

Report to



Upon

Cost of Tertiary Wastewater Treatment for Southern Santa Barbara County



Prepared by:



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Chapter 1 Introduction

Background

The residents of the South Santa Barbara County coastal communities are provided wastewater collection and treatment services by five distinct agencies or districts. These five agencies are:

- City of Santa Barbara
- Carpinteria Sanitary District
- Goleta Sanitary District, also serving the Goleta West Sanitary District and the Embarcadero Municipal Improvement District
- Summerland Sanitary District
- Montecito Sanitary District

Each of these agencies own their own wastewater treatment plants and collection systems. Each agency operates their system under the authority of and in compliance with regulations promulgated by the State of California.

Each of these local service agencies is sensitive to the costs to be born by their constituents. Each prides its self in meeting the regulatory constraints with the lowest possible cost to their customers. For this reason, the idea of increasing the level of treatment at the plants before discharging the water to the ocean raises a number questions. The most obvious question is why should we increase the cost to our customers?

The Heal the Ocean group, a not for profit corporation based in Santa Barbara, is of the opinion that the citizens of these service areas may well be prepared to request additional treatment levels and be prepared to pay for the associated costs. In order to test their belief, the concept must be

presented to the residents of each community. Before presenting the idea to the community, the Heal the Ocean group needs incremental cost data for each service area.

Purpose

The purpose of this study is to develop sufficient cost data for tertiary treatment to allow the Heal the Ocean group to present their idea to the public. These data are to be based on at least one conceptual set of improvements at each of the five wastewater-renovation plants capable of producing tertiary-level effluent. Using these conceptual improvements, develop the additional capital and annual operating and maintenance (O&M) costs for each plant. The capital and annual O&M costs are to be reduced to typical monthly costs for a residential unit in the respective city or district.

The scope of the assessment does not provide for developing justification for tertiary levels of treatment, such as a benefit to cost ratio.

Authorization

On May 3,2001, Heal the Ocean contracted with Metcalf & Eddy, Inc. to conduct a conceptual-level survey of the five south coastal water renovation plants in Santa Barbara County for the purpose of identifying and costing the improvements required to achieve full tertiary treatment. For purposes of this assessment, the term tertiary treatment means "Disinfected tertiary recycled water" as defined in California Administrative Code of Regulations, Title 22, Division 4, Chapter 3, Article 1, Section 60301.230. The definition includes both Quality and Reliability guidelines. Reliability is intended to consider each facility as though it was producing unrestricted irrigation quality water without the ability to divert effluent to the ocean outfall at a lower water quality. The terms of this definition are presented in Appendix B of this report.

Chapter 2 Summary of Findings and Conclusions

The following paragraphs are intended to provide a summary of the findings identified during the conduct of this survey.

- There are five independent wastewater treatment plants that serve the greater Santa Barbara area of southern Santa Barbara County. These plants are owned by the Goleta Sanitary District, City of Santa Barbara, and the Sanitary Districts of Carpinteria, Montecito, and Summerland.
- All five of these plants fully comply with the terms of their NPDES discharge permits and two plants have established water reclamation facilities including storage and distribution systems. One plant is treating to tertiary quality now but does not meet the full redundancy guidelines of the CADOHS.
- Four of the five plants provide full secondary treatment. The Goleta Sanitary District plant provides a combination of primary and secondary treatment to the outfall. Although in full compliance with their present discharge permit, this plant must be first upgraded to secondary treatment and then be upgraded to tertiary treatment.
- Three of the five plants have sufficient space available to upgrade to tertiary treatment. The other two must take special steps to accomplish the upgrade, such as convert existing plant to a new process or simply build the next phase of construction early so as to increase the number of process units to enhance reliability.
- Sewer service charges vary dramatically among the service areas. Some are based on a flat annual or monthly charge, and others are based on a flat service fee plus a charge based on water consumption. The monthly rates calculated on an average basis for an EDU range from \$13.86 to \$33.17.

- The increase in service charge that will be required for upgrading to tertiary treatment is acceptable to the treatment authorities so long as the majority of the public they serve is convinced of the need and is fully prepared to support the additional cost.

The following paragraphs are intended to outline the conclusions reached during the course of this study.

- The Goleta Water Reclamation Plant can be upgraded by expanding the processes presently in use at the plant. The major change proposed is that of equalizing storage after primary treatment in order to optimize the treatment train by reducing the impact of wet weather flow variations.
- The El Estero Water Reclamation Plant, City of Santa Barbara, is extremely limited in available land area. The conclusion is to convert the disinfection process to UV (which does not require a long contact time) and use the land made available for building the effluent filters. This requires a two-phase construction approach so that the land can be made available for demolition of the existing chlorine contact channels and the construction of filters. The existing filters can be used in conjunction with the new filters to meet the full plant design capacity.
- The Carpinteria Wastewater Treatment Plant also has an extremely small site in view of the future growth anticipated in the service area. Different approaches are presented that may be feasible, but the alternative chosen to develop for costing is to expand the present plant to provide process redundancy. With that issue solved, the tertiary process facilities can be added. These would consist of continuously back-washed filters and a new UV system for disinfection before releasing the water to the outfall. The existing chlorine contact channels would be demolished, thereby making that land available for other purposes.

- The Montecito Wastewater Treatment Plant is a full secondary plant that can be upgraded with the addition of filters and expanded chlorine contact channels. The solids handling facilities appear to be undersized for the present solids load. The additional solids from the filter backwash water will increase the loading, hence a parallel solids thickener and an aerobic digester was included in the process train.
- The Summerland Wastewater Treatment Plant already produces a filtered effluent before discharge to the outfall. The redundancy of processes is the only issue of substance here. By adding a continuous backwash filter and re-arranging the direction of flow, this plant can be considered a tertiary plant with full redundancy.
- Each of the plants must also add the appropriate sensors and alarm systems in addition to major process units so as to comply with the reliability standards.
- The following table sets forth the opinion of cost for proposed systems and their probable increase in operating and maintenance costs. These values are then converted to annualized costs so that a monthly increase in sewer service charges can be developed. These monthly increases are outlined as follows:

Item Description	Treatment Plant				
	El Estero WRP Santa Barbara	Goleta WRP	Carpinteria WWTP	Montecito WWTP	Summerland WWTP
Approximate population served	91400	64500	17000	11900	1,500
Estimated No of EDU	36,560	25,800	7,765	4,485	450
Present annual average flow (mgd)	8.22	5.80	1.53	1.07	0.15
Monthly Charges -					
- Present Sewer Service Charge/EDU	\$19.94	\$13.86	\$33.17	N/A	N/A
- Proposed Additional Charge/EDU	\$12.56	\$24.65	\$33.01	\$15.53	\$39.16