Chapter 8

Needs Assessment Summary

CHAPTER 8

NEEDS ASSESSMENT SUMMARY

8.1 INTRODUCTION

The purpose of this Study is to address wastewater issues for the Town of Chatham. Information on existing wastewater facilities, demographics and land use, and regulatory issues affecting wastewater facilities has been discussed in previous chapters. Existing conditions and problems related to environmental resources, water supply, and on-site septic systems have been evaluated and summarized. In addition, future conditions of the Town relating to population, growth, and the potential effects of that growth on wastewater disposal facilities have also been evaluated.

The purpose of this chapter is to summarize and integrate the Town's existing and future conditions which will in turn establish the wastewater facility needs for the Town. The needs assessment is divided into the following major areas: Centralized Wastewater Facilities, Water Supply Issues, Areas of Concern, the No Action Alternative, Implementation Issues, Data Gaps, and the Next Steps to Identify Solutions for Wastewater Needs.

The next phase of this Study, Phase 400, will identify and screen alternatives to meet the needs identified in this Needs Assessment Report. The Project Scope for Phase 400 is included as the last section of this Chapter.

8.2 CENTRALIZED WASTEWATER FACILITIES

A. Background Information and Administrative Consent Order. The majority of the Chatham Water Pollution Control Facility (WPCF) and collection system were

constructed in 1971, and are approximately 28 years old. The facilities are well operated and maintained by the Town's Water and Sewer Department, and the contract operations company (Earth Tech, Inc.) hired by the Town to operate these facilities, as well as the Town's water supply facilities. Several capital improvement projects (CIP) are planned (and are on going) by the Water and Sewer Department to replace old equipment, which is expected to need replacement in the next few years.

The wastewater treatment process was modified in 1996 to provide advanced nitrogen removal to meet the State's requirements for a Class I groundwater. Since the new process (Modified Ludzack-Ettinger process or "MLE" process) was installed, the Chatham WPCF has consistently met Class I discharge standards, which require nitrogen removal to ten parts per million (ppm) total nitrogen or less. In 1997, the total nitrogen concentration in the WPCF effluent averaged 5.6 ppm. As a result of this process modification, the Massachusetts Department of Environmental Protection (DEP) has increased the permitted discharge flow from 100,000 gallons per day (gpd) to 150,000 gpd.

The Town has signed an Administrative Consent Order with Massachusetts DEP due to DEP's concern that the Chatham WPCF effluent discharge causes groundwater mounding at the current discharge site that could impact the Town's existing water supply wells. That Administrative Consent Order requires that the Town perform this Comprehensive Wastewater Management Planning Study to identify the Town's wastewater problems, and to find appropriate solutions to those problems. The Administrative Consent Order establishes a schedule with the following milestones:

- Submittal of a Draft Environmental Impact Report (DEIR) and a Draft Comprehensive Wastewater Management Plan to DEP and other State agencies in April 2000.

- Submittal of a Final Comprehensive Wastewater Management Plan and Final Environmental Impact Report (FEIR) six months after the State approves the DEIR.

- Submittal of final plans and permit applications for any recommended centralized facilities to DEP, 15 months after the State approves the FEIR.

- Construction of those potential facilities to be complete by the end of 2004.

A copy of the Administrative Consent Order is attached to the Needs Assessment Report as Appendix B.

B. Centralized Wastewater Treatment Facilities. The Chatham WPCF performs well at treating the wastewater. The average effluent total nitrogen concentration in 1997 was 5.6 ppm, which compares very favorably with the average total nitrogen concentration of 35 ppm from a typical Title 5 system.

The existing treatment process has a capacity of approximately 200,000 gallons per day, which is 33 percent greater than the Administrative Consent Order (average annual) limit of 150,000 gpd. It is also approximately 17 percent greater than the existing (1997) maximum month flow of 171,000 gpd. This treatment capacity may need to be expanded to treat additional flows from areas of Chatham that want (or need) to connect to the centralized collection system.

The following problems were identified during the detailed evaluation of wastewater treatment facilities at the Chatham WPCF. Solutions for several of the problems have already been identified and addressed in the Water and Sewer Capital Improvement Plan. Others will be addressed as part of this Comprehensive Wastewater Management Planning Study.

1. Grit Removal. The Chatham WPCF has no influent wastewater grit removal. Grit consists of sand and heavy wastewater solids that settle to the bottom of tanks and must be removed by hand. Grit also causes excessive wear on wastewater and sludge processing equipment.

2. Screenings Removal. Removal of screenings (large solids that could be potentially removed with a fine screen) in the plant influent is a problem at the WPCF. A new comminutor (device for shredding screenings) has been requested in the CIP for FY 2000.

3. Aeration Tanks and Secondary Clarifiers. As discussed above, the wastewater treatment process that occurs in the aeration tanks works well. The following potential modifications should be considered in the future as part of regular maintenance or as part of a future plant upgrade.

- Chemical feed equipment should be added to the aeration tanks to automatically regulate the pH of the system.

- Diffused aeration equipment could be added to the aeration tanks to replace the existing surface aeration equipment and save on power costs. This potential modification will be evaluated in detail in following phases of this Study.

- Dissolved oxygen controls to automatically control the aeration equipment would be useful especially with diffused aeration equipment.

- An uninstalled standby mixer and recycle pump are needed for the nitrogen removal process. In addition, flow meters for the recycle lines need to be recalibrated.

- The aeration tank effluent weirs and return sludge distribution box need repairs.

- The effluent weirs in the secondary clarifiers need to be adjusted to the same elevation.

- Older equipment needs to be replaced as identified in the CIP and in Chapter 5 of this report.

C. Centralized Effluent Discharge Facilities. Four effluent sand beds are used for effluent discharge to the groundwater system at the Chatham WPCF site. They have a total area of 166,000 square feet (3.8 acres) and have a total capacity of 410,000 gpd based on a loading rate of 5 gpd/square foot, and resting half the beds at one time. DEP has limited the discharge at these beds to 150,000 gpd due to concerns that groundwater mounding (an increase in the groundwater elevation under the beds) could affect the natural groundwater flow pattern, which could allow treated wastewater to flow to a water supply well. It also could push contaminated groundwater from the landfill toward a water supply well.

The investigation of new effluent discharge alternatives that have minimal impact on water supply wells will be a major focus of following phases of this Study. If new effluent discharge facilities or methods can not be found, the Chatham WPCF may be limited to a treatment and discharge limit of 150,000, and will not be able to treat additional wastewater flows from areas of Town that want (or need) to connect to the collection system.

The effluent discharge at the upper reaches of the Cockle Cove Watershed appears to have minimal impact on Cockle Cove Creek. A new flow and water quality monitoring station was located on Cockle Cove Creek established in March 1999, and will provide an indication on the quantity and quality of the groundwater that is emerging from the watershed and flowing into the creek.

D. Centralized Wastewater Collection System. The existing centralized wastewater collection system is well maintained and is operating well. It has sufficient capacity for existing sewered flows and does not have excessive extraneous flows (Inflow and Infiltration) entering from leaking gravity lines, roof leaders or other sources.

The collection system pumping stations are being renovated, as the equipment needs replacement. The system capacity has been evaluated, and this information will be used in future evaluations to learn if additional wastewater can be handled by the system.

8.3 NITROGEN LOADING TO COASTAL EMBAYMENTS

Coastal embayments are sensitive to nitrogen inputs because nitrogen is typically the limiting nutrient in these surface water systems. This means that coastal waters have more than enough phosphorus and other nutrients to fertilize marine plants, and the growth of these plants is limited by the nitrogen content in the water. Therefore, as more nitrogen is added to the system, more plant material is produced. As more plant material is produced, the water quality can be impacted.

Nitrogen enters a coastal embayment through its recharge area (watershed). The nitrogen originates from on-site septic systems; discharges from wastewater treatment plants; fertilization of lawns and agricultural lands; waterfowl; wetlands; atmospheric deposition and stormwater runoff from impervious surfaces. Wastewater treatment plants are currently designed to remove nitrogen, therefore, the discharge of treated wastewater from wastewater treatment plants have lower nitrogen concentration than discharge from individual septic systems. Typical Title 5 approved systems provide minimal nitrogen removal, and are usually the largest source of nitrogen to coastal embayments. Typical Title 5 approved systems can be upgraded to remove nitrogen, and these systems (often called “Title 5 Plus” systems) will be an alternative nitrogen removal system evaluated in future phases of this project.

The assimilative capacity of a coastal embayment is a function of its depth and tidal flushing characteristics, and is unique to each embayment. Often coastal embayments are impacted by average embayment nitrogen concentrations as low as 0.35 mg/l. This is considerably lower than the State drinking water standard of 10 mg/l. The assimilative

capacity is often called the critical nitrogen loading and must be determined for each embayment through a nitrogen loading assessment.

The nitrogen loading (existing and projected future values) and critical nitrogen loading values have been calculated for each of the embayments in the Pleasant Bay System, the Stage Harbor System, and the South Coast Embayments of Taylor's Pond/Mill Creek and Sulfur Springs/Bucks Creek. Comparison of the future nitrogen loading values and the critical nitrogen loading values (calculated using the most stringent ORW-N water quality standard) indicates that the following embayments exceed the surface water standard under existing conditions.

- Muddy Creek
- Little Mill Pond
- Taylor's Pond
- Sulfur Springs

The following embayments exceed the surface water standard (ORW-N) under future conditions.

- Muddy Creek
- Little Mill Pond
- Taylor's Pond
- Sulfur Springs
- Mill Creek
- Ryder Cove

It is noted that there are several water quality standards that can be used to judge whether the nitrogen loading to an embayment exceeds the critical loading (discussed in Section 6.7). The standard used to identify the embayments listed above is the most stringent proposed by the Cape Cod Commission for Pleasant Bay. The Town's CAC and TAC have reviewed these standards as part of the public participation process as described in

Chapter 9 and has made the following decisions on which water quality standards will be used for the next phase of the Study. These decisions are listed below.

- Little Mill Pond will be evaluated using both the ORW-N and the BBP-ORW standards.

- Taylor Pond will be evaluated using the SA-N, BBP-ORW, and the ORW-N standards.

- Mill Creek will be evaluated using the BBP-ORW and the ORW-N standards.

- Sulfur Springs/Bucks Creek will be evaluated as one system using the ORW-N, BBP-ORW, and SA-N standards.

- Sulfur Springs will be evaluated using the SA-N, BBP-ORW, and ORW-N standards.

- Muddy Creek will be unable to meet any standard and other options of increased flushing or conversion to a fresh water system will be evaluated.

- Ryder Cove needs to be evaluated further using the ORW-N standard based on the additional flushing information which has been requested. (Discussed in Section 8.9, Data Gaps).

- All other watersheds will be evaluated based on the ORW-N standard which is the most stringent standard used.

These embayment watersheds have been identified as Wastewater Areas of Concern, and nitrogen management options will be developed for these areas in following phases of this Study.

8.4 WATER SUPPLY ISSUES

Groundwater conditions, water system demand, and water system capacity have been evaluated for the existing and future conditions in Chatham. Chatham has high quality supplies and has established a Water Resource Protection District to protect the existing and projected future water supply zones of contribution. Nitrogen loading to the water supplies has been evaluated by the Cape Cod Commission in the Monomoy Capacity Study, and it is not expected to be a health threat.

The Indian Hill Well is currently not in service due to low concentrations of tetrachlorethylene (commonly called PCE). The source of PCE has not been determined.

The existing water supply system has a total capacity of 5.75 million gallons per day (mgd) and 4.75 mgd with the Indian Hill Well offline. This capacity is sufficient to meet the existing (1997) peak day demand of 3.07.

The peak day future water demand is projected to be 5.2 mgd. This demand can not be met with the existing capacity. The Town is in the process of developing and permitting two additional 1 mgd wells: one at the Town Forest area, and one at the Training Field area. Three additional sites have also been identified as potential supply well locations.

The current Water Resource Protection District was developed based on existing and planned supply wells being pumped. This area will need to be changed slightly as the two new wells are brought into service.

8.5 WASTEWATER AREAS OF CONCERN (AOC)

A. Introduction. Several Wastewater Areas of Concern (AOC) have been developed as a result of Stearns & Wheler's evaluations, and as required by the Project

Scope. These areas are identified and reviewed in detail in Chapter 7 and are briefly identified in this Needs Assessment Summary.

B. Coastal Embayment Watersheds. Six coastal embayment watersheds have been identified as Wastewater Areas of Concern as described in the preceding chapter section.

C. Industrially Zoned Areas. Two areas of Town have industrial zoning which groups this land use into concentrated areas to support industrial activity, and provides year-round employment to the Town residents. The two areas are identified as the Enterprise Drive Industrial Area and the Commerce Park Industrial Area named for the two roads that access most of these industrial zoned properties. The properties in these areas are typically car and boat repair businesses. They have a real potential to introduce contaminants into the groundwater system. Both areas are located adjacent to existing centralized wastewater facilities. A large percentage of both areas are located within the Town's Water Resources Protection District; and both areas are located within Coastal Embayment Watershed AOCs.

These two areas will be evaluated for sewering due to the need to remove their wastewater discharges from the Water Resources Protection District and their coastal embayments.

D. High Groundwater Areas and 100-Year Flood Zones. Many properties in Chatham are located at low ground elevations where the groundwater is within three to four feet of the ground. Additional properties are located in 100-year flood zones as identified on mapping provided by the Federal Emergency Management Agency. Both of these areas would require raised septic systems to maintain a minimal distance between the top of the groundwater and the bottom of the soil absorption system.

A group of eight properties at the west end of Eliphamets Lane are located next to Mill Pond, and are in low elevation areas and the 100-year flood zone. Several of these properties are small, and have minimal area for raised on-site septic systems. The Town Health Agent has requested that this group of properties be evaluated for improved

wastewater treatment facilities. This group of properties is called the Eliphamets Lane AOC.

Several properties on Tom's Neck along Morris Island Road and Little Beach Road have had to install raised systems to meet the requirements of Title 5 and the Town's health regulations on upgrading existing systems in 100-year flood zones. Several of these properties are small, and have installed concrete retaining walls. These raised systems are expensive to construct and are considered unsightly. This area will be evaluated for improved wastewater facilities in the next phase of this Study.

E. Areas with Low Permeability Soils. Several areas of Chatham have low permeability soils that limit where on-site septic systems or effluent discharge systems could be located. The areas have been mapped and will be considered in future evaluations of where future development should occur and where treatment and discharge systems could be located.

F. Buffer Areas Around Fresh Water Ponds and Lakes. Available water quality data was reviewed for the fresh water ponds and lakes in Chatham, and it was found that these fresh water bodies have good water quality. At the same time, it is understood that phosphorus in septic system effluent can impact fresh water bodies because phosphorus is the limiting nutrient in these waters. This means that the more phosphorus that enters the waster body, the more algal growth will occur. Unlike nitrogen, phosphorus can not travel far in the groundwater system. Previous research indicates that phosphorus is retained by the soil within 300-feet from where it is discharged.

The Cape Cod Commission has established a Minimal Performance Standard (No. 2.1.1.2.B.1) that limits the siting of a subsurface disposal system within 300-feet of a fresh water body. Discussion with the Commission staff indicates that this 300-foot set back is appropriate for Cape Cod's sandy soils and conditions.

This will be addressed further during the next phase of the Study.

8.6 NO ACTION ALTERNATIVE

Under the "No Action Alternative", future wastewater treatment at the Chatham WPCF would be limited to 150,000 gallons per day as directed by the Administrative Consent Order agreed to by the Town of Chatham and Massachusetts DEP. If the Town did not comply with this Order by not finishing the Comprehensive Wastewater Management Planning Study, or not implementing recommendations of the plan, the Town could be fined $10,000 by DEP as allowed by the Order.

In the No Action Alternative scenario, existing substandard on-site systems would be upgraded to meet the standards of Title 5 and the local Board of Health regulations. Because these regulations do not address nitrogen loading to coastal embayments, the Town's coastal embayments would be impacted by nitrogen discharges from the embayment watersheds.

Nitrogen loading assessments of this Study and the Pleasant Bay Resource Management Plan have determined that existing nitrogen loading into Muddy Creek, Little Mill Pond, Taylor Pond, and Sulfur Springs Watersheds currently exceeds one or more of the nitrogen loading standards for those embayments. This indicates that additional nitrogen loading into these watersheds will further impact water quality in these embayments. These nitrogen loading assessments have also determined that projected future nitrogen loading into the Ryder Cove and Mill Creek Watersheds as well as the four watersheds listed above will exceed one or more of the nitrogen loading standards for that embayment.

Nitrogen impacts to these coastal embayments would threaten the shellfishing industry and vacation economy that depends on the vitality of coastal embayments for their success.

Embayments that exceed critical nitrogen loading limits result in low or absent dissolved oxygen concentrations. This in turn causes loss of shellfish due to lack of oxygen, and

production and release of hydrogen sulfide odors (rotten egg odors) from bottom sediments. Herring will not advance into these embayments because of low dissolved oxygen. Eelgrass will disappear and macroalgal mats will become the dominant plant species. It is noted that people will still be able to moor their boats, and the embayments will still look good from a distance. However, most people probably would not want to go swimming in this type of water (CCC, 1998). Ultimately, as these water quality impacts continue, property values could decline.

8.7 STORMWATER DISCHARGES

This report has identified 18 separate stormwater discharge locations, their impacts, and on going efforts to modify or remediate the discharges. Stormwater discharge is the most common reason for shellfish closures in Chatham. The Town may want to consider pursuing funding opportunities to allow the stormwater mitigation plans to move forward more quickly. Evaluation and recommendation of solutions to mitigate stormwater impacts is beyond the scope of this Study.

8.8 INSTITUTIONAL ISSUES

The Town needs to consider several institutional issues as the Comprehensive Wastewater Planning Study proceeds.

The Town has recently develop a "Sewer Bank" and associated guidelines that provide direction on who can connect to the existing collection system and utilize the small amount of excess treatment and discharge capacity at the Chatham WPCF. After completion of the Wastewater Management Plan, revised guidelines will be needed to guide future connections to the collection system. In addition, the Town should consider forming a sewer district through special legislation, which would identify which properties can connect to a sewer in the future.

The construction of cluster or centralized wastewater facilities for one or more of the Areas of Concern could be very expensive. Federal grants are no longer available for these projects. Low interest loans are available from the State, but there are many projects that compete for these loans. The Town needs to discuss how centralized facilities will be financed in the future.

The recommendation from this project to sewer or to not sewer various Areas of Concern could be controversial due to the costs for centralized facilities, and the perception that the quality of life will change in areas that are connected to cluster or centralized wastewater facilities. The Town should initiate discussions with property owners in the Areas of Concern to learn if they want cluster or centralized wastewater facilities, and if they are willing to pay their share of capital costs through property betterments.

Implementation and institutional alternatives will be identified and discussed in the next phase of the project to guide decision making on these issues.

8.9 DATA GAPS

Several data gaps have been identified as part of this Needs Assessment.

A. GIS Data Development. This Study has developed a Geographic Information System (GIS) database to evaluate the wastewater and related problems in Chatham. Much effort has been expended to translate Town Assessor, Water and Sewer Department, Health Department, Planning Department, and regional environmental data into a GIS computerized format. The Town needs to continue efforts to expand use of the Town's new GIS platform. A centralized data processing system or standard should be established by the Town to ensure that new Town data can be easily put into GIS format. Also, the GIS parcel layer needs to be updated on an annual basis.

B. Health Department information on Septic Systems. The current Health Department information on septic systems in Chatham is contained in several filing

cabinets and is referenced by an index card file. The Health Department should develop a computerized database for the septic systems in Chatham. The database will provide a platform to store data, track performance, and generally understand the make up of the on-site wastewater facilities in Chatham. This data could then be linked to the Town's GIS system to present summary and performance information in graphical form.

It is noted that Massachusetts DEP has recently revised the SepTrac program (developed by the Buzzards Bay Project). They have produced a program called BOH 2000, which allows input of all types of BOH information. It is currently in the testing phase and a beta version of the program is available from DEP.

C. Additional Information on Pleasant Bay Embayments. Findings from the Pleasant Bay Resource Protection Plan were used as findings of this Needs Assessment Report. Two data gaps have been identified with this information.

A modified flushing analysis for Ryder Cove has been requested so the watershed can be evaluated as three individual systems: Frost Fish Creek, inner Ryder Cove, and outer Ryder Cove. The Frost Fish Creek Watershed nitrogen loading is discharged to the outer portion of Ryder Cove where the tidal flushing is greater, and the loading may have a small impact. Nitrogen loading for Frost Fish Creek will be assessed individually and compared with a critical nitrogen loading for the creek channel.

Buildout and nitrogen loading information for the Muddy Creek Watershed has been developed for the Harwich and Chatham portions of the watershed. Discussions should be initiated with the Town of Harwich on their plans for nitrogen mitigation in the Muddy Creek Watershed.

D. Embayment Surface Water Quality Sampling. The nitrogen loading standards used to develop critical nitrogen loading values are based on allowable increases in nitrogen concentration over the background nitrogen concentrations. These background concentrations are believed to be 0.1 mg/l in the Atlantic Ocean and Pleasant Bay, and

0.25 to 0.3 in Nantucket Sound. Water quality sampling in the embayments should be initiated to verify these concentrations and to investigate actual existing concentration increases in the embayments.

It is noted that sample results have been received from initial sampling round for Nantucket Sound and the Stage Harbor Embayments as of April 1999. These areas are currently planned for monthly sampling between April and October.

8.10 NEXT STEPS TO IDENTIFY SOLUTIONS FOR WASTEWATER NEEDS

The Needs Assessment Report documents the first third of the Comprehensive Wastewater Management Planning Study. The next phase of the Study will identify and screen centralized, decentralized, and on-site wastewater technologies and solutions for the Areas of Concern and centralized facilities. These technologies and solutions will be described, and advantages and disadvantages will be summarized. Infeasible technologies and solutions will then be eliminated from further evaluation. The third phase will evaluate the feasible technologies and solutions in detail, and present the Recommended Wastewater Management Plan.

The project scope for the next phase (Phase 400) is presented below as identified in the Environmental Notification Form (ENF) and Development of Regional Impact (DRI) documents.

Task 401 - Identification and Development of Alternatives

A list of conventional technologies and innovative and alternative treatment technologies (whether or not they are permitted under MADEP Title 5 or other MADEP regulations) will be developed with the CAC and TAC. Upon acceptance of the list of technologies, screening of these alternatives for the Problem Area(s) and Potential Problem Area(s) of Chatham shall be performed.

401.1 Delineation of Problem Areas. Delineate problem area(s) of Town where individual, on-site systems cannot conform with current Title 5 regulations or cannot provide adequate protection to sensitive environmental receptors. Prepare a summary spreadsheet.

401.1.1 Identify existing non-conforming systems and describe modifications required to make them conforming. Include in problem areas any "raised septic system" which pose potential safety or aesthetic problems to the surrounding area.

401.1.2 Describe variances and/or regulatory modifications to current Title 5 regulations, which would be required in order for these systems to receive DEP approval.

401.1.3 Describe the expected long-term environmental impacts associated with continued use of individual, on-site systems in these non-conforming, problem areas. Local conditions for each of the Problem Areas and Potential Problem Areas shall be developed. Information on physical site conditions, demographics, wastewater generation, environmental impacts, and existing on-site systems shall be included.

401.2 Decentralized Treatment and Disposal Alternatives. For identified problem areas of the Town, identify and develop decentralized treatment and disposal alternative plans (including screening of sites), including:

401.2.1 Alternative systems, as defined in 310 CMR 15.282, for remedial use of either individual or group/cluster systems. Flow reduction measures, such as composting toilets, and grey water disposal systems, shall also be considered as part of these treatment and disposal alternatives;

401.2.2 Group/Cluster disposal systems located on public lands, in public rights-of-way, and/or on private lands with public access;

401.2.3 Multiple, package biological secondary and/or advanced wastewater treatment systems located on public lands; and

401.2.4 Combinations of any of the above alternative technologies.

401.3 Centralized Treatment and Disposal Alternatives. For problem areas of Town with flows greater than 10,000 gpd where potential economies of scale exist, identify and develop centralized conventional treatment and disposal alternative plans, including:

401.3.1. Wastewater treatment and effluent disposal on common site;

401.3.2. Wastewater treatment and effluent disposal on separate sites;

401.3.3 Effluent disposal to surface water;

401.3.4 Effluent recycling, deep well injection, and/or other groundwater discharge technologies shall be considered in all alternatives.

401.4 Collection System Alternatives. Identify and develop collection system alternative technologies for centralized and decentralized alternatives, considering as appropriate:

401.4.1 Pressure sewers - Septic tank and Effluent Pump (STEP) type;

401.4.2 Pressure sewers - Grinder Pump (GP) type;

401.4.3 Vacuum systems;

401.4.4 Small Diameter Gravity sewers (SDGS);

401.4.5 Conventional collection and pumping systems; and

401.4.6 Trenchless Technologies.

401.5 Residuals Disposal Alternatives. Identify ultimate alternative disposal plans for residuals in an environmentally acceptable manner for all alternatives, including:

401.5.1 Septage only;

401.5.2 Septage and Treatment Plant Residuals;

401.5.3 Treatment Plant Residuals only; and

401.5.4 Develop redundancy requirements for all residual disposal alternatives.

401.6 Flow and Loading Reduction Measures. Identify flow and load reduction measures, including:

401.6.1 Pricing policies for future water and wastewater services;

401.6.2 Plumbing code enforcement of low flush toilets;

401.6.3 Installation of composting toilets, including incentives and public convenience stations;

401.6.4 Water reuse and recycling of large volume users;

401.6.5 Segregation of greywater; and

401.6.6 Inflow/Infiltration reduction of the existing collection system.

Task 402 - Screening of Alternatives

402.1 Develop an evaluation matrix screening methodology to screen the various alternative locations and technologies for wastewater treatment and disposal, including residuals disposal. The Matrix will include the following factors:

- environmental factors
- legal, administrative, and financial criteria
- relative costs (+/- 25 percent) on an annual cost basis
- potential energy use
- flexibility to handle peak flows during tourist seasons
- effluent quality
- the need for special regulatory requirements or modifications to existing Town policies or regulations
- the potential for odors
- land requirements
- anticipated public acceptance
- ease for implementation
- potential for promoting additional water consumption
- anticipated maintenance requirements
- complexity of operation.

402.2 Discuss with the TAC/CAC and modify as necessary the evaluations matrix screening methodology prior to submitting the proposed methodology to the DEP and MEPA Unit for approval.

402.3 Screen the identified alternative technologies using the agreed upon evaluation matrix methodology and present to the TAC/CAC three (3) alternatives for further evaluation, in addition to the No Action alternative.

402.3.1 Systems judged to be not cost-effective shall be eliminated.

402.3.2 Up to 10 alternative plans may require additional study, including combinations of:

- on-site - individual (including composting toilets)
- decentralized - group/cluster treatment
- decentralized - package wastewater treatment
- centralized - conventional wastewater treatment
- collection systems - alternative sewers
- collection systems - conventional sewers
- solids handling and disposal - septage only
- solids handling and disposal - septage and treatment plant residuals
- solids handling and disposal - treatment plant residuals only.

402.4 Discuss screening of alternative technologies and plans with the TAC/CAC and select alternative plans to receive more detailed evaluation.

402.5 Prepare and submit to the Town one (1) unbound set of reproducible originals along with twenty (20) copies of a Draft Alternatives Screening Analysis Report, summarizing all findings and conclusions. The draft report shall

document the methodology used to screen the identified alternative plans and shall fully describe the alternatives, which will receive more detailed analysis in the next phase.

402.5.1 Prepare report sized figures of screened alternative plans, conceptually depicting the various alternatives on GIS base mapping.

402.5.2 Develop numbering system for combinations of alternative plans for subsequent use in detail evaluation phase.

402.6 Review written comments received from the TAC, CAC, and the Board of Selectmen and meet with the TAC/CAC to resolve comments received.

402.7 Prepare for and conduct a Public Comment Meeting for the purpose of discussing the Draft Alternatives Screening Analysis Report and receiving public comment. Public comments received shall be recorded and noted or addressed in a written Public Comments Summary, twenty (20) copies of which shall be submitted to the Town.

402.8 Following submittal by the Town of the Draft Alternatives Screening Analysis Report and Public Comments Summary to the CCC, DEP and to the MEPA Unit, Meet with CCC, DEP, and MEPA representatives to discuss and resolve comments on the draft report.

402.9 Prepare and submit to the Town one (1) unbound set of reproducible originals along with twenty (20) copies of a Final Alternatives Screening Analysis Report, revised to incorporate comments as agreed upon with the TAC, CAC, CCC, DEP, and MEPA Unit, and including an appendix containing public comments received.

402.10 Determine and summarize any additional information needs, if necessary, to address comments received and to continue the next phase of the CWMP.

402.10.1 Any informational needs, including a refined draft scope for the next phase, shall be submitted in a letter report to the Town for submittal to the DEP and/or MEPA Unit.

402.10.2 Additional study costs shall be presented in the letter report, with negotiations conducted with the Town to determine revisions that may be needed to the Scope of Services and Engineering Agreement.