permits, the sewer infrastructures are some of the oldest in the state, and in many cases have substantially exceeded their design lives. In addition, the sewer infrastructure in these municipalities tends to be combined sewer systems, with all the attendant fiscal and environmental challenges of such a system. Compounding this situation, the residents of these areas are often those citizens least able to afford the costs associated with achieving and maintaining compliance with environmental requirements.

Deferral of wastewater infrastructure funding has long term consequences to the municipalities. At this critical stage, adequate funding for the Clean Water Fund and an ongoing commitment to steady, predictable funding for the next 20 years is essential to developing and implementing a strategy to address the environmental challenges that threaten Connecticut's water resources.

The History of the Clean Water Fund

The Clean Water Fund (CWF) was established in 1986 and is codified in Sec. 22a-475 through 482 of the Connecticut General Statutes. As a replacement to the previous EPA Construction Grants program, the CWF was established as a state revolving fund to provide an ongoing funding program for wastewater infrastructure. It provides state funding assistance to municipalities for wastewater projects that correct existing pollution problems and improve water quality. The program is governed by extensive regulations adopted in 1992 and an annual priority list that determines which projects are to be funded with each year's capital funding.

Funding under the CWF is a combination of both grants and low-interest loans for 100% of the eligible project costs. Grants are supported by general obligation (G.O.) bonds of the State while the loans are supported by revenue bonds of the State. Grant percentages vary by project type, while all loans are set by statute at 2% interest with up to 20 years to repay. Because of the favorable interest rate, a diverse cross-section of Connecticut's municipalities have participated in the program. The state's program is one of the most well-established programs in the country, with the capability to provide low cost financing to all its municipalities.

The original statute authorized grants at 20% of eligible project costs for all projects except combined sewer overflow correction projects, which receive a 50% grant. The 50% grant was established to reflect that CSO projects benefit more than just the municipality in which the combined sewers exist, as well as a realization of the large expense of CSO correction projects located in the poorer urban municipalities. The original statute also included a sunset provision that would eliminate all grants as of July 1, 2006. After that date, all CWF projects were to be funded solely with low-interest loans.

It was anticipated that all treatment plant upgrades and CSO correction projects would have been completed in the 20-year period, and that once all projects were funded with state assistance, subsequent upgrade projects would be funded solely with low-interest loans. In other words, the responsibility of the State would be reduced once the "initial" project in each municipality was funded with both grants and loans.

Since the establishment of the CWF in 1986, the Connecticut legislature has passed multiple amendments to the Statutes which have increased state grants for certain categories of projects (25% grant for small community projects, 30% grant for project costs associated with denitrification, 55% planning grant) and which eliminated the sunset provision for the grant portion of the CWF financing. In addition, a loan-only program was created in 2002 for one category of projects defined as collection system improvements (see CGS Sec. 22a-478(c)(8)). The loan-only program was borne of the idea of using "excess" revenue bond authorizations for projects not typically reachable for funding on the priority list. "Excess" revenue bonds were deemed to be revenue bonds beyond those necessary to provide loans to higher rated projects which were receiving grants. "Excess" revenue bonds may not exist in the future and will require a re-assessment of the loan-only program.

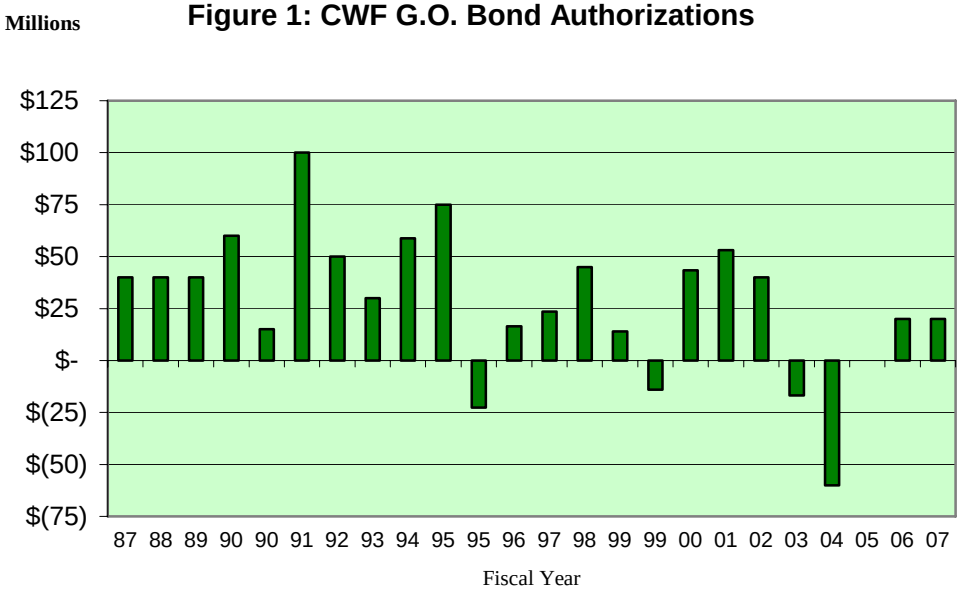
The revenue bond program, instituted in 1991, leverages the federal capitalization grant and the required state matching contribution to provide funding for projects more quickly that the original direct funding program. The revenue bonds provide the funding for loans that are combined with the grants discussed above to provide 100% project funding for eligible project costs. The amount of the revenue bond authorization is dependent on the G.O. bond authorization as follows:

- The first use of G.O. bonds is to meet the required state match to the federal capitalization grant.
- The second use is for the grants to municipalities.
- The third use is to support the revenue bond program through leveraging.

Due to the maturity and strong financial conditions of the revenue loan program, the level of G.O. bond support to provide the revenue bond authorization has been reduced over time. After issuing $90 million per year supported by program assets, revenue bonds can be issued in a 4:1 ratio of any supporting G.O. bonds, meaning that $10 million in G.O. bonds can support $40 million in new revenue bonds. Revenue bonds authorized by the legislature, which do not count against the state's overall bonding cap, have been issued as project financing is needed.

Figure 1 demonstrates the funding commitments of the State for the grants (G.O. bonds) over the history of the program.

Figure 1: CWF G.O. Bond Authorizations



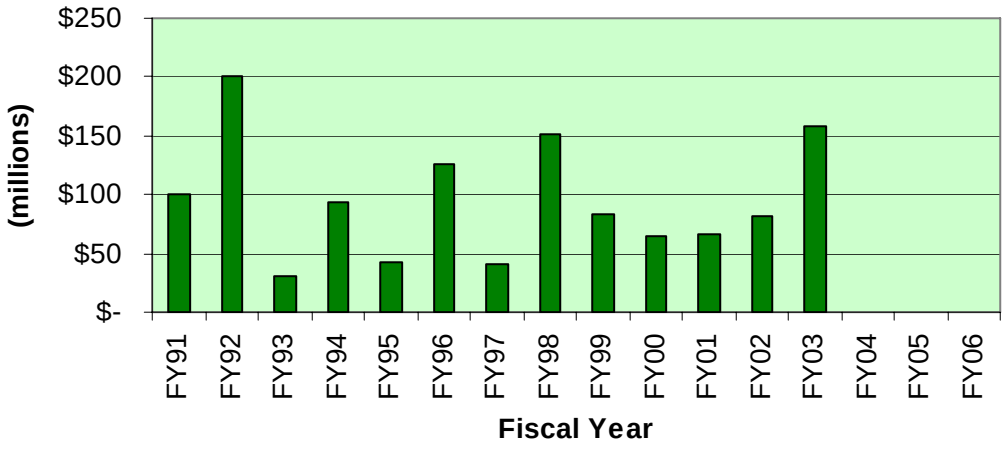
From the inception of the program in 1986 to FY 2002, the average annual commitment of G.O. bonds to the CWF program averaged $47.8M/year. This 16 year commitment of steady funding for the program is a major reason why the program is nationally recognized as one of the top tier state revolving loan programs in the country.

Annual EPA review of the technical program and fund financial management has consistently determined that the program is run by skilled staff and is a healthy, solvent program with demonstrated fiscal management. Coupled with strong administration and management by both the DEP and the Treasurer's Office, the fund had consistently been available to fund high priority projects when they were ready for implementation.

However, new fiscal support for the fund vanished in 2003 through 2005 with no new G.O. bond authorizations and an actual rescission of $78M in previously authorized funds. Funding resumed in FY2006 and 2007, albeit at a significantly reduced rate of only 40% of the average of the previously acclaimed program.

Figure 2 illustrates the funding commitment of the State for the revenue bonds over the history of the program. Note that there were no authorizations for FY04-FY06.

Figure 2: CWF Revenue Bond Authorizations



From 1987 to the present, the DEP has received annual capitalization grants from EPA to support the CWF program. Since the initial issuance of revenue bonds in 1991, the federal capitalization grant has been used as security for the issuance of those bonds, rather than for direct funding of projects. The federal capitalization grant is one of the inputs into the Debt Service Reserve Fund within the CWF that supports the sale of revenue bonds. Figure 3 illustrates the annual capitalization grant from 1987 to the present. As this illustrates, the federal commitment to the program has also been decreasing in recent years. There are discussions being held at the federal level that are considering the elimination of federal support in its entirety by 2011. Such an action would have a significant, detrimental effect on the CWF, as it would require additional G.O. bonds to be issued by the state to support the revenue bond program.

Figure 3: Federal Capitalization Grants

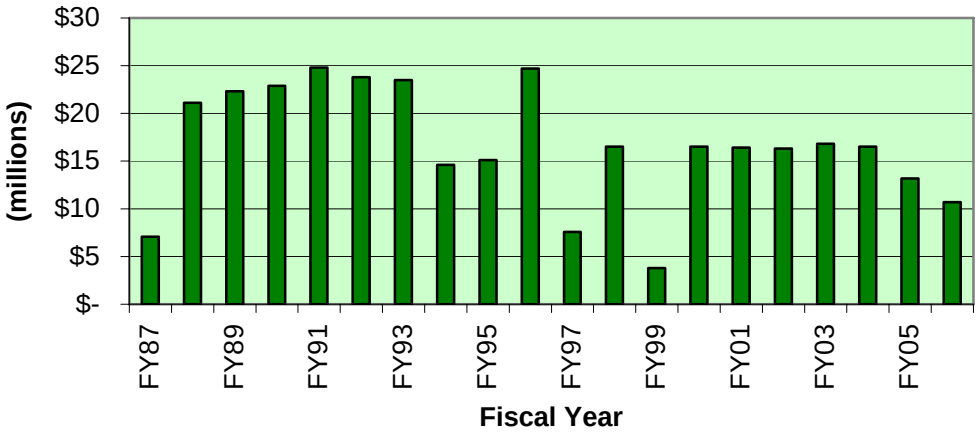
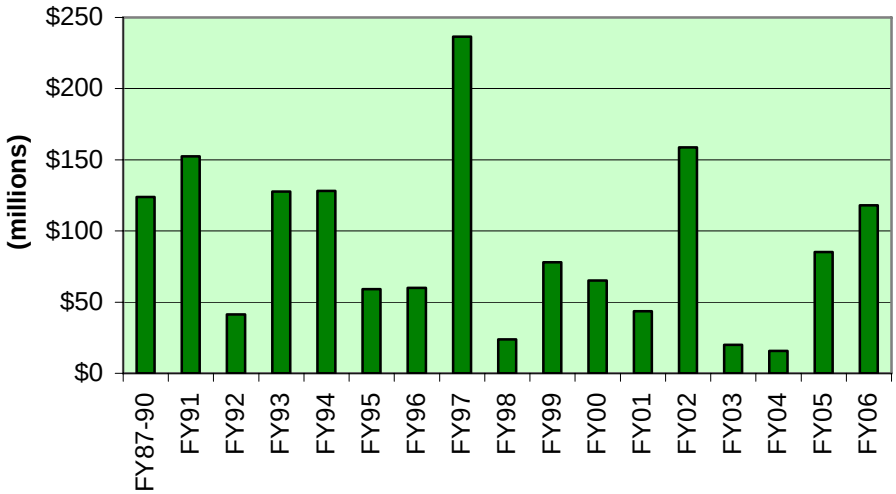


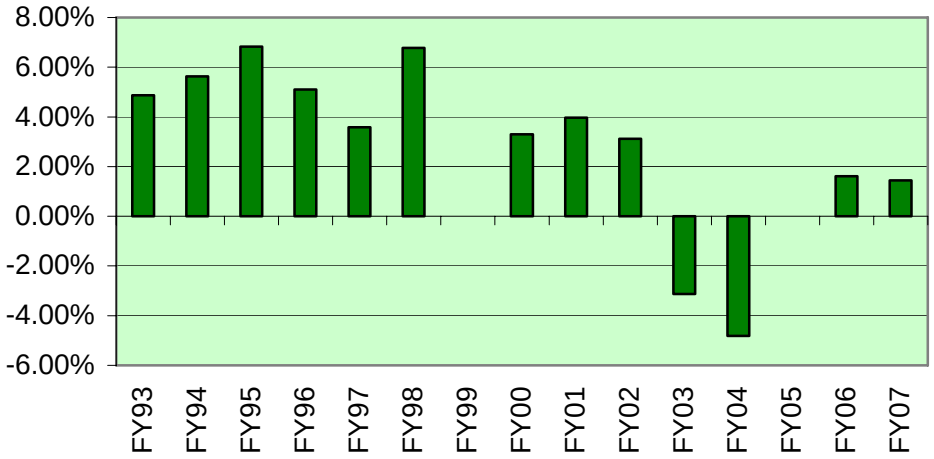
Figure 4 represents the annual CWF awards. This represents the volume of projects funded in each year, as measured by CWF agreements executed with municipalities, and is a reflection of the both past demands on the program and the availability of funding through the bond commission. The average annual rate of CWF agreements is $88.7 million. Based upon the data in Table 1, an average annual expenditure of $247 million (in 2006 dollars) would be necessary to accomplish the work over the next 20 years. It is clearly evident that meaningful progress in CSO projects, denitrification projects, other water quality needs, and maintenance of existing infrastructure cannot be achieved with the current funding levels. In addition, current staffing levels are recognized as insufficient to meet this need. The DEP and Treasurer's Office must supplement the program staffing to levels sufficient to handle the projected volume of projects.

Figure 4: Total Dollar Value of CWF Agreements by Fiscal Year



The Advisory Work Group certainly recognizes that there are other programs deserving of State bonding. However, considering the social and economic value of clean water, it is instructive to consider what a small percentage of the total state bonding has been committed to the CWF on an annual basis. Figure 5, compiled from state bonding records, reflects the ratio of annual CWF authorizations to the total annual statewide bonding authorizations.

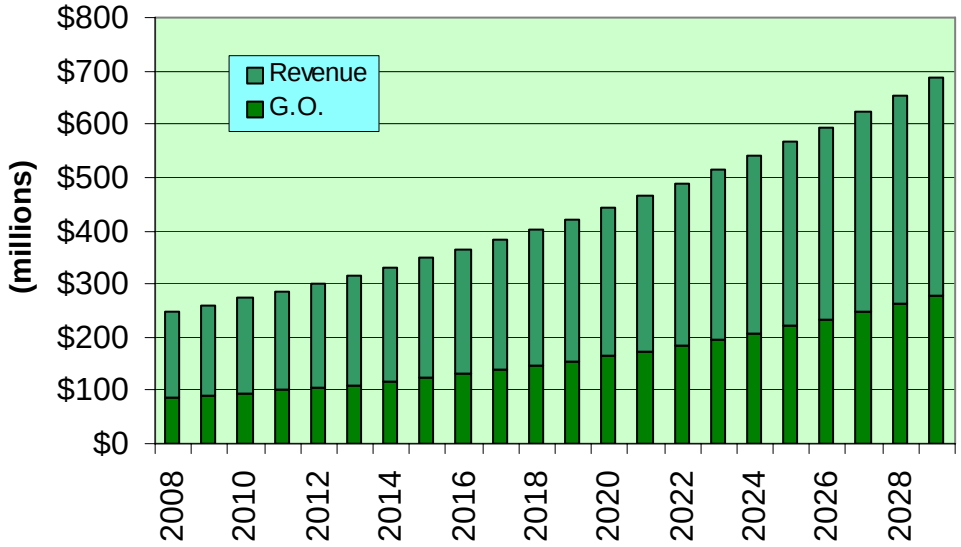
Figure 5: Ratio of CWF G.O. Bond Authorizations to Total State Bond Authorizations



This is yet another demonstration of the reduced priority of this program from the state's fiscal and policy decision makers at the same time that environmental standards have become increasingly stringent and existing water pollution control infrastructure continue to age.

The projected investments needed to sustain the demands of the Clean Water Fund have been discussed, up to this point, in current dollars. However, the construction industry is experiencing an annual inflation rate of approximately 5%. That rate is not expected to change substantially in the coming years. Figure 6, below, shows the annual average expenditure on projects needed to meet the wastewater infrastructure needs identified in Table 1, assuming an annual inflation rate of 5% for construction costs.

Figure 6: CWF Demands with 5% Inflation



The grant percentage between 2008 and 2014 is projected at 35% of all costs, increasing to 40% between 2015 and 2028 as CSO projects become a greater percentage of all expenditures. Note that figure 6 does not include G.O. bond costs necessary to issue revenue bonds beyond the $90 million per year sustainable rate.

Financial Alternatives Under Consideration

With the input of the Advisory Work Group, the following list was developed by the DEP as alternatives that should be analyzed further. The inclusion of any alternative on this list is not to be interpreted as an endorsement or recommendation from any group.

1. Status quo (with adequate funding)
2. Status quo with a loan only option if grant fund (G.O. bonds) were not available.
3. Reduction of grant percentages either across the board or in varying amounts, depending upon the project category. This alternative would require less G.O. bond authorizations with a comparable increase in revenue bond authorizations.
4. Restrict grants to only those portions of a project directly related to water quality improvement with the balance of the project loan only.
5. Re-instate the sunset provision for the grant and convert the CWF program to a loan only program at 2% interest, immediately or at a future date.
6. Vary interest rate charged on the loan based upon a participant's ability to pay. Current loan interest is set by statute at 2% for all municipalities with no measure of ability to pay.

In general, the list is shown in order of increasing financial burden to the municipalities. All except maintaining the statues quo would require statutory amendments to implement.

Subcommittees of the CWF Advisory Work Group

The Advisory Work Group was divided into three subcommittees, each with a task of analyzing a specific question. The subcommittees and their respective tasks were:

- **Affordability/Fiscal Impacts** of alternatives – to address the fiscal impacts of various alternatives on the municipality and assess the affordability of projects with each alternative.
- **General Obligation/Revenue Bond Costs** of each alternative – to predict bonding costs of the program and to determine the sustainability of revenue bonds without new costs based upon the current fund conditions.
- **Prioritization of Project Categories** – to assess the roles and responsibilities of both the federal, state and local governments for financing projects.

A summary of each of the subcommittees work was reported to the Advisory Work Group as a whole for discussion and development of a consensus. What follows is the consensus of the Advisory Work Group for each subcommittee work effort. It should be noted that the subcommittee analyses were adopted as the consensus without change. Also of note is that the Affordability / Fiscal Impacts subcommittee altered its task focus after unanimously agreeing that the status quo was the only viable alternative. This impacted the ability of the General Obligation / Revenue Bond Costs subcommittee to fully complete the task with which they were charged.

Subcommittee Recommendations

- **Affordability/Fiscal Impacts**: The consensus was significantly different from the original charge to the subcommittee of analyzing the identified alternatives discussed in the previous sections of this report. Rather than conducting a "nuts and bolts" review of the resulting local costs of each alternative, the subcommittee determined this was counterproductive to the municipalities. In their view, the CWF program was not broken and did not need major statutory changes. The CWF program works exceptionally well, and will continue to do so, when properly funded. The "problem" needing attention was not the details of the program, but rather the priority of the CWF program as measured against all demands for state bonding. Prior to any statutory changes being recommended, the Advisory Work Group determined that the state needs to re-invest in the CWF and that re-prioritization of the bonding for the program should be the effort conducted during the 2007 legislative session.

  The subcommittee recommended, and the Advisory Work Group concurred, with

  i. Evaluating an extension of the amortization period from 20 years to 30 years for CSO projects as the 30-year time period better reflects the useful life of the project.
  ii. Adding an affordability criteria to the priority list project rating criteria, giving higher priority to projects that are less affordable to the users.
  iii. Dedicating a portion of each year's budget surplus for grants for the Clean Water Fund.
  iv. If necessary, extending the time period for environmental compliance if the project exceeds the EPA affordability criteria, by extending compliance dates in Consent Decrees and Consent Orders to keep the annual costs to users below the EPA affordability numbers.
  v. Evaluating the creation of a dedicated funding source for the CWF as has been done in other states for water quality projects.

- **General Obligation/Revenue Bond Costs**: The original charge of this subcommittee was to determine the bonding costs (G.O. and revenue) of the alternatives reviewed by the Affordability / Fiscal Impact subcommittee, and the sustainability of the existing fund without new costs to the state. The original charge of the subcommittee of analyzing the identified alternatives was changed by the Advisory Work Group. As a result, this subcommittee focused on the costs of the current program, what the current funds can sustain in the future, and the impacts n the program and municipalities of changing grant levels and loan terms.

  The conclusions are:

  i. The CWF has the capacity to issue revenue bonds for loan financing of up to $90 million per year through 2021 <u>without</u> additional state general obligation bond authority. This capacity is from current assets of over $550 million. (See Appendix B for the details on development of the figure of $90 million

per year.) A 20 year program to the year 2026 could sustain issuance of $76 million per year.

ii. Additional general obligation bond authority would be necessary to provide grants for new projects. The level of authority would vary depending on the category of projects (CSO, denitrification, small community, etc.) financed each year. Best estimates for the next five years are general obligation needs of $130 million/year.

iii. Additional general obligation bond authority would be needed to support additional revenue bonds beyond the $90 million currently sustained from the existing fund resources. For each $40 million in additional revenue bonds needed to meet program needs, $10 million of new G.O. bond authorization would be needed to be contributed to the CWF Support fund.

iv. DEP would need to determine the cost of additional administrative support to manage a larger program.

- **Prioritization of Project Categories**: The state has a responsibility for providing financial assistance to municipalities for the following categories of projects. The subcommittee recommended, and the advisory group generally concurred with, the establishment of the following project priorities, shown in order of importance:

1. Combined Sewer Overflow Correction
2. Denitrification Upgrades to meet Long Island Sound goals
3. Infiltration / Inflow reduction
4. Equipment Upgrades without hydraulic expansion
5. Sewer Extensions to address community pollution problems
6. Structural Repair and Rehabilitation of conveyance systems (sewers and pump stations)
7. Phosphorus Reduction Upgrades
8. Decentralized Wastewater Management to address community pollution problems
9. Stormwater
10. Hydraulic Expansion of wastewater treatment facilities
11. Nonpoint Source Pollution reduction (other than stormwater)
12. Sewer Extensions for growth / economic development
13. Upgrades of individual onsite systems (septic systems)

The subcommittee recognizes that wastewater infrastructure responsibility does not rest solely with the state and municipalities. The Federal government also has a role that should not be ignored. The Federal government should be pressured by a consortium of state leaders to support funding for water quality improvement projects in waters of regional and national significance, such as additional federal funding for Long Island Sound. Additionally, the Federal government is seeking to terminate the federal participation in the SRF program by 2011. State leaders should pursue efforts to block this and to return federal funding to previous levels of $3 to $4 billion/year. The salient reason for this argument is that the federal government has a vested interest, as well as a responsibility, for water quality in waters of national significance and their tributaries.

Advisory Work Group Conclusions

Related to the Program:

- The CWF is a top-tier program and has made substantial progress since its inception in 1986.
- 445 projects, worth $1.45 billion, have been funded since 1987.
- Massive demands remain for wastewater infrastructure, now approaching $5 billion. Approximately half of this demand or $2 billion is necessary for combined sewer overflow correction in five of the state's oldest and poorest cities within the next 15 years.
- The creation and upkeep of wastewater infrastructure is a responsibility of all three government levels: federal, state and local.
- Lack of adequate state funding drives up inflationary costs, saps resources, and unfairly shifts a state 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.
- A poorly sustained CWF will subject Connecticut municipalities to potential enforcement actions from the federal government, with penalties and a lack of concern for local fiscal impacts.
- The current CWF program is not broken and does not need major revamping; however additional flexibility in project funding options should be further explored.
- The current CWF program's ills are from inadequate federal and state fiscal support.
- At recent funding levels of $20 million G.O. bonds per year, combined sewage will continue to be discharged for decades – up to 100 years. This is unacceptable environmentally and must be addressed as a leading public health issue.
- The DEP and OPM should be commended for reaching an agreement on awarding CWF financing as an annual lump sum from the State's Bond Commission. This single step has eliminated many administrative delays and provides greater assurance of delivering the funds when needed.
- Regional water quality needs such as Long Island Sound and the Connecticut River need continued and increasing federal support. Local and state officials should deliver this message to the Connecticut congressional delegation and stop the tide of receding federal support.
- The DEP needs adequate staffing levels to support the CWF. Additional technical and financial support staff are absolutely necessary to deliver the necessary projects to completion.
- Citizen support for CWF projects is high as is evidenced by the 2006 MDC referendum for $800 million that passed by an overall 3:1 margin. All eight member towns of the MDC affirmatively passed the referendum by at least a 2:1 margin.

Related to Environmental Needs:

- Two billion gallons per year of combined sewage is discharged to Connecticut rivers and harbors from combined sewers with all of its associated public health concerns and environmental impacts.
- Backups of raw sewage into private homes and businesses occur more than 250 times per year in the State's 5 largest CSO communities
- 150 bypasses or overflows of raw sewage occur on average every year from inadequate wastewater infrastructure with annual volumes potentially reaching millions of gallons.
- Inadequate and outdated septic systems as compared to today's septic system standards plague many of CT's lakes and shorelines with negative impacts on Connecticut water resources.
- The achievement of water quality goals for Long Island Sound by 2014 will not be met without a significant increase in CWF funding.
- Emerging water quality issues, such as phosphorus control and pharmaceuticals/personal care products, will not be adequately addressed without a properly financed CWF.
- Storm water pollution is a major reason that many rivers and beaches cannot be enjoyed for swimming and fishing each year. A grant program designed to leverage and expand municipal storm water control planning should be considered for incorporation into a properly financed CWF.

Advisory Work Group Recommendations

Based on the evaluations and conclusions, the Clean Water Fund Advisory Work Group offers the following recommendations for further action:

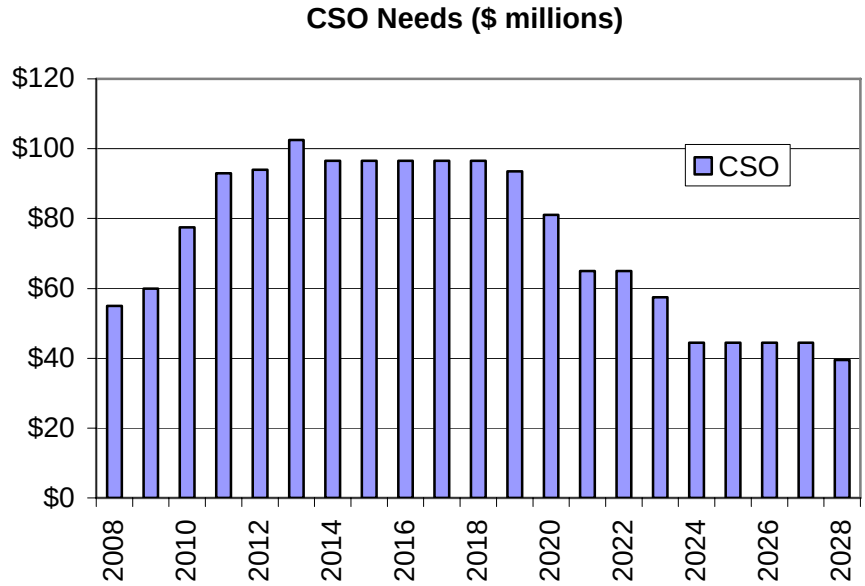
- A significant increase in CWF funding is required immediately.
- The state must re-prioritize its obligations and place the CWF much higher in the order of expenditure of state bonding capacity.
- The state should consider utilization of a portion of the budget surplus up to $100 million, as an alternate to G.O. bond authorizations to meet the current backlog needs created by rescissions in FY 2003 and 2004.
- The state should pass a non-binding resolution recommending consistent annual funding for the CWF at $130 million/year G.O. bonds to demonstrate its commitment to achieving public health and water quality improvements.
- Adequate revenue bond authorizations necessary to match G.O. bond authorizations must be established including the $90 million/year available through the CWF at no additional debt service subsidy from the state and additional revenue bonds which will require debt service subsidies from the state.
- The state should investigate and adopt a dedicated funding source for some of the CWF needs, similar to actions taken in Maryland and South Carolina.
- Loan origination fees should be added to the CWF program sufficient to support technical and fiscal staff at DEP to administer the program.
- Both DEP and the Treasurer's office should recommend new staffing levels necessary to handle the projected volume of projects. Current staffing levels are inadequate to meet the future needs of the program.
- Municipalities should be required, as a condition of receiving CWF financing, to establish an adequate sinking fund as part of their user charge system to maintain and upgrade existing wastewater infrastructure; including sewage collection systems.
- The CWF program is not broken and needs no major surgery to fix it; its ills are caused by inadequate funding.
- Statutory flexibility should be created to allow for a loan only program for all eligible wastewater projects.
- Affordability should be an added criteria utilized by DEP in rating the priority of projects.

APPENDIX A: Calculating 20 year wastewater needs projections

The cost projections in this report are based, in part, on the US EPA's Clean Watershed Needs Survey 2004 (CWNS), a quadrennial report which summarizes long-term fiscal needs to meet the goals of the Federal Clean Water Act. Data input to the survey includes all available facilities plans and engineering reports, and uses nationally approved algorithms to estimate costs when project specific costs are not available. The categories of need (I – VII) are identical to those used in the EPA report.

Combined Sewer Overflow Correction

Estimates for this category were based on planning documents on file with the Department at the time of the estimate. Timetables were estimated based on best judgment of maximum fiscal load that could be sustained by a municipality. Note that, subsequent to this estimate, the Metropolitan District Commission (Hartford MDC) submitted a Long Term Control Plan estimating $1.3 billion in CSO correction needs, which was almost twice the estimate carried in the development of this projection. Other CSO communities are also developing Long Term Control Plans; it is possible a similar increase will be identified when those documents are completed and submitted.

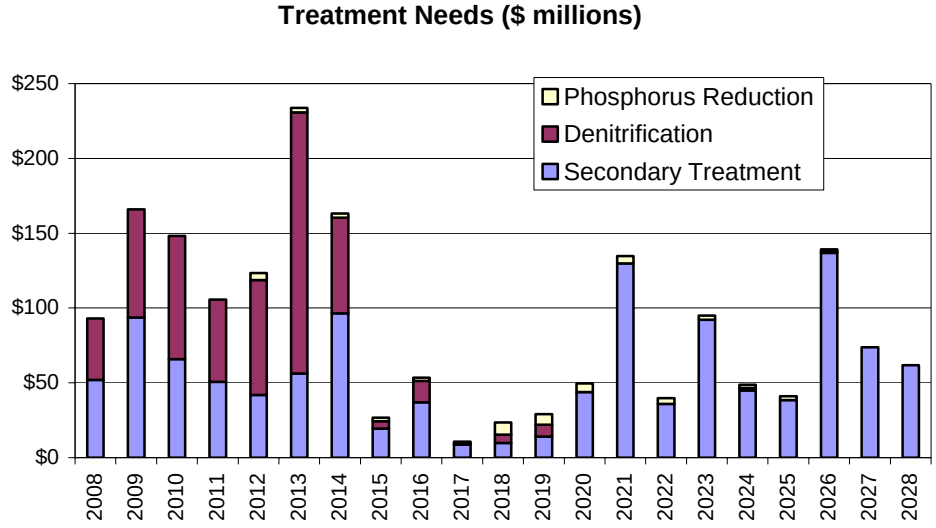


Advanced Wastewater Treatment (Denitrification)
Costs for upgrades to accomplish denitrification in accordance with the Total Maximum Daily Load (TMDL) for Long Island Sound were taken either from planning documents or from the TMDL if no better documentation existed. Timing of the upgrades is to meet the TMDL deadline of 2014.

Advanced Wastewater Treatment (Phosphorus Reduction)
Levels of phosphorus removal necessary to protect the environment are still being evaluated. For the purpose of this estimate, it was assumed that all facilities would need to reduce phosphorus to 0.5 mg/l in their effluent, and that the cost to add such treatment was $0.30 per gallon of capacity, based on literature searches. Projects were estimated to start in the year 2012, and continue through 2025.

Secondary Wastewater Needs
At the present time, all Connecticut wastewater treatment facilities are required to treat to a minimum of secondary effluent quality; that is, to reduce suspended solids and BOD5 to 30 mg/l or less. However, as many of the existing facilities are reaching the end of their design lives (or in some cases, have passed that date), there exists a continuing need to rehabilitate structures, replace worn out or obsolete equipment, meet current safety and monitoring standards, etc. Many facilities have planning documents which identify the specific needs and costs for maintaining permit compliance and operability; in those cases, costs from the planning documents were used. If no such document exists (especially where recent upgrades have been made), rehabilitation costs were assumed to be $4.80 per gallon of permitted capacity, based on an average of costs from existing planning documents.

Scheduling of these upgrades into the future was a function of the age of the facility since the last major upgrade and staff judgment. An attempt was made to balance the costs equally among the 20 years in the planning period, with facilities whose design flows were substantially greater than their actual flows being allowed to lag compared to facilities operating at or near their design capacity.

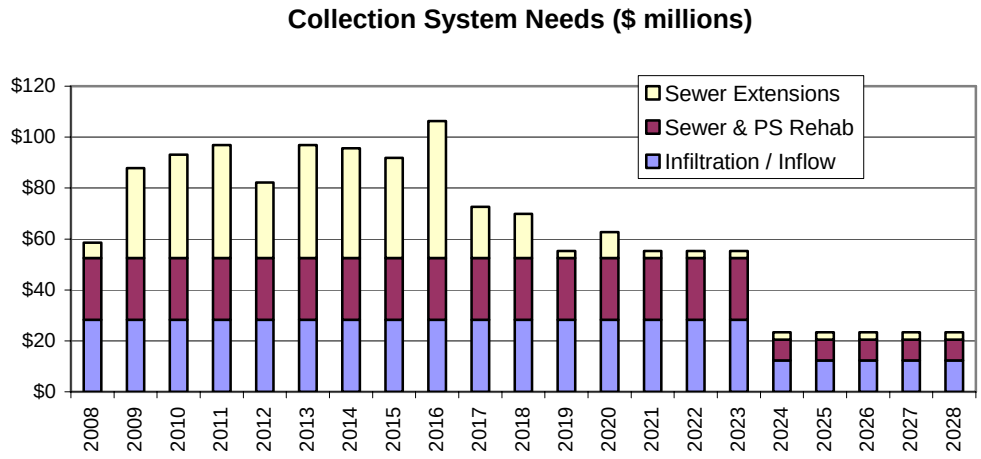


Infiltration / Inflow Reduction and Conveyance System Rehabilitation
This category addresses the need to remove groundwater and surface drainage from sanitary sewer lines, and the rehabilitation of existing sanitary sewers and pumping stations that have reached their design lives and are no longer adequately performing their designed function in a manner that protects human health and the environment. A number of sewer systems have planning reports that identify costs to perform such upgrades based on equipment age, construction materials, and surveys. The costs for these municipalities were extrapolated to encompass the universe of all sanitary sewer systems in the state, and were projected as a level demand over the next 20 years. Note that the drop in needs in 2024 represents the estimated completion of the MDC's I/I and sewer rehab program, whose costs were carried separately from the rest of the state needs.

New Sanitary Sewers
Roughly 66% of Connecticut's population is served by sanitary sewers; the remaining portion uses onsite wastewater disposal (septic systems). For the purpose of determining long-term sewer needs, it was assumed that 50% of population growth would be in urban and suburban settings and therefore served by sanitary sewers. Population growth in rural (and some light suburban) setting would be expected to be on larger lots which would be capable of supporting septic systems indefinitely. Growth, and the corresponding need for service, was assuming to linearly increase with time based on OPM population projections.

Added to this evaluation were costs for sanitary sewers for existing populations where a planning document had been filed with the DEP indicating that the appropriate solution to a community pollution problem was the extension of sanitary sewers from an existing wastewater treatment system.

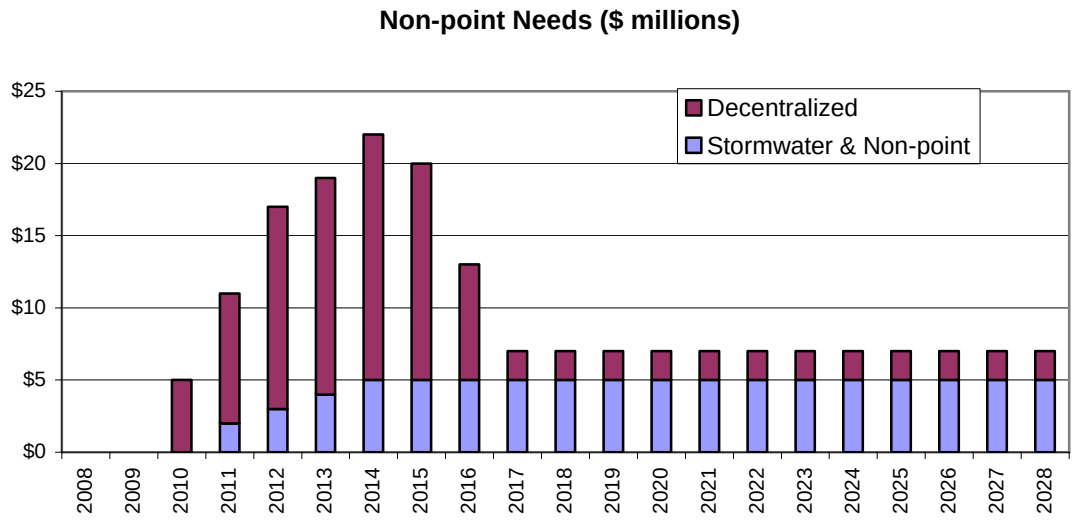
In the absence of final planning, an estimate of 23 linear feet per capita was used to estimate demands for future infrastructure, with a construction cost of $175 per linear foot of sewer. These numbers are based on the available infrastructure currently in use or under construction in Connecticut.



Decentralized Wastewater Management Districts
Decentralized Wastewater Management Districts represent an alternative approach for areas where community pollution problems exist or are anticipated in the future (shoreline, lakefront, isolated villages) and where conventional sanitary sewers are either not feasible or not favored for other social or economic reasons. Cost estimates for this category were based, in part, on planning documents being prepared for a number of communities that are considering this approach as an alternative to conventional sewers. Additional costs were then extrapolated for other communities with similar characteristics that currently have no planning in place. If the initial efforts of the communities currently in planning are successful, the cost estimates in this category may increase, with a corresponding reduction in new sanitary sewers and secondary treatment.

Stormwater
At the present time, no specific planning documents have been prepared showing the level of need or the cost of meeting the needs of addressing stormwater pollution control. A gradual ramping up to $5 million per year was used in this planning effort to reflect the total estimated demands for both this category and non-point source, below.

Non-Point Source
This category covers other non-point sources of pollution that might degrade or otherwise diminish or restrict the use of the impacted surface waters (such as agriculture, silviculture, urban runoff, marinas, etc.) As with stormwater, no specific planning documents have been prepared showing the level of need or the cost of meeting the needs of addressing non-point water pollution. The sole exception to this is the subcategory of decentralized wastewater management, which is discussed above.



APPENDIX B:

Treasurer's Report on CWF Revenue Loan Stability

FINAL

Date: January 24, 2007

To: Financial Subcommittee of the Clean Water Fund Advisory Work Group

From: Sharon Dixon Peay
State Treasurer's Office

Susan Weil
Chris Valentino
Lamont Financial Services

Background

The Clean Water Fund Program (CWF) was established as a revolving fund in 1986 to replace a state grant program that could not keep pace with the State's wastewater management and treatment needs. The Program was designed to provide a combination of grants and low cost loans to municipalities that provided them an equivalent benefit to the grant program and, through the issuance of revenue bonds, provided greater funding to meet those needs.

The CWF statutes provide funding through a combination of State-funded grants (ranging from 20%-50% of total project costs, depending on the nature of the project funded) and loans payable by the borrowers at an annual interest rate of 2%. Historically, program-wide grants have averaged approximately 25%, and are expected to increase to approximately 34.5% over the Program horizon, based on an anticipated change in the mix of project types. The principal driver of this change is the need to fund the separation of storm and sanitary sewers in the State's largest cities and these projects receive 50% grant funding under the CWF statute.

The Finance Subcommittee of the Clean Water Fund Advisory Group led by Catherine Boone, former Assistant Treasurer for Debt Management in the Office of the State Treasurer, was asked to evaluate the Program's revenue bond funding capacity over a foreseeable time horizon, to determine the grant funding that would be required under the current funding standards and to review the impact of financing alternatives on Program participants. Due to both the high levels of near and long-term needs ($2.7 billion from fiscal year 2008 through 2014, adjusted for inflation) and anticipated significant reductions in federal grant funding, the Subcommittee explored the implications of potential financing scenarios based on three Program variables: the interest rates charged on the borrowers' loans; the term of the loans; and the portion of the project to be funded with State grants. The Subcommittee determined that the analysis should cover three points in time in the future: 2014 (including the highest demand years of DEP's project projections 2013 and 2014); 2021 (a reasonable time horizon to evaluate the capacity of the Program); and 2028 (the maturity date of any bonds issued in 2008, the first year of the projections). Unless otherwise noted, the report refers to the results for the 2021 analysis.

Elements of Program Funding

The analyses of the Program's current funding capacity involved a review of the key elements of the Program, including the sources of funds for projects, the payment of debt service on the revenue bonds issued for project loans, and the amounts that must be maintained in the fund due to federal grant requirements.

Sources of Funds

Under the current CWF Program, the grant portion of project costs is funded with proceeds of State general obligation (G.O.) bonds. The CWF revenue bonds are issued for the loan portion of the project. The loan portion of the Program, in which loan repayments are used to pay debt service on the revenue bonds, is referred to as the State Revolving Fund ("SRF").

Debt Service on Revenue Bonds

Debt service on the revenue bonds is paid from two sources: borrower loan repayments at 2% interest and an interest rate subsidy funded from program assets (accumulated since Program inception from a combination of federal grants, state contributions, and interest earnings) or from GO bonds. The subsidy is calculated at the closing of each bond issue and deposited into a "Support Fund" pledged to the bonds. With the interest earnings on the deposit, the Support Fund is fully spent to pay debt service over the term of the bonds. The subsidy is calculated based on the difference between the interest payable on the bonds and the 2% interest paid by borrowers. At an assumed interest rate of 5% on the revenue bonds issued, a Support Fund deposit of approximately 25% of bonds to be issued is sufficient to meet debt service. As interest rates increase and loan rates remain constant at 2%, the Support Fund deposit must also increase. For example, if bonds are issued at 6%, the Support Fund deposit increases to approximately 30%.

Amounts Held in the Fund

The State has received federal capitalization grants for the Clean Water Fund Program and the State's agreement with the EPA contains several requirements for the financial management of the Program. These requirements include:

- The annual federal capitalization grants from EPA must be matched by a state contribution equal to 20% of the federal contribution.

- The State must maintain the federal capitalization grant and the state match in the CWF, in perpetuity, and this money cannot be used for making grants.

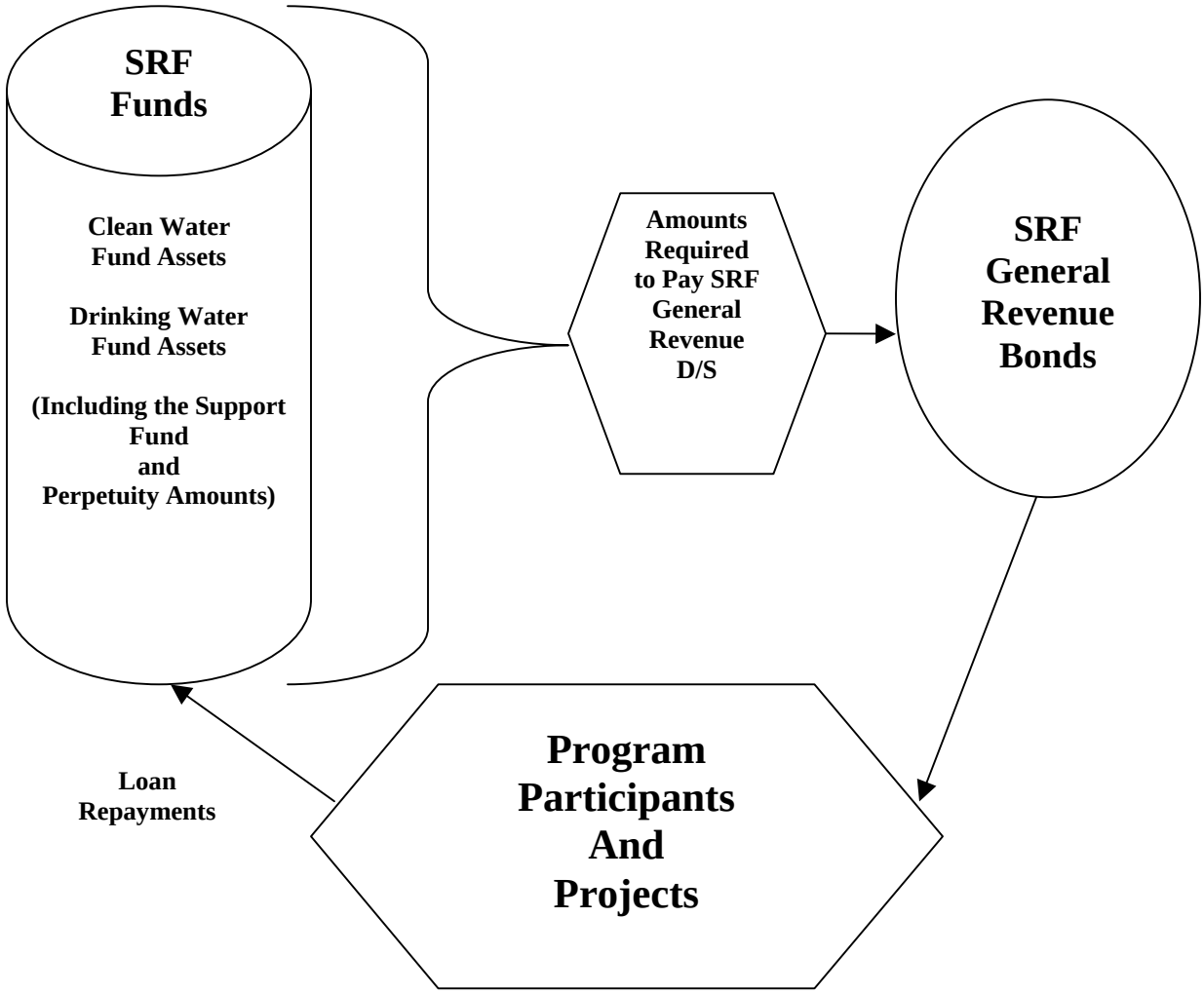
The requirement to hold a certain level of assets in the fund means that an assessment of the perpetuity of the fund is made annually and at each bond issue. Because the Support Fund (which includes a portion of the Program assets) is fully spent to pay debt service, as explained above, to ensure that the Program's perpetuity requirement is met, a "Perpetuity Target" is calculated at each bond issue. In order to meet the Target at the maturity of the bonds, a Perpetuity Amount is retained and invested in the Fund along with other assets. The Perpetuity Amount, plus interest, will offset the depletion of the Support Fund and meet the "Perpetuity Target" at the maturity of the bond issue.

An important feature of the Clean Water Fund's General Bond Resolution (GBR) structure, created by the Treasurer in 2003, is that the amount of Program assets subject to yield restriction is limited. Since bond proceeds are used to fund projects and borrower loan repayments and the Support Fund are used to pay the revenue bonds, most other Program assets are not yield restricted and may be invested at interest rates above the bond yield. To the extent the unrestricted assets can be invested at a rate higher than the bond rate, the Perpetuity Target can be reached earlier and will be available to support additional revenue bond issues for project funding more quickly.

The Support Fund deposit for each bond issue and the related Perpetuity Amount as described above are referred to as the annual "Equity Contribution". For example, for a $100 million bond issue with a 5% rate, the Support Fund Requirement is $25 million and the Perpetuity Amount is $14.2 million. The total Equity Contribution for the $100 million bond issue is $39.2 million.

Support fund deposits from GO bonds do not require an associated Perpetuity amount.

A schematic of the Clean Water Fund Financing Program follows:



Capacity of the Current Program ("Base Case" Revenue Bond Funding Scenario)

The first analysis was designed to show Program capacity and determine grant funding levels that would be required under the current funding policy. A "Base Case" scenario was created assuming no changes to the current bond financing program, with continuing revenue bond authorizations at historical levels, a modest level of additional federal grants ($7 million annually) and no changes in loan rates and project grant funding percentages. As shown in Table 1, the Base Case analysis determined the sustainable level of annual Program funding capacity through FY 2021.

Table 1 – Annual Capacity of the Current Program (Base Case)

	Annual Capacity from 2008 thru 2021	Total Capacity 2008 thru 2021
Revenue Bonds Issued	$90,000,000	$1,260,000,000
Required State Grant	47,404,580	663,664,120
Total Project Funding	137,404,580	1,923,664,120
Support Fund Required	21,605,694	302,479,716
Perpetuity Amount	13,500,000	189,000,000

Using this information, in the period from 2008 to 2014, the current Program could result in $630 million in revenue bonds and $331.8 million in state funded grants or a total of $961.8 million while DEP's estimated demand will be $2.72 billion.

Table 2 below shows the current sustainable annual capacity over a 20 year financing horizon. The lower annual capacity reflects a use of program assets for equity contribution over 20 years (to 2028) rather than 14 years (to 2021).

Table 2 – Annual Capacity of the Current Program (20 year Capital Program)

	Annual Capacity for 20 year program (2008 – 2028) – no additional support	Total Capacity for 20 year program (2008 – 2028) – no additional support
Revenue Bonds Issued	$76,000,000	$1,520,000,000
Support Fund Required	18,244,808	364,896,160
Perpetuity Amount	11,400,000	228,000,000
Required State Grant	40,030,534	800,610,687
Total Project Funding	116,030,534	2,320,610,680

Subcommittee Scenarios Reviewed

Once the Base Case was established, additional scenarios were reviewed to evaluate the impact on funding capacity of changing various Program elements, including loan interest rates, loan terms and grant funding levels.

Impact of Various Loan Rates

The following table shows the impact of changing borrower loan rates on the related Support Fund Requirement, and, the Perpetuity Amount percentages.

Table 3 - Equity Contribution at Various Loan Interest Rates

	Loan Rates	Support Fund %	Perpetuity %	Equity Contribution (Support Fund and Perpetuity %
20 Year Loan	0%	38%	22%	60%
	1%	31%	18%	49%
	2%	24%	14%	38%
	3%	17%	10%	27%
	4%	9%	5%	14%

The results are as anticipated. A closer match of loan rates and bond rates requires lower Equity Contribution for the projected bond issues. Similarly the level of annual revenue bond funding capacity increases as loan interest rates are increased:

Table 4 -– Impact of Changing Loan Interest Rates on Sustainable Bond Capacity through 2021

Loan Rates	Sustainable Annual Bond Capacity (adjusted for loan interest rates)	Annual Grant Funding (34.5%)	Annual Project Funding	Total Project Funding Capacity (adjusted for loan interest rates)*
0%	$57,000,000	$30,022,901	$87,022,901	$1,218,320,614
1%	69,000,000	36,343,511	105,343,511	1,474,809,154
2%	90,000,000	47,404,580	137,404,580	1,923,664,120
3%	110,000,000	57,938,931	167,938,931	2,351,145,034
4%	145,000,000	76,374,046	221,374,046	3,099,236,644

*Aggregate total 2008-2021

Impact of Changing Loan Terms

Affordability for borrowers was a concern of the committee. Table 5 shows the impact of extending the borrower loan terms from 20 to 30 years and also extending the bond term from 20 to 30 years, using the current 2% loan rate and a 5% bond rate. Increasing the term of the loan increases the required Equity Contribution under either scenario because the required interest subsidy between the repayment interest rate and the bond rate must be paid for a longer time.

Table 5 – Impact of Changing Loan Terms (Sustainable Bond Capacity and Equity Contribution at Various Final Loan and Bond Maturities)

	Loan Rates	Support Fund %	Perpetuity %	Annual Capacity thru 2021
20-Year Bond / 20-Year Loan	2%	25%	14%	$90,000,000
20-Year Bond / 30-Year Loan	2%	45%	26%	59,000,000
30-Year Bond / 30-Year Loan	2%	32%	19%	76,000,000

Program Sustainability – Adjusted for Changes in Loan Rates and Terms

The Table below summarizes the impact of changes in both loan rates and loan terms on the sustainable capacity of the Program. We used the highest capacity level of $90 million in annual bond issuance to show the date when the funding capacity is exhausted at various loan interest rates, bond interest rates and final maturities.

Table 6 – Program Sustainability – Adjusted for Changes in Loan Rates and Terms

Loan and Bond Rates and Terms	Final Fiscal Year of Revenue Bonding Capacity at $90 million per year
0%	2012
1%	2015
2%	2021
3%	After 2028
4%	After 2028
30 Year/5% Bond- 20 Year/2% Loan	2013
30 Year/5% Bond- 30 Year/2% Loan	2017
20 Year/5.5% Bond – 20 Year/3.5% Loan	After 2028
20 Year/6% Bond – 20 Year/4% Loan	After 2028

Increasing loan rates require lower Equity Contributions per dollar of bonding, thereby increasing total Program capacity and allowing annual bond issues of $90 million to be sustained for a longer period without additional support. Conversely, because increasing the term of the loans will require Equity Contributions to be used for a longer period of time, total Program capacity is decreased and annual bond issues of $90 million can be sustained for shorter period of time.

Impact to the State of Changing Grant Funding Levels

The Advisory Group had concerns relating to the State's grant programs since program participants were negatively impacted by diminished grant funding over the past several years. The Subcommittee explored the interaction of changes to the loan rate and potential reductions in the percentage of state grant contributed for each project.

As shown in Table 7, varying interest rates result in total borrower debt service payments equivalent to payments required under the current grant and loan program.

Table 7 - Grant Equivalent Loan Interest Rates and Equity Contributions

Base Case Current Program (with $90 million annual bond issuance)			Required Loan Rates/Equity Contribution with 5% Reduction in Grant			Required Interest Rates/Equity Contribution with 10% Reduction in Grant		
Grant	Loan Rate	Equity Contribution	Grant	Loan Rate	Equity Contribution	Grant	Loan Rate	Equity Contribution
20%	2%	$34,427,579	15%	1.35%	$41,071,881	10%	0.76%	$46,938,929
25%	2%	34,427,579	20%	1.21%	42,492,599	15%	0.68%	47,961,300
30%	2%	34,427,579	25%	1.31%	41,486,378	20%	0.50%	49,451,550
50%	2%	34,427,579	45%	0.99%	44,685,890	40%	0.10%	53,184,350

The Table above shows that the required Equity Contribution increases if, at the time of 5% and 10% grant reductions, loan interest rates are also lowered to "grant equivalent" interest rates, thereby mitigating the impact of reduced grants on Program participants.

Impact of Financing Alternatives on Program Participants

Program Participant Debt Service Costs

Our analysis included a review of the total 20 year loan debt service cost to a borrower of financing a $10 million project, at various grant percentages and loan interest rates. The related Equity Contributions at each loan interest rate are also shown:

Table 8 Total Borrower Cost of a $10M Project at Various Grant and Loan Rates

	20 year Debt Service on		
Grant Amounts	2% loan	3% Loan	4% Loan
20%	$9,701,490	$13,274,885	$14,478,010
25%	9,095,147	9,956,163	10,858,507
30%	8,488,804	9,292,419	10,134,607
50%	6,063,431	6,637,442	7,239,005
Equity Contribution (Combined Support Fund and Perpetuity Requirements)	38%	27%	14%

Grant Equivalency Cost to Program Participants

The Advisory Group explored the benefit of the grant component of project funding to the Program participant. The Subcommittee used the grant equivalency analysis and created Table 9 to show the interaction of changes to the loan rate and potential reductions in the percentage of state grant contributed for each project. As shown in below, these are the interest rates that will result in total borrower project payments equivalent to payments required under the current Program. As in Table 7, the grant levels are shown with both 5% and 10% reductions from current Program levels.

Table 9 Grant Equivalency Cost to Program Participants

Base Case Current Program $10 million project				Required Interest Rates with 5% Reduction in Grant			Required Interest Rates with 10% Reduction in Grant		
Grant	Loan Rate	Loan amount	Debt Service cost to Program Participant	Grant	New Loan Amount	Loan Rate	Grant	New Loan Amount	Loan Rate
20%	2%	$8M	$9,701,490	15%	$8.5M	1.35%	10%	$9M	0.76%
25%	2%	7.5M	9,095,147	20%	8M	1.21%	15%	8.5M	0.68%
30%	2%	7M	8,488,804	25%	7.5M	1.31%	20%	8M	0.50%
50%	2%	5M	6,063,431	45%	6.5M	0.99%	40%	6M	0.10%

Summary: Assessment of Additional State Support

Our final analysis utilized DEP's current projections of needs throughout the State, and focused primarily on the foreseeable time horizon of peak project needs of $2.7 billion for fiscal year 2008 through 2014, to determine the level of additional state funding that would be required to accomplish this level of project construction.

Based on the current structure of the Program, with a long term view of sustainability, the program can issue $90 million of revenue bonds for loans. At the levels of need identified by DEP, further revenue bonding beyond the $90 million will be needed and will require additional state GO funding. We assumed that this additional state G.O. funding would be deposited to a Support Fund. Maintaining perpetuity as previously described, would not be required by EPA for this additional state contribution because the contribution exceeds the required state match.

The following table shows the annual project funding shortfall assuming current grant and loan interest rate levels, with annual funding needs ranging between $161.6 million in 2008 and peaking at $548.9 million in 2013 and $505 million in 2014.

Table 10 – Annual Funding Shortfall (based on 5% bonds and 2% loans)

Year	Program Need	Bond Issue Schedule (20-Year Bonds / 20-Year Loans)	State Grants Required	Equity Contribution Deposit	Existing Capacity thru 2021	Project Funding Shortfall
2008	$161,578,511	$90,000,000	$47,404,580	$35,105,694	$137,404,580	$24,173,931
2009	293,650,886	90,000,000	47,404,580	35,105,694	137,404,580	156,246,306
2010	391,317,503	90,000,000	47,404,580	35,105,694	137,404,580	253,912,923
2011	393,014,973	90,000,000	47,404,580	35,105,694	137,404,580	255,610,393
2012	429,751,364	90,000,000	47,404,580	35,105,694	137,404,580	292,346,784
2013	548,919,142	90,000,000	47,404,580	35,105,694	137,404,580	411,514,562
2014	505,556,991	90,000,000	47,404,580	35,105,694	137,404,580	368,152,411
2008 thru 2014	2,723,789,370	630,000,000	331,832,060	245,739,858	961,832,060	1,761,957,310
Average Annual 2008 thru 2014	389,112,767	90,000,000	47,404,580	35,105,694	137,404,580	251,708,187
2015-2021	2,509,496,551	630,000,000	331,832,060	245,739,858	961,832,060	1,547,664,491
Total Thru 2021	5,233,285,921	1,260,000,000	663,664,120	491,479,716	1,923,664,120	3,309,621,801
Average Annual Thru 2021	373,806,137	90,000,000	47,404,580	35,105,694	137,404,580	236,401,557

Utilizing the Base Case annual bond issuance capacity of $90 million and corresponding annual state grant contribution of $47.4 million an average funding shortfall is approximately $250 million per year from 2008 through 2021. Below is the breakdown of the annual funding shortfall and the related grant and Support Fund necessary to eliminate the shortfall.

Table 11 – Annual Funding of Program Shortfalls

Year	Project Funding Shortfall	Additional Revenue Bonds Needed	Additional Support Fund (GO Bonds) Needed	Additional State Grant (GO Bonds) Required
2008	$24,173,931	$15,833,925	$3,801,144	$8,340,006
2009	156,246,306	102,341,330	24,568,394	53,904,976
2010	253,912,923	166,312,965	39,925,633	87,599,958
2011	255,610,393	167,424,807	40,192,546	88,185,586
2012	292,346,784	191,487,144	45,969,029	100,859,640
2013	411,514,561	269,542,037	64,707,141	141,972,524
2014	368,152,411	241,139,829	57,888,815	127,012,582
Total 2008 thru 2014	1,761,957,309	1,154,082,037	277,052,702	607,875,272
Average Annual Thru 2014	251,708,187	164,868,862	39,578,957	86,839,325
2015-2021	1,547,664,490	1,013,720,241	243,356,990	533,944,249
Total Thru 2021	3,309,621,799	2,167,802,278	520,409,692	1,141,819,521
Average Annual Thru 2021	236,401,557	154,843,020	37,172,121	81,558,537

The additional state commitment that would be required to fund all DEP's project funding through 2021. The annual shortfall of $236.4 million per year would be met with both revenue bonds and state funded grants. The Program would have to issue $154.8 revenue bonds each year (in addition to the $90 million contemplated in the Base Case). G.O. bonds would be needed for two purposes, state funded grants and direct support fund deposits. State funded grants would increase by $81.6 million (in addition to the $47.4 million contemplated in the base case). The State funded support fund deposit requirement would be an average of $37 million per year.

APPENDIX C:

Explanation of Revolving Loan Program

The financial administration of the state revolving fund program for the CWF is managed within the Office of the State Treasurer, Debt Management Division. Connecticut's CWF Program was initiated in 1986 as EPA was eliminating the old construction grants program and requiring all states to convert to a revolving loan fund as a condition of receiving further federal financial support. The State of Connecticut and the EPA have entered into a federal capitalization grant agreement, which contains several requirements for the financial management of the Clean Water Fund. These requirements include two key items that have laid the foundation for the state to be able to issue additional revenue bonds in the future without additional G.O. bond authorization costs:

- The annual federal capitalization grants from EPA must be matched by a state contribution equal to 20% of the federal contribution.

- The state must comply with a perpetuity requirement that the federal capitalization grant and the state match must be maintained in the CWF and cannot be used for making grants or loans. As of June 30, 2006 the Clean Water Fund has restricted net assets of $514 million against a perpetuity target amount of $472 million ($372 million in federal capitalization grants and a state match of $100 million).

The state revolving fund (SRF) bond program is complex, with multiple funds or accounts within it that comprise the whole program. Accounts within the program were established in a revenue bond resolution and include the debt service reserve fund, the debt service fund, support fund and sinking fund, state subsidy and other investments. The first revenue bonds for the program were issued in 1991. This combination of funds is used to support previous revenue bond issues and will be used to support future bond issues.

It is helpful to envision the SRF bond program as a generator of loan capacity with 2 entrances into the generator and one exit from the generator. One entrance into the generator is the monthly loan repayment made by the municipalities over time for the repayment to bond holders. The second entrance is various funds over time that have built the strength of the programs, including the federal capitalization grant, the state match required by EPA, additional state match elected by Connecticut and interest earnings. The one exit from the fund is the award of loans to municipalities made on an on-going basis. The award of new loans and the repayment of loans, over a period of time, would be equal and would not affect the size of the "generator" or the fund.

A common misconception is that, as repayments are made by one municipality into the fund, the dollars are re-loaned to a new municipality. This is not the case. The repayments are utilized as payments to the bondholders. It is the past and future federal capitalization grants, the required state match and the state overmatch and other sources within the fund that are utilized as support for existing and new loans. These funds act as a capacity generator, supporting the state's ability to issue bonds.

Based upon a detailed model analysis conducted with Lamont Financial Services, financial advisors to the Office of the State Treasurer on the CWF SRF program, the current capacity of the program to support new revenue bond authorizations is estimated at $90 million per year. This can be accomplished at no additional cost to the state and should be made immediately available for FY 08 and 09 as the DEP prepares the next priority list. Please see Appendix C for the detail of the analysis.

From the latest CWF 2006 Annual Report, the capacity generator within the fund stands at $514 million. These funds are not directly loaned out because, if they were, it would be a one-time use of the funds and only $514 million of projects could be built. If, however, these dollars within the fund are used to support new revenue bond authorizations, the fund can issue new revenue bonds at a rate of $90 million per year. Over a 20 year period, more than $1.8 billion of loans can be made. This far exceeds the $514 million capacity if this money were directly loaned out and is the justification for not making a one time fix by utilizing the $514 million immediately to meet current demands for financing.

If demands on the CWF exceed this existing loan capacity, additional loan capacity can be generated by infusing more funds into the capacity generator. These funds would likely be additional G.O. bonds and would represent a cost to the state. However, it is estimated that for each dollar in G.O. bonds sold that four dollars of revenue bonds can be sold. As an example, if $130 million per year were needed in revenue bonds, the first $90 million is available already at no cost to the state. The next $40 million in revenue bonds would cost $10 million in G.O. bonds.