
CHAPTER 8

UTILITIES

WATER SYSTEM

Summary & Recommendations

The Waldoboro Water Company is a small water utility serving the downtown area of Waldoboro. The Water Company has 299 residential, 57 industrial and 2 industrial customers. They use about 120,000 gallons per day. This water comes from six (6) wells and the Quarry which is a surface water supply. The system is manually operated and now has a staff of two (2). The total revenue for the Water Company averages about \$165,000 per year.

A complete evaluation of the Waldoboro Water Company has shown that the water system is faced with three (3) major improvements. These improvements are 1) to replace the present supply with high quality groundwater or to build a treatment plant, 2) replace the present open reservoir with an additional covered reservoir, and 3) replace any of the old small diameter pipes.

The existing Waldoboro water system is in fair to poor condition. The supply is of marginal quality and of limited capacity. The transmission and distribution mains are in poor to fair condition. The older mains have only 40 to 60 percent of their original capacity. One (1) storage facility is old and needs to be replaced. In general, the system is in fair to poor condition.

Consideration has been given to the future needs of the Town of Waldoboro. It is quite apparent that residential growth could have a significant impact on the water system. The Town has some industrial base now and it is possible that more will locate in Town. The water system will need much more capacity to service the needs of the Town in the next 20 years.

The study confirmed the need for improvements. The recommended improvements have been separated into three (3) categories: immediate, short term and long term. The immediate improvements are those that should be made immediately to ensure the reliability of the system. The short term improvements include a new groundwater supply or a full treatment plant for the present supply or for Kaler's Pond. It also includes a new in-ground concrete reservoir. The long term improvements include more main extensions, replacements, and looping of dead end lines.

The cost of the recommended improvements has also been estimated. The immediate, short term and long term improvements will cost an estimated \$500,900, \$1,221,000 and \$734,000 respectively over. These costs are over and above the purchase price of the system. This estimate includes all engineering, inspection, interim financing, etc.

A brief determination has been made to determine the eligibility for a grant-in-aid from the Farmers Home Administration. The result indicates that Waldoboro will be eligible for a grant. It is hoped that the grant could be as much as \$880,000.

All the costs have been related to the annual user fees. The annual residential fee could remain the same after the purchase only. If the immediate and short term improvements are made, the user fee will go up from \$222 to \$363 per year, an increase of 63.4 % depending on the improvements and amount of grant. If the long term improvements are made, the user fee will go up again

proportionately.

A final comparison has been made between public ownership and continued private ownership. The comparison shows that the annual user fees under private ownership have increased substantially over the last 10 years. The rates will have to increase by 136% (to \$520/yr.) if the immediate and short term improvements are made. This difference will only be magnified as more improvements are made.

Conclusions and Recommendations

There are several major conclusions resulting from the study. The first is that the Waldoboro Water Company is in fair to poor condition. The second conclusion is that the cost to the users of any improvements will be considerably greater if made by the Waldoboro Water Company. The Town should keep these conclusions in mind when deciding whether or not to proceed with the purchase.

Specific recommendations have been based on the above conclusions. There are three (3) primary recommendations. They are itemized below:

1. The Town of Waldoboro should purchase the Waldoboro Water Company. There is no question that public ownership is in the best interest of the people of Waldoboro.
2. The Town should operate the system as a department of the Town for the first couple of years. Then the Town can set up a separate Water District or turn it over to the Utilities District if they wish. There are many cost savings opportunities with such a District.
3. The Town should make the short term improvements as soon as possible after the purchase. These improvements will improve water quality for everyone.
4. The Town or District should make the other improvements as they see fit. The extent of the improvements should depend on the net effect on the user rates. It is important to note that the FmHA loan grant program may also be available for future capital projects.

This Summary & Recommendation was
taken from a report entitled:

*Evaluation of Waldoboro Water Company
for the Town of Waldoboro*

Dated: February 2, 1995

Prepared by:

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See this report for additional detail.

SEWER SYSTEM

Summary, Conclusions And Recommendations

Summary

The Waldoboro Utility District's wastewater treatment facility has been in continuous operation since 1967. Over the past 25 years, the facility has served the District well and is currently in compliance with its discharge permits. The plant operates as a modified high rate activated sludge facility which generates a relatively large amount of sludge, and demands constant operator attention to manage. The facility is located in the center of the village area of Waldoboro and occasional odor problems (primarily from sludge handling) are considered to be a nuisance. The plant discharges to the tidal area of the Medomak River which the DEP has acknowledged as a poor location for the discharge due to low dissolved oxygen levels and bacteria adversely affecting shellfish harvest. Many of the mechanical systems at the plant are operating beyond the normal life expectancy and continued use of the plant will require an increased level of attention and money for equipment maintenance and replacement.

The purpose of this Facilities Plan is to develop a wastewater management plan for the Waldoboro Utility District that will meet current and future wastewater treatment and disposal needs. The existing treatment facility is currently meeting its discharge requirements and although there is no pressure from the licensing agencies (DEP and EPA), the District has initiated the facilities planning in an effort to develop and evaluate alternatives to the current treatment facility and discharge. Wastewater treatment alternatives were developed based on major objectives set by the District which are:

- Develop a wastewater management plan that minimizes the impact on the Medomak River which has a large and productive shellfish area that is very important to the local economy.
- Develop a plan which relocates the treatment facility away from the center of the business and residential center of Waldoboro for aesthetic purposes.
- Select a treatment process which reduces the amount of sludge that is generated resulting in less annual sludge handling expenses.

The alternatives for wastewater treatment considered in this report include:

- An upgrade of the existing treatment facility at its present location.
- The construction of a new mechanical treatment plant at the Town Garage site (Wagner Bridge Road) with a seasonal discharge to the Medomak River.
- The construction of an aerated lagoon treatment plant at the Town Garage site with a seasonal discharge to the Medomak River.
- The construction of an aerated lagoon treatment plant including a land application system to dispose of the treated wastewater at the Union Road site.

Current and future wastewater flows and loads have been estimated based on monthly operations reports for the existing treatment plant, sewer populations growth estimates, and information from the Utility District and the school superintendent's office. Consideration was also given to accepting and treating the pretreated processes water from Osram Sylvania. The estimated future flows and

loads have been used to size the treatment facilities and estimate costs for each alternative.

The alternatives have been evaluated based on capital costs, operations and maintenance costs, present worth, environmental impact, siting issues, future expansion potential and ability to meet the major objectives set by the District as outlined above. A twenty year planning period has been assumed in order to evaluate the long-term feasibility of the alternatives.

Capital costs have been estimated based on bid prices from similar projects. Operation and maintenance costs have been estimated based on current budget information provided by the Waldoboro Utility District.

Based on the evaluations made in this report, the following conclusions and recommendations are presented.

Conclusions

1. The existing treatment facility currently meets the discharge limitations set in the state and federal discharge licenses. The average daily flow to the plant over the past two years is 0.10 mgd and the average monthly influent BOD and TSS for the same time period is 290 mg/l and 240 mg/l respectively.
2. Based on the preliminary evaluation of the current wastewater discharge by the Maine DEP, there is very little dilution of the effluent at low tide and it appears that the dissolved oxygen standard (85% of saturation) is not met at the discharge location (near head of the tidal zone). Relocating the discharge to the Town Garage site, approximately 3 miles upstream could greatly improve the condition of the tidal portion of the river by eliminating the dissolved oxygen demand associated with the discharge in this area and decreasing the bacteria contamination concerns. The Department of Maine Resources (DMR) has indicated that relocating the wastewater discharge to the Town Garage site could potentially open up a much larger area of the estuary for shellfishing. However, at this time, there is no data available to conclude that the relocation of the discharge will guarantee that additional shellfishing area would be opened. Also, the possibility of relocating the river discharge would be subject to further review and approval by the Maine DEP as well as the EPA.
3. The existing sewer system consists of approximately 7 miles of gravity sewer and with the completion of the sewer replacement work in 1993, the entire system is less than 30 years old. An evaluation of the sewer system was not included in the scope of this report and therefore, no additional sewer replacement is considered as part of the alternatives evaluated in this report.
4. The current sewer system has three pump stations. The Friendship Street pump station was installed only three years ago and the only modifications to be considered are the addition of a radio telemetry alarm system and an emergency generator receptacle to allow the District to supply power to the station with a portable generator during a power failure. The Main Street pump station and the Elm Street pump station are both 30 years old. The Main Street pump station needs to be replaced in its entirety, and it appears possible to rehabilitate the Elm Street pump station at its present location.
5. The existing wastewater treatment plant is 25 years old and many of the mechanical systems are operating beyond the normal life expectancy. The treatment process is classified as a high-rate activated sludge process which requires constant operator attention to produce an effluent that meets permit requirements. The process also generates relatively large quantities of sludge. The aeration tanks are operating above desired loading rates which

limits the plant's ability to accommodate any growth.

6. Septage is not currently treated at the existing wastewater treatment facility. The District has no plans to accept and treat septage at the new treatment facility and so no allowance for septage is made in the flows and loads projection.
7. Upgrading of the existing treatment plant would be very difficult to implement because there is very little land available on the site needed for the construction of new facilities while the existing facilities are being maintained for wastewater treatment. The limitation of land at the site would also make future expansion or upgrades difficult if not impossible. An upgrade of the existing treatment plant does not meet any of the objectives set by the District as outlined in the summary of Section 1. For these reasons, upgrading the existing treatment facility is not a feasible option for the District.
8. Three other alternatives, as described in the summary of Section 1 are evaluated in this report. The present worth value of each alternative was determined based on estimated capital costs and estimated annual operation and maintenance costs, as summarized in Section 6. The present worth values vary only 7% from the alternative with the lowest present worth to the alternative with the highest present worth. Given the preliminary level of information used for the present worth analysis, it is reasonable to conclude that all three alternatives have an equivalent present worth value.
9. Of the alternatives evaluated, the alternative of aerated lagoons with land application located on the Union Road site best meets the objectives of the Waldoboro Utility District, although it does require much more land than the alternative with a seasonal river discharge. Because there is no river discharge, the alternative with land application has the most positive impact on the Medomak River. This alternative relocates the treatment facility away from the business and population center of Waldoboro. The pretreatment process of aerated lagoons prior to land application eliminates the routine handling of sludge and provides a more simplified operation than the current treatment process.

The sizing of the treatment facility as well as the estimated costs are based on a land application rate of 3 inches/week as determined by preliminary soils investigation. It is imperative that this application rate be verified by more extensive hydrogeological investigation. If further evaluation determines that more buffer is required to guarantee that groundwater quality meets State requirements at the property lines or that an application rate less than 3 inches/week is to be used, the alternative would require more land and the costs would increase. If further evaluations determine that land application is not feasible at this site, then the next best alternative for the District would be Alternative No. 3 - Aerated lagoons and a seasonal river discharge located at the Town Garage site.

10. A treatment system with land application is more sensitive to flows than a system with a river discharge. A land application system has a finite capacity based on the amount of suitable soils available at the site and the application rate at which effluent can be applied. The sewerage growth plan of the Waldoboro Utility District and the Town of Waldoboro must be consistent with the limits defined by the land application system.

Recommendations

1. It is recommended that the Waldoboro Utility District submit this report to the DEP, the USEPA and FmHA to obtain their input on the conclusions and recommendations. It is imperative that the DEP and EPA review the back up alternative to land application and

verify that a river discharge at the Town Garage site would be permitted, and whether seasonal storage for the months of June through September would be required.

2. Upon approval from the DEP, EPA and FmHA, it is recommended that the District proceed with the implementation of the selected plan - aerated lagoons with land application located at the Union Road site. The top priority would be to conduct the necessary hydrogeological evaluation to verify that an application rate of 3 inches/week is possible for this site in regards to both the soils' hydraulic capacity and the effects on the groundwater quality.
3. It is recommended that the District aggressively pursue funding for the project from the FmHA and DEP such that the debt incurred from this project does not cause the annual user charge for a residential user to exceed 2% of the median household income.
4. It is recommended, as part of this selected plan, that a new replacement pump station be constructed across the street from the Main Street pump station and that the Elm Street pump station be upgraded to meet current and future needs. It is recommended that radio telemetry alarm systems and emergency generator receptacles be included in the work at these stations, and also be installed at the Friendship Street pump station. Radio telemetry should also be included in the two proposed pump stations being constructed as part of the selected plan.
5. It is recommended that the Waldoboro Utility District review the sewer growth projections with the Town of Waldoboro to verify that the projections are consistent with the Town's growth plan.
6. Because a land application system is sensitive to flows, it is recommended that the District continue to monitor the sewer system for infiltration and inflow (I/I) and take necessary steps to minimize I/I if it becomes excessive.

This Summary & Recommendation was
taken from a report entitled:

*Facilities Plan For The
Waldoboro Utility District*

Dated: February 1994

Prepared by:

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See this report for additional detail.

SPECIAL NOTE:

Since this report was prepared, the Waldoboro Utility District has contracted with Dirigo Engineers

of Waterville, Maine for additional studies and the location and type of treatment facility constructed may change from the recommendations listed above. For further information, contact the Waldoboro Utility District.

