

# Executive Summary

## ES.1 Introduction

This purpose of this Wastewater Facilities Plan is to develop a 20-year plan for wastewater collection, treatment and disposal for the Town of Stonington. The Plan has been prepared in conformance with the Connecticut Department of Environmental Protection (CTDEP) guidelines, and is partly funded through the State's Clean Water Fund.

The plan has been developed for the Stonington Water Pollution Control Authority (WPCA) as part of a lengthy and meaningful public process. An initial draft of the Wastewater Facilities Plan report was presented at a public hearing in August 2001, after a year-long development process involving a Citizens Advisory Group representing residents from various locations and interests in the Town. The initial draft was met with significant comment at the Public Hearing, after which WPCA sponsored a second citizens group, the Citizen's Review Panel (CRP). A second draft, containing updated information and revised recommendations, was presented at another public hearing in February 2005. Again, the presented plan generated a very high volume of public comment that was overwhelmingly opposed to the WPCA's recommended plan for wastewater treatment. In the period following this second public hearing, WPCA carefully reviewed the available options, and this final draft version of the Wastewater Facilities Plan incorporates WPCA's analysis of the comments received throughout the public participation process and WPCA's revised recommendations. A third public hearing was held in November 2006, at which minimal comment was received, and the majority of which was supportive of WPCA's revised recommendations.

The Wastewater Facilities Plan has been prepared to meet the following goals:

- To provide the Stonington WPCA with a cost-effective, comprehensive plan to meet the Town's wastewater needs for the next 20 years,
- To obtain public and regulatory approval of the Plan, and
- To position the Town for funding opportunities.

## ES.2 Wastewater Needs Assessment

Section 2 of this Plan reviews current wastewater disposal methods, their functionality, and identifies areas where improved or alternate facilities are required in order to provide adequate treatment and disposal of the generated wastewater. This assessment is based on the Connecticut Department of Environmental Protection (DEP) guidelines and the United States Environmental Protection Agency (EPA) Publication *Construction Grants 1985 (CG-85)*.

## Identification of Wastewater Needs Areas

A wastewater needs analysis was performed, based on the review and evaluation of data from local, state and federal sources. General data included surficial geology, soil suitability for subsurface disposal, zoning, lot sizes, population density, floodplains, wetlands, surface water, groundwater, drinking water supplies and recharge areas, public water service areas, and public sewer service areas. Site-specific information indicating where homes and/or businesses were experiencing difficulties with their wastewater disposal system included septage haulers' pumping records, Board of Health records, and questionnaire responses.

The questionnaire survey was mailed to each unsewered landowner within the Town. Approximately 3,140 questionnaires were mailed, and approximately 50 percent of the questionnaires were completed and returned. The questionnaire included 33 questions designed to determine whether or not a subsurface disposal problem exists, the type of problem, potential causes of the problem, the age of the system, the number of people using the system, whether the system has been rehabilitated, etc. Based on an analysis of the information obtained from the questionnaire responses and the Board of Health Records, the density of failures per unit area was determined. Areas of significant problem density were then characterized as problem areas, to be analyzed in detail.

The final step in the analysis was determination of an implementable, reliable, cost-effective means of resolving onsite disposal system problems. Generally, problems caused by poor maintenance, excessive age and/or hydraulic overload were considered solvable by means of rehabilitation, replacement, or enlargement of existing onsite systems. These are relatively simple corrective measures, assuming that conditions prevail that would allow upgrading of onsite disposal systems in conformance with state requirements. Problem areas subject to high groundwater and/or poor soils were evaluated based on their population density.

Based on the considerations described above, the following 18 wastewater needs areas were identified:

- Area 1 – Marjorie Street Area
- Area 2 – Riverbend Drive
- Area 3 – School Street Area
- Area 4 – Roseleah Drive
- Area 5 – Elm Ridge Road Area
- Area 6 – Pequot Trail Area
- Area 7 – Cronin Avenue/Holly Drive Area
- Area 8 – Millan Terrace Area
- Area 9 – Aimee Drive Area
- Area 10 – Mark Street Area
- Area 11 – Greenhaven Road Area
- Area 12 – Meadow Road Area
- Area 13 – Latimer Point
- Area 14 – Mason's Island

- Area 15 – Marlin Drive Area
- Area 16 – Elm Street Area
- Area 17 – Montauk Avenue Area
- Area 18 – North Stonington Road

### **Assessment of Wastewater Needs Areas**

Each of the 18 wastewater needs areas was assessed to determine the available treatment and disposal alternatives, wastewater conveyance alternatives, and the probable cost of the recommended alternative.

### ***Wastewater Treatment and Disposal Alternatives***

The following alternatives were considered for wastewater treatment and disposal for the identified problem areas:

1. Town-Wide No-Action
2. Individual Onsite Wastewater Treatment and Disposal
  - Conventional Septic Systems
  - Innovative/Alternative Technologies
3. Shared Local (Community) Wastewater Treatment and Disposal
  - Conventional Septic System
  - Innovative/Alternative Technologies
4. Package or Small Wastewater Treatment Plants
  - Offsite Disposal at a Municipal Water Pollution Control Facility

### ***Screening of Conveyance Alternatives***

The following alternatives are considered for wastewater collection:

1. Conventional Gravity Sewers
2. Pumping Stations and Force Mains
3. Small Diameter Gravity Sewers
4. Pressure Sewers with Septic Tank Effluent Pumps (STEP systems)
5. Pressure Sewers with Individual Grinder Pumps
6. Combinations of the Above

### ***Costs of Wastewater Management Alternatives***

Costs of wastewater management alternatives were estimated and compared. The feasible alternatives identified for each wastewater needs area were evaluated on a common fiscal basis.

### ***Assessment Results and Recommendations***

**Table ES-1** summarizes the recommended alternatives, total capital costs, costs per lot and annual operation and maintenance costs for each of the 18 wastewater needs areas. The 18 needs areas have a variety of problems and issues, including high groundwater, ledge, poor filtration, location within environmentally sensitive areas and small lots. Installing a collection system and connecting to the existing sewer is the most cost-effective and environmentally sound alternative for 15 of the 18 wastewater needs areas. The other three areas, Marjorie Street, Mason's Island and North Stonington Road, are located relatively far from the existing wastewater collection system, and the impacts of constructing the transmission lines would be significant. Recommended alternatives for these three areas are community treatment systems for Marjorie Street and Mason's Island, and individual onsite systems with innovative/ alternative technologies for the North Stonington Road area. The proposed collection and transmission systems are shown in **Figure ES-1**.

The WPCA plans on addressing only the critical and high-priority needs areas during the 20-year planning period. These areas are also indicated on Table ES-1. However, WPCA has the right and responsibility to continuously review the sewer needs of the Town, and respond to the highest-priority needs as the public health demands and as budgetary constraints allow. Therefore, it is possible that the timing of implementing the recommended improvements may change, either by accelerating or delaying the schedule. It is also possible that the needs areas priorities will change.

## **ES.3 Projected Flows and Loads**

Section 3 summarizes the development of projected wastewater flows and loads within the Town of Stonington in 2025. It documents the procedures and methods used to develop the projections.

### **Review of Previous Reports**

The following sources were reviewed and considered in the development of the projects flows and loads:

- Stonington Plan of Development (May 1992),
- 2000 U.S. Census,
- Water and Sewer Needs Analysis, Stonington, CT (November 1997),
- Regional Conservation and Development Policy Guide for Southeastern Connecticut (October 1997),

**(See Table ES-1)**

**(See Figure ES-1)**

- 1999 Master Transportation Plan (January 1999),
- Draft Environmental Impact Statement, Route 2/2A/32 (March 1999),
- Conservation and Development Policies Plan for Connecticut 1998-2003 (May 1998), and
- 2004 Plan of Conservation and Development (June 2004).

### Population Projections

The goal of the Wastewater Facilities Plan population projection is to develop a reasonable estimate of future population within the Town of Stonington, considering the studies issued by planning agencies, as well as the Town and region's growth patterns, and to use the estimated population to project future wastewater flows and loads.

Population projections for the Wastewater Facilities Plan were developed based on this available data and on information about future development in the town. The resultant population projections are shown in **Table ES-2** and **Figure ES-2**.

<b>Table ES-2</b>					
<b>Population Projections</b>					
<b>Year</b>	<b>Town of Stonington</b>	<b>Mystic (B 7053)</b>	<b>Borough (B 7052)</b>	<b>Pawcatuck (B 7051)</b>	<b>Remainder (B 7054)</b>
1990	16,919	3,176	3,510	7,871	2,362
2000	17,906	3,377	3,533	8,226	2,770
2005	<i>18,456</i>	<i>3,481</i>	<i>3,642</i>	<i>8,479</i>	<i>2,855</i>
2010	<i>19,006</i>	<i>3,584</i>	<i>3,750</i>	<i>8,731</i>	<i>2,940</i>
2015	<i>19,556</i>	<i>3,688</i>	<i>3,859</i>	<i>8,984</i>	<i>3,025</i>
2020	<i>20,106</i>	<i>3,792</i>	<i>3,967</i>	<i>9,237</i>	<i>3,110</i>
2025	<i>20,656</i>	<i>3,896</i>	<i>4,076</i>	<i>9,489</i>	<i>3,195</i>

<sup>1</sup> Numbers in italics are estimated based on historical trends. Numbers below each area (e.g., B 7053) indicate the respective U.S. Census tract number.

### Projected Flows and Loads

Estimates were made for domestic, institutional, industrial, commercial, infiltration and inflow and septage. For each category, population growth, future development and sewer system expansion were taken into account.

The projected future flows were used to project future loads to each of the three water pollution control facilities (WPCFs). The overall contributing percentages of constituents of the wastewater flow (e.g., domestic, institutional, commercial, etc.) are not projected to change significantly in proportion to one-another. This indicates that

**(See Figure ES-2)**

the characteristics of the wastewater should remain similar to the existing conditions. In addition, the projections do not include any additional significant industrial users that could alter the wastewater characteristics. Therefore, the wastewater is expected to be of similar strength, and contain similar concentrations of the important pollutants such as BOD, TSS and nitrogen components as the existing wastewater.

**Table ES-3** summarizes the projected flows and loads to each of the three WPCFs, assuming that the wastewater quality parameters, and the peaking factors for different loading conditions, would not change.

## ES.4 Wastewater Collection Systems

### System Description

Stonington has three sanitary sewer systems that discharge to the Mystic, Borough and Pawcatuck WPCFs., as follows:

- The Mystic service area extends eastward from the Mystic WPCF to the intersection of U.S. Route 1 and Chapman Lane, and northerly to North Stonington Road. The Mystic collection system includes approximately 20 miles of gravity sewers, five pumping stations, approximately 1.1 miles of force mains, and the Mystic WPCF. Four of the five pumping stations collect the flow and convey it to the Mystic WPCF. The remaining pumping station is located at the Mystic WPCF and conveys underflow from the plant's primary clarifiers to the Borough WPCF via a separate transmission main.
- The Stonington Borough collection system primarily services the Borough, Lord's Point, and the area immediately north of the downtown Borough area. In addition, the collection system extends north to Deans Mill Road. This system includes approximately 8.5 miles of gravity sewers, seven pumping stations, 0.7 miles of force main, a force main that conveys underflow from Mystic WPCF to the Stonington Borough system, and the Borough WPCF.
- The Pawcatuck collection system services the eastern portion of the town. The Pawcatuck system consists of approximately 20 miles of sewers, 1.4 miles of force main, six pumping stations and the Pawcatuck WPCF.

### Capacity Analysis and Recommended Improvements

A hydraulic capacity analysis for the critical components of each of the three wastewater collection systems – including the interceptors and pumping stations – is included in Section 4.

#### *Mystic*

All of the interceptors within the Mystic collection system are sufficient for existing peak and projected future wastewater flows. All of the pumping stations within the Mystic collection system have adequate capacity to handle existing and projected future peak wastewater flows. There are no improvements to the Mystic collection system necessary to increase capacity.

*(See Table ES-3)*

***Borough***

All of the interceptors within the Borough collection system are sufficient for existing peak and future wastewater flows. In addition, all of the pumping stations within the Stonington Borough collection system can adequately handle existing peak wastewater flows. However, in order to adequately handle projected future peak wastewater flows, the Shawondasee Drive pumping station would likely need to be upgraded in the future, depending on actual development patterns. The upgrade would include replacing the existing submersible pumps with larger pumps in order to handle the increased flow. The existing 6-inch force main can sufficiently handle the future peak wastewater flow from this pumping station.

***Pawcatuck***

All of the interceptors within the Pawcatuck collection system are sufficient for existing peak wastewater flows. In addition, all interceptors are sufficient for projected future peak wastewater flows, with two marginal pipe segments. A 24-inch pipe segment of about 2,000 feet in Mechanic Street would theoretically be loaded at 88-percent of capacity at the projected peak flow rate, compared to the typical design criteria of 80 percent, if sufficient development occurs in the areas upstream. Similarly, an 18-inch pipe segment of 250 feet in Mary Hall Road would theoretically flow at 91-percent of capacity at the projected peak flows.

All of the pumping stations within the Pawcatuck collection system can adequately handle existing peak wastewater flows. However, two pumping stations would likely need to be upgraded in the future in order to adequately handle projected future peak wastewater flows, either by pump replacement or addition: Pumping Station No. 3 and the White Rock Road pumping station.

Overall, it is estimated that approximately \$341,000 of system improvements would be required in the collection system over the 20-year life of the plan.

**ES.5 Water Pollution Control Facilities Evaluation**

Section 5 documents the evaluations of the existing water pollution control facilities (WPCFs). These evaluations consist of a summary of the history of each plant, a description of the current facilities and the unit processes at each facility, a summary of recent plant operating data, and a unit process capacity analysis.

**Water Pollution Control Facilities*****Mystic***

The Mystic WPCF provides wastewater treatment services for the villages of Mystic and Old Mystic, in addition to adjacent commercial districts. The plant was built in 1971-72. The Mystic WPCF was designed to treat an average flow of 0.80 million gallons per day (mgd), and a peak flow of 2.35 mgd to secondary treatment standards. The Mystic WPCF has undergone a substantial amount of upgrading and equipment replacement in recent years, and currently employs the following treatment processes:

- Influent comminution (or bypass coarse screening)

- Influent raw sewage pumping
- Primary clarification
- Activated sludge biological treatment
- Disinfection with sodium hypochlorite
- Primary underflow de-gritting
- Diversion pumping of de-gritted primary clarifier underflow to the Stonington Borough WPCF
- Odor control

#### ***Stonington Borough***

The Stonington Borough WPCF (Borough WPCF) provides wastewater treatment services primarily for the Village of Stonington. The plant was placed into service in 1975. The Borough WPCF was designed to treat an average flow of 0.66 mgd to secondary treatment standards. The Borough WPCF has also undergone a substantial amount of upgrading and equipment replacement in recent years, primarily due to the diversion from the Mystic WPCF, and currently employs the following treatment processes:

- Influent comminution (or bypass coarse screening)
- Influent raw sewage pumping
- Primary clarification, with waste activated sludge (WAS) co-settling
- Activated sludge biological treatment
- Disinfection with sodium hypochlorite
- Sludge thickening and thickened sludge storage
- Odor control

#### ***Pawcatuck***

The Pawcatuck WPCF provides wastewater treatment services for all of the sewered areas of Pawcatuck. The plant was placed into service in 1980. The Pawcatuck WPCF was designed to treat an average flow of 1.3 mgd to secondary treatment standards. The plant discharges to the Pawcatuck River. The plant is currently treating flows below its original design capacity. The Pawcatuck WPCF currently employs the following treatment processes:

- Primary clarification, with waste activated sludge (WAS) co-settling

- Septage receiving
- Activated sludge biological treatment
- Disinfection with sodium hypochlorite
- Sludge thickening and thickened sludge storage
- Odor control

## ES.6 Water Quality Analyses

Section 6 examines the water quality implications of various wastewater treatment options under consideration by the Town of Stonington. Currently, Stonington's three WPCFs - Mystic, Stonington Borough, and Pawcatuck - discharge to the Mystic River, Stonington Harbor, and Pawcatuck River, respectively.

CTDEP performed water quality analyses of the Mystic River from 1988-1990. The results of these analyses are summarized in a report entitled "*Water Quality Analysis of Mystic Harbor - A Water Quality Model and Waste Load Allocation*" (June 1990). This report indicated that, although the Mystic Harbor generally exhibits excellent water quality, nutrient loadings intermittently cause algae blooms. Since state *Water Quality Standards* require that Mystic Harbor's water quality not be allowed to degrade, increases in flow to the Mystic WPCF outfall would be accompanied by tighter restrictions on effluent quality such that nutrient loading would not increase above existing levels. As a result of the findings of this report, future discharges from Mystic WPCF would also be limited to levels existing at the time of the study. Because of the existence of this study by CTDEP, Section 6 of this Wastewater Facilities Plan included analyses of only Stonington Harbor and the Pawcatuck River. No additional analysis of the Mystic River/Harbor was performed.

The NPDES permits for the Stonington Borough and Pawcatuck WPCFs were renewed in 2005. The NPDES permit for the Mystic WPCF will be renewed in 2006. The permits included limits for BOD, TSS, coliform bacteria, chlorine, and whole effluent toxicity testing. They also included monitoring requirements for metals and phosphorus compounds. Future permits could include limits for these compounds if they are shown to be a potential water quality concern. with the three WPCFs are also required to comply with the *General Permit for Nitrogen Discharges*. Thus, the water quality investigation focuses on determining if future discharges can meet water quality standards for (1) conventionals (i.e., dissolved oxygen) and (2) toxics.

For both the Pawcatuck River and Stonington Harbor, existing water quality information was obtained and analyzed. Then the dissolved oxygen and toxics analyses were completed. The results of the analyses are as follows:

- Water quality in the northernmost portion of the Pawcatuck River estuary is highly degraded. This condition appears to be a function of physical constraints of the estuary.
- Pawcatuck River water quality is only somewhat degraded near the Pawcatuck WPCF outfall. This appears to be because there is much better tidal exchange lower in the estuary at its mouth. The Pawcatuck WPCF discharge is a small contributor to the deficit of oxygen found in the estuary.
- Stonington Harbor is better suited than the Pawcatuck River for assimilating wastewater flows because:
  - It has greater mixing/flushing for conventional pollutants, and
  - It offers greater dilution potential for meeting water quality criteria for toxic pollutants.
- Stonington Harbor should be able to handle the combined discharge from all three treatment plants and meet the state's water quality standard for dissolved oxygen.
- The Borough WPCF's outfall diffuser has sufficient hydraulic capacity to handle the combined flow from all three plants.
- The Town should investigate whether influent copper concentrations in the wastewater could be reduced by improved corrosion control of the water supply.
- If the WPCA implements a one-plant solution utilizing the existing Borough WPCF outfall to Stonington Harbor, then the outfall should be modified by opening two additional ports on the existing diffuser.

## ES.7 Alternatives Evaluation

The configuration of the existing Stonington WPCA facilities – consisting of three separate collection systems and WPCFs – is complex. The complexity of the existing systems provides a tremendous amount of flexibility when considering the numerous options available for upgrading the systems to meet the Town's future wastewater needs. In Section 7, a limited number of feasible "big picture" overall alternatives are selected. These alternatives are then evaluated in detail and compared to determine the recommended alternative.

### WPCF Effluent Quality

The final effluent from each of the three existing WPCFs, and/or from a new WPCF, would be required to meet the current NPDES secondary treatment levels. It is anticipated that future permits would require a dechlorination process be provided, for all facilities disinfecting by addition of either chlorine gas or liquid sodium hypochlorite (as at all three existing WPCFs).

## Nitrogen Removal

In addition to the NPDES permit requirements, the upgraded or new facilities would be required to comply with the nitrogen wasteload allocation (WLA) assigned to Stonington by CTDEP's *General Permit for Nitrogen Discharges*, either by treatment or by use of Connecticut's nitrogen trading program. The *General Permit for Nitrogen Discharges* includes WLAs for each of Stonington's three WPCFs. These WLAs decline over time through 2014. Stonington's need to purchase (or ability to trade) nitrogen credits is determined annually based on these WLAs and plant performance. As Stonington looks toward the future, the sum of these WLAs would become the basis for nitrogen discharge compliance.

**Table ES-4** summarizes the anticipated effluent quality requirements that are critical to the alternatives evaluation. All of the alternative treatment process trains evaluated in this section are designed to meet these treatment goals, with the exception of Alternative G (see description below), which would not be designed with the intent of meeting the nitrogen limits, and would only provide the degree of nitrogen removal that can be achieved while using the Symbio™ process. Compliance with the nitrogen wasteload allocation would be attained by utilization of the nitrogen trading program.

<b>Table ES-4</b>			
<b>Anticipated WPCF Effluent Quality Requirements</b>			
<b>Condition</b>	<b>Mystic WPCF</b>	<b>Borough WPCF</b>	<b>Pawcatuck WPCF</b>
<b>BOD<sub>5</sub> (mg/L)</b>	30 (avg. monthly) 50 (max. daily)	25 (avg. monthly) 45 (max. daily)	25 (avg. monthly) 45 (max. daily)
<b>TSS (mg/L)</b>	30 (avg. monthly) 50 (max. daily)	30 (avg. monthly) 50 (max. daily)	30 (avg. monthly) 50 (max. daily)
<b>TN (mg/L)<sup>1</sup></b>	8.1 mg/L (2006) 5.1 mg/L (2014) 4.5 mg/L (2025)	10.9 mg/L (2006) 6.6 mg/L (2014) 5.6 mg/L (2025)	8.5 mg/L (2006) 4.2 mg/L (2014) 3.1 mg/L (2025)
<b>Total residual chlorine (TRC) (mg/L)<sup>2</sup></b>	0.2 (minimum) 1.5 (maximum)	0.2 (minimum) 1.5 (maximum)	0.2 (minimum) 1.5 (maximum)

<sup>1</sup> TN concentrations are based on the *General Permit for Nitrogen Discharges* allowable WLA (lbs/day) and the projected annual average flow in the indicated year. TN WLAs may be traded among the Stonington WPCFs; it is possible that one WPCF can discharge a higher effluent TN concentration, but an increase in effluent wasteload would have to be made up by an equal decrease in discharge quantity at another WPCF. TN WLAs for 2006 and 2014 are based on the General Permit. It is assumed that the WLA for 2025 is the same for 2014. More stringent treatment would be needed (in terms of concentration) because of the projected flow increases over time.

<sup>2</sup> Existing effluent TRC limits shown. It is anticipated that stricter limits on TRC would be permitted in the future, requiring that dechlorination be provided following chlorine disinfection.

## Alternatives

Seven alternatives were evaluated in detail, as described below. The alternatives include both construction of new plants and upgrading the existing WPCFs.

### Alternative No. 1

Alternative No. 1 involves upgrading each of the three existing WPCFs to handle the future flows and loads from their respective collection systems, without diversion of flow from the Mystic WPCF to the Borough WPCF (which is evaluated separately as Alternative 1A).

### Alternative No. 1A

Alternative No. 1A involves the upgrading of each of the three existing WPCFs to handle the future flows and loads from their respective collection systems, and includes flow transfer of 0.28 mgd of primary clarifier underflow from the Mystic WPCF to the Borough WPCF.

**Alternative No. 1B**

Alternative No. 1B involves the upgrading of each of the three existing WPCFs to handle future flows and loads from their respective collection systems, and includes a 0.28 mgd diversion from the Mystic WPCF to the Borough WPCF. However, unlike Alternative 1A, the diversion would be either raw influent or primary effluent, but not the primary clarifier underflow.

**Alternative No. 2**

Alternative No. 2 involves abandoning the Mystic WPCF and pumping the entire flow currently treated at the Mystic WPCF to the Borough WPCF for treatment. The Borough WPCF would be upgraded to handle the future flows and loads from both the Mystic and Borough collection systems. The Pawcatuck WPCF would be upgraded to handle its locally generated flow.

**Alternative No. 3**

Alternative No. 3 involves abandoning both the Mystic and Borough WPCFs and pumping the entire flow currently treated at the two plants to the Pawcatuck WPCF for treatment. The Pawcatuck WPCF would be upgraded to handle the future flows and loads from the entire Town. A portion of the treated effluent would be piped back to the existing Borough WPCF outfall for discharge to Stonington Harbor.

**Alternative No. 4**

Alternative No. 4 involves abandoning the Mystic and Borough WPCFs and pumping the entire flow currently treated at the Mystic WPCF and the Borough WPCF to a new WPCF at a new site. The treated effluent would be piped back to the existing Borough WPCF outfall for discharge to Stonington Harbor. The Pawcatuck WPCF would be upgraded to handle its locally generated flow.

**Alternative No. 5**

Alternative No. 5 involves abandoning the Mystic, Borough and Pawcatuck WPCFs and pumping the entire flow currently treated at the three plants to a new WPCF at a new site. The treated effluent would be piped back to the existing Borough WPCF outfall for discharge to Stonington Harbor.

**Alternative G**

Alternative G involves upgrading each of the three existing WPCFs only when and as necessary to handle the future flows and loads from their respective collection systems. Upgrades under this alternative would not provide nitrogen removal, except as may be accomplished by installing the Symbio™ process at each plant. This option would ultimately require improvements at all three plants in order to accommodate future flows and loads, and to comply with NPDES permit requirements. Stonington would then purchase nitrogen credits through the state's nitrogen trading program to comply with the requirements of the *General Permit for Nitrogen Discharges*.

### **The “Groton Alternative”**

During the preparation of the Wastewater Facilities Plan, CTDEP suggested that WPCA also evaluate another option, which is known as the “Groton Alternative.” This evaluation was completed and was documented in a separate report. The Groton alternative would be a regional solution and would involve the transfer of wastewater from the Mystic and Borough collection systems to the Groton system for treatment. The *Groton Analysis* is included in Appendix F of this Facilities Plan. It was found that the Groton Alternative was not a feasible option.

### **Siting Study**

Two of the alternatives (Alternatives Nos. 4 and 5) would require that a new water pollution control facility (WPCF) be constructed at a new site to treat some or all of the projected wastewater flow within the Town of Stonington. An evaluation was conducted to determine appropriate sites suitable for construction and operation of a new WPCF and included:

- An outline of the methodology used to identify potential sites,
- A description of the initial, secondary and final screening processes, and
- The recommended site for new WPCFs under Alternatives No. 4 and 5.

### **Screening Considerations**

The first step in the site-selection process was to narrow the list of all properties within the Town of Stonington. The following criteria were considerations in screening suitable sites for new WPCFs.

- Area Requirements
- Current Zoning Requirements and Site Location
- Current Land Use
- Property Ownership
- Access
- Proximity to Existing or Proposed Sewer Systems
- Proximity to Existing or Projected Development
- Physical Characteristics
- Site Configuration
- Historic and Archeological Features

- Rare or Endangered Species

### Site Selection Process

There are a total of approximately 8,200 parcels within the Town of Stonington. Of this total, 382 parcels have areas of at least 10 acres. Although the number of potential sites is considerably reduced in this step, additional steps were required to narrow down the sites even further. Parcels that are owned and reserved by the State of Connecticut, Avalonia, or other conservancies were screened out of contention. In addition, sites located north of Interstate 95 are not considered feasible, and were screened out.

### *Finalist Site Ranking*

After several screening steps, an order of ranking was conducted on ten finalist sites to identify the most suitable site for a new WPCF. A list of factors was applied to the remaining sites to establish the most suitable site for a new facility, as follows:

- Implementability (ownership, “fatal flaws,” key advantage, etc.)
- Compatibility with Site and Surrounding Areas
- Site Characteristics
- Engineering/Technical Feasibility
- Vehicle Access
- Environmental Features (wetlands, flood hazards, presence of threatened species, etc.)
- Historical/Archeological Features
- Land Acquisition

Upon completing the final site ranking, the town-owned site on U.S. Route 1 and Spellman Drive was identified as the most suitable location for a new WPCF (see **Figure ES-3**). For the purpose of developing cost information, this site was used for Alternative No. 4 and Alternative No. 5.

### Economic Comparison

The eight alternatives were evaluated in detail to facilitate comparison, in terms of economic and non-economic criteria. **Table ES-5** summarizes the capital cost, annual operation and maintenance (O&M) cost and 20-year present worth of the eight overall alternatives. Note that the cost summaries do NOT include estimated costs for property acquisition, nor do they include possible credits (total cost reductions) due to potential sale of existing properties.

<b>Table ES-5</b>			
<b>Overall Economic Comparison</b>			
<b>Description</b>	<b>Capital</b>	<b>Annual O&amp;M</b>	<b>Present Worth</b>
<b>Alternative No. 1</b>	\$25.8 million	\$1.77 million	\$46.7 million
<b>Alternative No. 1A</b>	\$25.3 million	\$1.86 million	\$47.3 million
<b>Alternative No. 1B</b>	\$25.7 million	\$1.86 million	\$47.7 million
<b>Alternative No. 2</b>	\$28.3 million	\$1.45 million	\$45.4 million
<b>Alternative No. 3</b>	\$42.0 million	\$1.22 million	\$56.4 million
<b>Alternative No. 4 (preferred site)</b>	\$49.8 million	\$1.44 million	\$66.8 million
<b>Alternative No. 5 (preferred site)</b>	\$50.9 million	\$1.23 million	\$65.4 million
<b>Alternative G</b>	\$19.1 million	\$1.76 million	\$39.9 million

Table ES-5 shows that on a capital cost basis, Alternative G is the least costly, followed by Alternative Nos. 1, 1A, and 1B. Alternative No. 2 is slightly more costly. Alternatives Nos. 3, 4 and 5 are more costly. On an annual O&M basis, Alternative Nos. 3 and 5 are the least costly, because they involve operation of only one plant. Alternative Nos. 2 and 4 are somewhat more costly to operate and maintain, and the alternatives with three plants (Alternative Nos. 1, 1A and G) are the most expensive to operate.

**(See Figure ES-3)**

On a 20-year present worth basis, Alternative G is the most economical, followed closely by Alternative Nos. 1, 1A, 1B and 2. Alternative Nos. 3, 5 and 4 are the most costly.

### **Non-Economic Comparison**

The alternatives are compared versus several non-economic criteria in the following paragraphs. It is understood that comparing the alternatives against these criteria is, by necessity, subjective. However, by evaluating each criterion separately, a preferred alternative can often be identified.

#### ***Constructability***

This criterion seeks to measure the ease or difficulty with which the alternative can be physically constructed. Alternative Nos. 1, 1A, 1B and G involve considerable construction at each of the three existing plant sites, but involve a negligible amount of pipeline construction work. Construction at the Mystic and Borough WPCFs will be difficult due to the small amount of available area for staging, though at the Pawcatuck site this is not an issue. Alternative No. 2 involves extensive construction at the Borough WPCF site, and the quantity of work to be performed would make that construction difficult. Alternative Nos. 3, 4 and 5 require an extensive amount of pipeline work. The necessary work at a new treatment plant site would be relatively simple in comparison to the pipeline work.

#### ***Implementability***

This criterion seeks to measure the ease or difficulty with which the alternative can be implemented, and is meant to address factors such as regulatory and public acceptance, potential stumbling blocks and the political climate. Based on the public comment received to date, the alternatives that involve continued use of the three existing plant sites (Alternatives 1, 1A, 1B and G) are the most likely to be approved and successfully implemented by the Town. Alternative 1A, which involves continued diversion of primary underflow from the Mystic WPCF to the Borough WPCF, appears to be less acceptable to the public than Alternatives 1, 1B, and G. The other alternatives all involve some degree of consolidation of either treatment facilities and/or discharge, and public acceptance of those options seems dubious. Alternative Nos. 4 and 5 include one significant additional hurdle: a new site is needed, and though the preferred site is already owned by the Town, obtaining the public's approval of a new site is not easy.

#### ***Impacts during Construction***

All of the alternatives will impact the community to some extent during construction. The three-plant alternatives will each require heavy construction at three sites. Visual proximity to neighbors seems most direct at the Borough WPCF, as the Mystic WPCF and Pawcatuck WPCF are somewhat more isolated visually. For this reason, Alternative No. 2 is probably the least preferable. Alternative Nos. 3, 4 and 5 involve significant pipeline work in busy streets, and will therefore have impacts.

***Land Impact***

Alternative Nos. 1, 1A, 1B and G will have minimal land impact (positive or negative), as the current use at the existing sites would continue. Alternative 2 would have a slightly positive impact on the Mystic WPCF site and a negative impact at the Borough WPCF site due to the amount of construction needed. Alternative No.3 will have minimal land impact, as the existing site is large enough to support plant expansion without directly impacting neighbors. Alternative Nos. 4 and 5, which include new sites, will have a significant land impact.

***Reliability***

All of the alternatives involve either upgraded or new treatment facilities, provided with reliable and redundant systems, and therefore all of the alternatives are approximately equal against this criterion.

***Flexibility***

The alternatives that involve the continued use of the three existing treatment plant sites (Nos. 1, 1A, 1B and G) provide the most flexibility, in terms of both long-term operations, and in terms of initial implementation of the alternative. The three-plant options provide the option of project phasing, and would provide the flexibility to implement phases at the optimal time. Purely in terms of operational flexibility after construction is complete, the new plants in Alternative Nos. 4 and 5 would be designed with the most up-to-date, proven technology, and would be optimally flexible.

***O&M Complexity***

Alternative Nos. 3 and 5 would be preferred over the other alternatives for this criterion, because one plant is simpler to operate and maintain than two or three. Alternative No. 5 would have an advantage over Alternative No. 3, because a new facility would be streamlined for efficiency. The three-plant options would be the most complex to operate and maintain.

***Proximity to Neighbors***

Alternative No. 5 would rank highest against this criterion, followed by Alternative No. 3, then Alternative No. 4. Fewer facilities translate into fewer neighbors, which is an advantage. The preferred site for Alternative No. 5 is isolated from its neighbors, more so than the existing Pawcatuck site. The three-plant alternatives maximize the plants' exposure to neighbors.

***Odor Control***

Similar to the above criterion, Alternative No. 5 would rank highest against this criterion, followed by Alternative No. 3, then the other alternatives. Fewer facilities translate into fewer potential odor problems, which is an advantage. It must be noted that the cost figures included earlier in this section include maintenance, or in some cases, improvements over the odor control measures provided by the 2003 odor control project, so all alternatives should be more than satisfactory from an odor-control perspective.

### ***Water Quality (Impact from Outfalls)***

Except for Alternative G, the alternatives can be considered equal against this criterion, although it should be noted that not all interested stakeholders agree on this for all alternatives. All alternatives include continued use of the existing outfalls, either all three (as in Alternative Nos. 1, 1A, 1B and G), the Pawcatuck River and the Stonington Harbor outfalls (Alternative Nos. 2 and 4), or just the Stonington Harbor outfall (Alternative Nos. 3 and 5). The effluent quality resulting from the upgrades will result in an overall lower impact than either of these outfalls has today. The public has expressed a strong concern with significantly increasing the quantity of effluent discharged through any specific outfall, therefore making the alternatives that involve consolidation (Alternatives 2, 3, 4 and 5) least preferred.

Alternative G, by definition, will not provide the same level of nitrogen removal as the other alternatives, and therefore is least preferred for this criterion.

### ***Ambient Noise***

None of the alternatives will have any particular advantage or disadvantage regarding ambient noise, and all are approximately equal.

### ***Water Supply***

All of the alternatives include discharge through existing outfalls, and will not impact the water supply.

### ***Floodplain***

The Mystic and Borough WPCFs are located within the floodplain, and thus must be designed to maintain operation during floods. This is not an unusual design criterion for treatment plants. Neither the existing Pawcatuck WPCF site, nor the preferred new plant site for Alternative Nos. 4 and 5, are in the floodplain. Construction at none of the existing or new sites will have any impact on flooding conditions. None of the alternatives will have any particular advantage or disadvantage regarding floodplain issues, and all are approximately equal.

### ***Wetlands***

The existing treatment plant sites have no wetland issues, though construction at the Mystic WPCF will have to consider the nearby wetlands. The preferred site for the new plant in Alternative Nos. 4 and 5 is partially surrounded by wetlands, but disturbing the wetlands will not be required to build or operate the plant. Proper permitting procedures will have to be followed regardless of the alternative. Therefore, no alternative has an advantage against this criterion.

### ***Public Health and Safety***

All of the alternatives will provide environmental benefits, and none of the alternatives is favored.

### ***Aesthetics***

The three-plant alternatives will have an aesthetic impact at the existing Mystic WPCF and Borough WPCF sites, although the proximity to neighbors at Mystic is less of a

concern. The Pawcatuck WPCF site is visually isolated from neighbors, so expansion at the site will not have negative aesthetic impact. Alternative No. 2 would have a considerable negative impact at the Borough WPCF site. The preferred site for Alternative Nos. 4 and 5 would be isolated. The new plant road that would be required to enter the new plant will have a minor impact.

#### ***Energy Use (Other than Cost)***

This criterion seeks to ascertain if one alternative is significantly more energy-efficient or consuming than the others, because of the overall environmental impact that this has. The alternatives measure approximately equally.

#### ***Farmland (Preserve)***

None of the alternatives impact preserved farmlands.

#### ***Historical/Cultural/Recreational***

None of the alternatives has any known impact on historical or cultural resources. Alternative Nos. 1, 1A, 1B, 2 and 3 have no impact on recreational resources. Alternative Nos. 4 and 5 would have some negative, and possibly other positive, impacts. On the positive side, the new plant alternatives could make at least parts of the existing Mystic WPCF, Borough WPCF and Pawcatuck WPCF sites available for other uses. The new plant alternatives impact the hiking trails that currently exist at the preferred site – the trails would have to be relocated. In the case of Alternative No. 5, which will include the closure of the Pawcatuck WPCF, there might be a corresponding positive impact. Alternative No. 4 is slightly less preferred than Alternative No. 5 because this option would not be available.

### **Summary**

Upon review of the discussion in Section 7.5.3, it seems obvious that the three-plant alternatives offer some significant non-economic advantages during the construction and implementation phase, and that the one-plant alternatives may offer some advantages during the long-term operations.

### **Recommendation**

WPCA is authorized by the Town of Stonington to provide wastewater collection and treatment services within the Town. While performing these services, the WPCA balances the community interests in water quality and cost effectiveness with those interests and standards of the regulatory authorities like the DEP and the EPA.

These considerations suggest that only those options that maintain continued operation at the three existing treatment plant sites can be feasibly implemented with public support. Through the facilities planning efforts and the public comment received as the project has advanced, WPCA believes that alternatives that include consolidation of plants (Alternative Nos. 2, 3, 4 and 5) are not acceptable to the Town. Among the reasons that these alternatives cannot be successfully implemented are: 1) the capital and present-worth (life cycle) costs of those options are unaffordable, and are much higher than the other options; and 2) the consolidation of treatment sites,

resulting in an increase in the amount of flow discharged into any single receiving water body, is unacceptable to the citizenry. In addition, Alternative Nos. 4 and 5 require a new treatment plant at a new site, and there are complex hurdles associated with the siting issues.

By process of elimination, only those options that involve continued operation of the three existing plants (Alternatives 1, 1A, 1B and G) remain for consideration. Of these four remaining alternatives, WPCA feels that Alternative G is least preferred, because it does not provide the same level of treatment as the others, and would therefore not provide the same degree of environmental benefit. In fact, Alternative G would require Stonington to purchase nitrogen credits through the *General Permit for Nitrogen Discharges* indefinitely to stay in compliance. WPCA does not consider Alternative G to be an acceptable long-term wastewater treatment solution.

Alternatives 1 and 1B are preferred over Alternative 1A, because Alternative 1A includes continuation of the current primary clarifier underflow diversion from the Mystic WPCF to the Borough WPCF. Alternatives 1 and 1B do not include this underflow diversion. The WPCA supports restoration of the original design concept for Stonington – three treatment plants treating the sewage from their respective collection systems. The upgraded facilities provide levels of treatment consistent with DEP requirements and eliminate the need for the underflow diversion (installed per DEP order) at Mystic. Alternatives 1 and 1B are equally feasible both economically and non-economically to Alternative 1A, and therefore WPCA does not consider Alternative 1A the best option.

Continuing on this line of thinking, Alternative 1 is preferred to Alternative 1B. Alternative 1 involves no planned diversion of any kind, and is therefore expected to be the most acceptable to the citizens of Stonington. It is also a cost-effective, feasible option that will meet the 20-year performance goals of the WPCA. Therefore, WPCA recommends implementation of Alternative 1. WPCA also notes that the existing diversion infrastructure, consisting of the pumping system at the Mystic WPCF and the forcemain system that allows the transfer of flow to the Borough WPCF, is in-place infrastructure and is an asset that should not be abandoned or removed. Rather, it should be maintained in-place to maximize the Town's operational flexibility and available options to handle unexpected emergencies at Mystic WPCF after the upgrades are complete. In such emergencies, WPCA envisions that that the diversion infrastructure could be used to transfer either raw influent or primary effluent (not primary clarifier underflow) from the Mystic WPCF to the Borough WPCF if necessary to avoid a non-compliance event.

## ES.8 Recommended Plan

Section 8 summarizes the recommended plan for wastewater collection, disposal, and treatment for the Town. The recommended plan combines recommendations from Sections 2 through 7. The recommended plan is phased over time, based on the relatively urgent need to upgrade the Town's wastewater treatment facilities, and the

long-term need to implement solutions to the critical and high-priority sewer needs areas.

## **ES.9 Environmental Assessment**

CTDEP must prepare either a *Finding of No Significant Impact* or an *Environmental Impact Evaluation* for the review and approval by the Connecticut Office of Policy and Management for the recommended plan. Section 9 addresses the required evaluation criteria for the recommended treatment and collection system improvements. The environmental impacts of these recommendations are evaluated for the following parameters:

### **Soils**

Existing soils were found to have little impact with the exception of potential impacts with new collection system facilities construction.

### **Geology and Topography**

Existing geology and topography at the existing WPCF sites would not have an impact on construction activities. It is unclear what impact geology will have on construction of collection system expansion.

### **Hydrology**

Construction at the existing WPCF sites would not have an impact on local hydrology. However, collection system expansion into the sewer needs areas could have a positive impact on the quality of groundwater in those areas with cessation of onsite disposal.

### **Wetlands**

Construction activities at the existing WPCFs could result in temporary wetland impacts. Additionally, collection system expansion activities could involve construction in close proximity to wetlands. Soil erosion control measures would be required to mitigate impacts.

### **Floodplains**

The existing Mystic and Borough WPCFs are presently located within the 100-year floodplain. Portions of six of the sewer needs areas are also located within the 100-year floodplain. Construction at these locations will have to be protected against the 100-year flood. The planned construction will have no impact on flood levels.

### **Vegetation and Wildlife**

There are no known rare or endangered species at the existing WPCF sites.

### **Air Quality**

Expansion at the WPCFs would include, at a minimum, maintenance of odor controls equal to the existing. During construction, there would be emissions and/or dust

from construction activities. Mitigation measures would be in place to minimize these impacts.

Operational modifications are proposed for Pumping Station No. 3 to minimize odor generation at that site. If odors continue, after these changes are implemented, odor control equipment should be installed at that location as well.

### **Noise**

Temporary noise impacts, associated with construction activities, would occur during implementation of the recommended improvements. Noise impacts are expected to be minimal once the recommended improvements are operational.

### **Traffic**

Temporary traffic impacts, associated with construction activities, would occur during implementation of the recommended improvements. These impacts would be significantly reduced once the recommended improvements are operational. Of greatest concern are potential impacts at the Stonington High School (resulting from vehicles entering/leaving the proposed WPCF site) and in the Borough (resulting from vehicles entering/leaving the Borough WPCF). Mitigation measures, including traffic control plans, would be required to minimize traffic impacts in these areas.

### **Visual Impacts/Aesthetics**

The aesthetics of the Mystic, Borough and Pawcatuck WPCF sites would be largely unchanged after the plant upgrades. The proposed expansion at the Borough WPCF would be notable from the neighboring properties. Process selection and layout, architectural features and landscaping can be designed to improve the aesthetic quality and minimize impacts at this site.

### **Cultural/Recreational/Historical/Archeological Resources**

The recommended construction work at the three existing WPCF sites would not have an impact on any cultural or historic resources. However, the Borough WPCF is located within an area of historical significance. The proposed WPCF site is not listed on the National Register of Historic Places and does not have any cultural, historical or archaeological resources.

### **Land Use**

The recommended plan will have negligible impact on land use.

### **Zoning**

The existing Pawcatuck and Mystic WPCFs are zoned as residential. The existing Borough WPCF is zoned by the Borough as Reserved Land – for use by public or semi-public agencies for public purposes.

## Conservation and Development Plan Conformance

CTDEP facilities plan approval requires that facility planning conform to the Office of Policy and Management's state-wide *Conservation and Development Policies Plan for Connecticut 1998-2003* (OPM Plan). An important concept of the OPM Plan is protection of "areas of critical environmental concern" (e.g., existing preserved open space, preservation areas, conservation areas, level A/B aquifer protection areas and historic areas). Similarly, Stonington has recently adopted its *2004 Plan of Conservation and Development* (Stonington Plan), which is intended to provide guidance for Town conservation and development activities. The recommended plan complies with the Stonington Plan and the OPM Plan.

## ES.10 Financial Considerations

The Town of Stonington faces a major capital improvement program to rehabilitate and upgrade its existing wastewater treatment and collection systems. Section 10 presents the financial aspects related to implementation of the recommended plan for wastewater collection, disposal and treatment for the Town of Stonington.

Implementation of the recommended plan would be phased over time, based on the need to provide improved wastewater treatment, implement solutions to the sewer needs areas, and make minor improvements to the existing collection systems. The initial phases of the recommended plan include upgrading the three existing WPCFs. Once these improvements are complete, collection system improvements (i.e., recommended collection system modifications, expansion into sewer needs areas, etc.) would occur.

The impact of the recommended plan on revenue requirements and user rates has been evaluated for two implementation plans, as follows:

- Implementation Plan No. 1 includes wastewater treatment improvements, collection system modifications, a community system for Marjorie Street area, and extension of the collection system into the Elm Ridge Road area.
- Implementation Plan No. 2 is the full recommended plan as outlined in Section 8 and includes wastewater treatment improvements, collection system modifications, a community system for Marjorie Street area, and extension of the collection system into the Elm Ridge Road, Roseleah Drive, Pequot Trail, Cronin Avenue/Holly Drive, Latimer Point, Marlin Drive, Greenhaven Road, and Mark Street areas.

Either plan is expected to have a significant impact on the Town's taxpayers and the sewer ratepayers. This impact has been evaluated in two stages. The first stage projected the impact of the wastewater treatment and collection system upgrades on operating and maintenance expenses. These costs would be recovered through sewer user fees. The second stage determined the impact of anticipated debt service. Debt service is allocated to tax payers through the general fund and to collection system project beneficiaries through special assessments. Debt service issued for facilities benefiting the entire system (treatment plant upgrades, major interceptors and pump

stations) is borne entirely by the general fund. Debt service for projects extending service to new areas are paid half by the general fund and half by a special assessment allocated to the benefiting properties.

### **Sewer Rate Impact**

Today, a household connected to the sewer system using 12,000 cubic feet of water per year (approximately 90,000 gallons per year) would pay approximately \$408 per year in sewer use fees to cover sewer system operation and maintenance costs. This rate would be expected to rise at an average rate of about 5 percent per year to \$1,135 per year for Implementation Plan No. 1 – or \$1,240 per year for Implementation Plan No. 2 – by FY 2025.

### **Property Tax Impact**

Property taxes are used to recover sewer system capital costs financed from the general fund. Existing sewer debt service is approximately \$60 per thousand dollars (assessed property value); stepping down to almost nothing by FY 2020. In FY 2010, new sewer debt would add approximately \$10 per thousand dollars of assessed value to the existing taxes. Tax impacts for the recommended plan would peak near FY 2012 as the WPCF upgrades are completed and reduce over time.

The amount of property tax support for sewer improvements (new and existing) would increase significantly. For a property assessed at \$250,000, the tax contribution would increase from approximately \$150 in FY 2005 to nearly \$290 in FY 2015 and then decline to \$180 in FY 2025 for Implementation Plan No. 1 – or from \$ 150 in FY 2005 to nearly \$290 in FY 2015 and decline to about \$260 in FY 2025.

In addition, if a property benefits from one of the sewer needs area improvement projects, a special (betterment) assessment would also be made ranging from \$10,000 to \$25,000 depending on the project’s details and the value of the benefiting property.

## **ES.11 Public Participation**

Section 11 of the Wastewater Facilities Plan describes the public participation aspect of the facilities planning process. This section includes detailed accounting of the public participation efforts conducted, including the following:

### **Preliminary Public Participation**

A series of public meetings was held in July 2000, to introduce the residents of Stonington to the wastewater facilities planning process. Background on the project was reviewed, and goals of the facilities planning process were outlined.

### **Citizen’s Advisory Group**

A citizen’s advisory group (CAG) was formed to provide ongoing public participation during development of the draft facilities plan. The CAG was comprised of concerned citizens from throughout Stonington. The CAG attended monthly meetings to offer advice and comment as the planning work proceeded.

## **Summary of Public Meetings (2/6/2001 and 7/16/2001)**

The first public meeting for the project was held on February 6, 2001 to describe the progress to date on the project, and to outline the next steps. The two primary topics of presentation included the sewer needs analysis (which eventually became integral to Section 2 of this draft report), and flow and load projections (Section 3).

A second public meeting was held on Monday, July 16, 2001 at the Stonington Police Station to discuss the wastewater treatment alternatives evaluation (Sections 5, 6 and 7).

## **Summary of Public Hearing (8/20/2001)**

A Public Hearing was held on Monday, August 20, 2001 at Stonington High School. A presentation was made that described the Draft Wastewater Facilities Plan recommendations. Many questions were asked at the conclusion of the presentation. Section 11 contains a paraphrased record of the questions and answers from the public hearing. A verbatim transcript of the Public Hearing is available for review at the WPCA office in Town Hall.

## **Public Comment Period (8/20/2001 – 3/31/2002)**

Due to the considerable public comment received at the Public Hearing, WPCA kept the public comment period open until March 31, 2002. During this period, a Citizen's Review Panel (CRP) was formed to evaluate the Draft Wastewater Facilities Plan in detail (see discussion below). Also during this period, WPCA received several additional comments in the form of letters and meetings. These comments are included in Section 11.

## **Citizen's Review Panel**

A second group of concerned citizen's, the Citizen's Review Panel (CRP) was formed subsequent to the August 20, 2001 Public Hearing. The purposes of the CRP were to assess and evaluate the draft Wastewater Facilities Plan, and to develop conclusions and recommendations to WPCA. WPCA carefully considered the CRP's recommendations in the development of a revised draft Wastewater Facilities Plan. WPCA agreed with most of the CRP's recommendations, except for the wastewater treatment alternative. The CRP recommended Alternative G, and for that revision of the draft Wastewater Facilities Plan, WPCA recommended Alternative No. 5.

## **Summary of Public Hearing (2/5/2005)**

A Public Hearing was held Wednesday, February 5, 2005, at the Mystic Middle School, to present the revised draft Wastewater Facilities Plan. Many questions and comments were received at the hearing, and Section 11 contains a paraphrased record of the questions and answers from the hearing. A verbatim transcript of the Public Hearing is available for review at the WPCA office in Town Hall.

### **Public Comment Period (2/5/2005 – 4/15/2005)**

During the public comment period following the hearing, WPCA received many additional comments on the revised draft Wastewater Facilities Plan, in the form of letters and at meetings. These comments are documented in Section 11 and are included in Appendix E. The public comment received was nearly universally against WPCA's recommendation to implement Alternative No. 5. The nature and volume of the comments received caused WPCA to withdraw its recommendation for Alternative No. 5 and to reconsider the options. After careful evaluation, WPCA revised its recommendation to Alternative No. 1.

### **Summary of Public Hearing (11/8/2006)**

A Public Hearing was held on Wednesday, November 8, 2006, at the Mystic Middle School, to present the revised draft Wastewater Facilities Plan. Relatively few public comments were received at the hearing, and these comments were generally supportive of the recommendations contained in the revised plan. Section 11 contains a paraphrased record of the questions and answers from the Public Hearing. A verbatim transcript of the Public Hearing is available for review at the WPCA office in Town Hall.

### **Public Comment Period (11/8/2006 – 12/8/2006)**

During the subsequent open comment period after the hearing, WPCA received no additional comments.