FINAL Environmental Impact Report

For The

Los Osos Community Services District
WASTEWATER FACILITIES PROJECT

SCH# 9911103

Certified March 1, 2001

Prepared by:

Crawford Multari & Clark ASSOCIATES

Draft Environmental Impact Report

for the

Los Osos Community Services District

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November, 2000

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1. Introduction

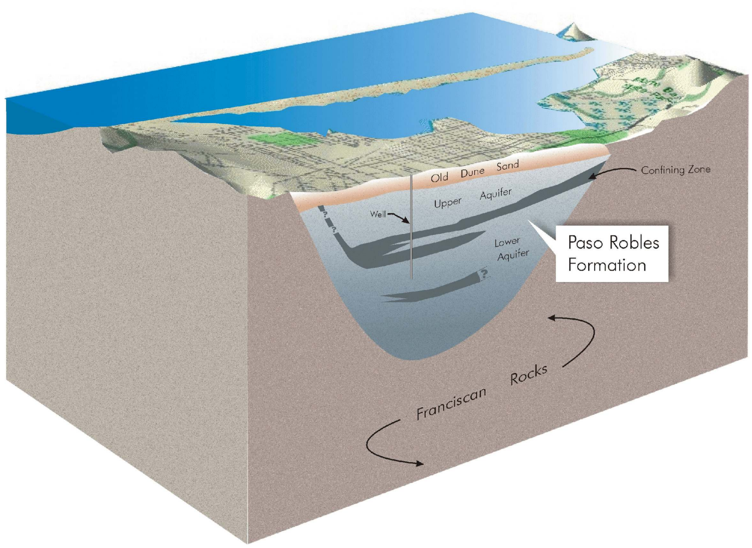
This Draft Environmental Impact Report (DEIR) assesses the potential environmental impacts of a wastewater collection, treatment, disposal, and bio-solid disposal system ("Wastewater Facilities Project") for the community of Los Osos, California. Los Osos is a small coastal community of about 14,600 residents located at the south end of Morro Bay, twelve miles west of the City of San Luis Obispo (See Figures 1-1 and 1- 2).

The Wastewater Facilities Project consists of several components described in detail in Chapter 3. However, the four main components include wastewater collection, treatment and disposal, and the disposal of treated bio-solids.

The purpose of the Wastewater Facilities project is to alleviate groundwater contamination – primarily nitrates – that has occurred at least partially because of the use of septic systems throughout the community.

Background

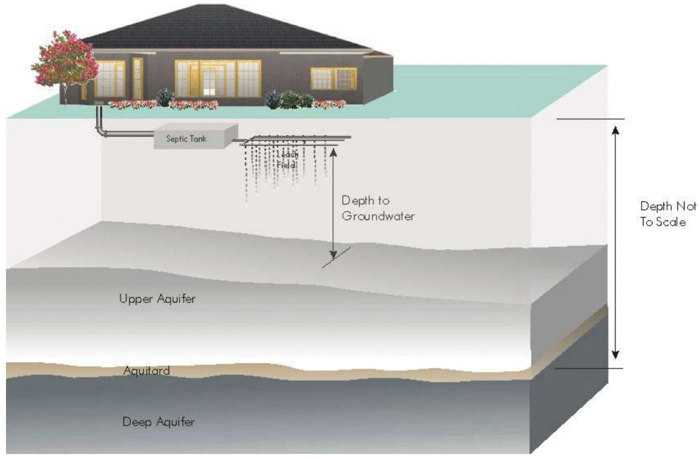
The unincorporated community of Los Osos is located on a series of ancient sand dunes. Underlying the shallow dune sands is a water-bearing zone known as the Paso Robles Formation which provides the community with its sole source of domestic water. Deeper still is the older, non-water-bearing material of the Franciscan Formation (see illustration) which, along with the Pacific Ocean, confines the aquifer to the west end of the Los Osos Valley. The Paso Robles Formation contains intermittent layers of clay that restrict the vertical movement of groundwater, effectively dividing the aquifer into upper and lower components.



Sub-surface geology. (Source: The Morro Group and Cleath & Associates)

Los Osos was subdivided into small residential lots in the late 19^{th} century which were intended as summer homes and retreats. Over the years, the community developed in the absence of a central wastewater collection and treatment system, relying instead on individual septic tanks and leach fields in combination with wells that extract drinking water from the Paso Robles Formation.

Currently there are about 7,000 septic tanks in use in Los Osos. A typically functioning septic system will separate out solids from raw sewage and the liquid sewage will flow, without treatment, into the soils surrounding the tank through a leach field (see illustration). Because treatment of the liquid sewage is accomplished by the soil, it is necessary to have adequate separation between the leach field and groundwater, and to have adequate room for dispersal of the pollutants contained in the sewage. These minimum requirements are typically established by the Regional Water Quality Control Board (RWQCB) in Basin Plans developed for specific watersheds.



Typical septic system

Primary constituents of concern in sewage are nitrates, which can lead to health problems if certain concentrations are found in drinking water. In addition, high concentrations of nitrates in surface waters can result in algal blooms that deplete oxygen from the water, having an adverse impact on aquatic habitats. Other elements of domestic sewage that can have adverse environmental impacts include bacteria such as fecal coliform, and viruses. These constituents pose health risks to humans both from direct contact with contaminated surface water, as well as from the consumption of contaminated shellfish.

The RWQCB and other health agencies became concerned with the use of individual disposal systems (i.e., septic systems) in the Los Osos area as early as 1971. The basis for this concern was that while depth to groundwater varies in the area, it is shallow enough to flood some leach fields in wet weather. In the Baywood Park area, few of the systems can meet the RWQCB's criteria for separation between the bottom of a leach field and ground water. Furthermore, many of the smaller lots are too small for leach fields, and as a result, utilize deeper seepage pits which may discharge directly to ground water. Concerns regarding the impacts of septic systems on ground water were heightened by the fact that the Los Osos area obtains its water supply from groundwater aquifers. As a result, an interim Basin Plan adopted by the RWQCB in June, 1971 contained a provision prohibiting septic system discharges in the area after 1974.

In 1983, the RWQCB issued Resolution No. 83-13 which made the following findings:

- Previous studies (Brown and Caldwell, 1983) indicated that the quality of water derived from the shallow aquifer underlying the community was deteriorating, particularly as it relates to increasing concentrations of nitrates in excess of State standards.

- The current method of wastewater disposal by individual septic tank systems located in areas of high groundwater may be a major contributing factor to this degradation of water quality. And,

- Continuation of this method of waste disposal could result in health hazards to the community and the continued degradation of groundwater quality in violation of the Porter-Cologne Act.

In January, 1988, the RWQCB established a discharge moratorium which effectively halted new construction or major expansions of existing development until the County (in charge of service at that time) provided a solution to the water pollution problem. The County, working with representatives of County Service Area No. 9, which included most of the community of Los Osos, devised a plan for a wastewater treatment system based on conventional collection, treatment and disposal technologies.

In a December, 1995 study by the RWQCB entitled *Assessment of Nitrate Contamination in Ground Water Basins of the Central Coast Region Preliminary Working Draft*, nitrate contour maps depict significant increases in nitrate concentrations over time in both the upper and lower aquifers. According to a July 10, 1998 letter from the RWQCB, the data used to generate these maps were obtained from 107 monitoring wells with more than 1,100 data points. The sources of this data were the EPA STORET database, the USGS National Weather Information Service, the California Department of Health Services, California Department of Water Resources, and small water systems. (it is noted that these maps show that, during the most recent time frame of 1985-1994, nitrate levels in the lower aquifer have not increased, and in some areas have decreased. In its July 10, 1998 letter, the RWQCB states that this may be due to many of the monitoring sites being discontinued after the late 1970s and early 1980s.)

The July 10, 1998 RWQCB letter also states:

> *Monitoring data indicates much of the shallow groundwater in the most densely developed areas exceeds 45 mg/l, the drinking water standard for nitrate. For this reason, many of the shallow water supply wells have been removed from service and demand shifted to the deeper aquifer. Dependence upon the deeper aquifer exacerbates the surface water problems because the community's water supply, formerly drawn from the upper aquifer, is now drawn from the deeper aquifer and recharged (after use) to the upper aquifer causing ground water levels to rise and flood more septic systems. Increasing surface water impacts including: restriction of portions of shellfish harvesting areas because of rising bacteria levels; waters surrounding the Los Osos area periodically do not meet bacteria standards for water contact recreation (such as swimming, wading, kayaking and small boat sailing); and the public is increasingly exposed to surfacing wastewater.*

A Final Environmental Impact Report (FEIR) was prepared for the original County wastewater project in 1987. The FEIR addressed the following issues:

Geologic and seismic hazards	Noise
Groundwater hydrology	Air quality
Flooding and drainage	Agricultural resources
Biological resources	Growth inducement
Cultural resources	Alternatives
Visual resources	Economic and fiscal considerations
Traffic and circulation	

An addendum to the Final EIR was prepared in 1987 to address new information that became available regarding isotopes of nitrogen and their impact on the groundwater contamination problem. A second addendum prepared in 1989 included additional information regarding agricultural impacts associated with the proposed treatment plant site as well as more specific data regarding native plant life.

A supplemental EIR was also prepared in 1989 to provide an updated analysis of the following issues:

Geologic hazards	Sludge disposal
Groundwater hydrology	Growth inducement
Agricultural resources	Alternatives

Lastly, a second supplemental EIR was prepared in 1997 to accomplish the following:

- ❏ Update the information contained in the 1987 FEIR to respond to any changes in the environmental setting which may have occurred since the original FEIR was certified, and since completion of the two addenda and the first supplement.

- ❏ Evaluate changes and potential changes in the project description relating to the service area boundaries; project phasing; alternative treatment plant site locations; alternative treatment processes; and modifications to the collection system.

The project evaluated by the 1997 supplemental EIR was a conventional wastewater collection and treatment system which, for a variety of reasons, did not enjoy community-wide support. The biggest concerns regarding the County-sponsored project related to:

- Cost;
- The potential for the proposed disposal system and the volume of wastewater being introduced on the disposal site to result in the daylighting of discharged treated effluent downslope;
- The use of percolation ponds and their susceptibility to rupture;
- The potential for increased liquefaction potential and flooding sownslope from the disposal site.

This resulted in the formation of Taxpayers Against Percolation Ponds (TAPPS) who appealed the Coastal Development Permit for the County Plan to the Coastal Commission. The *Solutions Group* formed in August, 1997, and prepared a Comprehensive Resource Management Plan (CRMP) which recommended alternative wastewater collection and treatment technologies that were potentially less expensive to ratepayers and afforded opportunities for community open space. The CRMP was presented to the California Coastal Commission three times during the appeal process. Based in part on information presented in the CRMP, The Coastal Commission allowed the community the opportunity to demonstrate the feasibility of an alternative to the County project.

In November, 1998, voters approved the formation of a Community Services District (CSD) for Los Osos to assume responsibility for the completion of a wastewater system based in large part on the wastewater solution recommended by the CRMP. The appeal of the county-approved wastewater project had been held in abeyance by the Coastal Commission to give the newly-formed CSD the opportunity to demonstrate the feasibility of an alternative system involving new technology for the treatment of effluent. The Commission gave the CSD until January, 2000 to prepare a facilities plan for the alternative wastewater system and to present the plans to the Regional Water Quality Control Board.

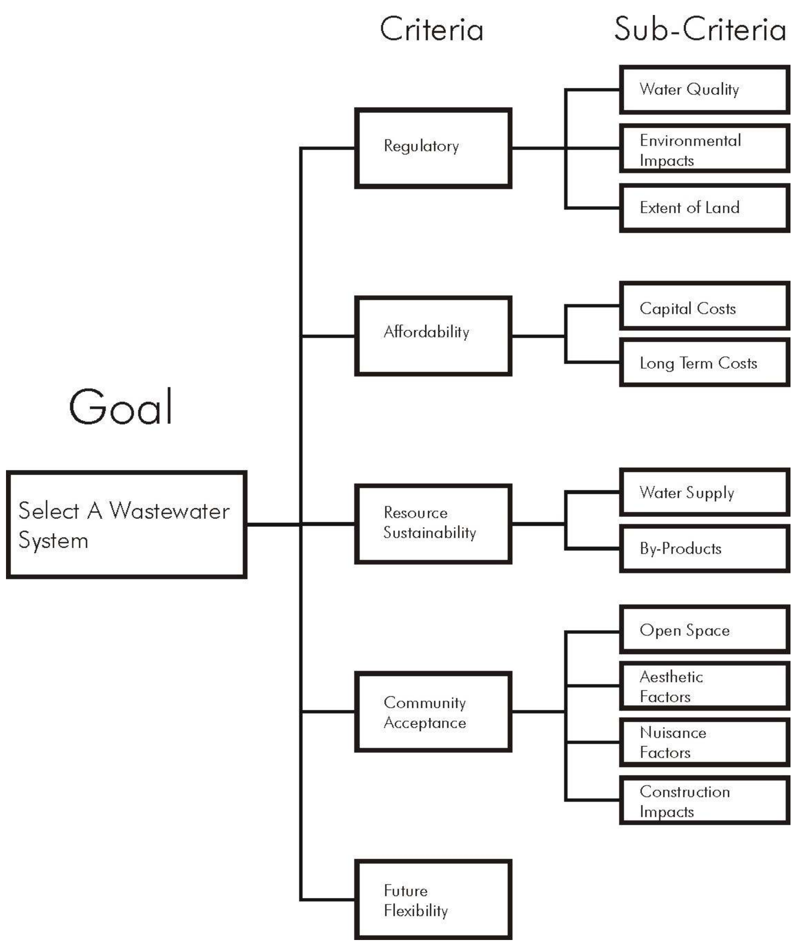


Figure 1-1:Project Selection Criteria

The District contracted with Oswald Engineering to prepare a *Wastewater Facilities Project, Draft Project Report* (2000) as required by the Regional Water Quality Control Board. The District subsequently contracted with Montgomery Watson Engineers to be the project engineer and finalize the Project Report.

In February, 2000, the *Project Report* was submitted to the Regional Board based on a system of wastewater treatment known as Advanced Integrated Wastewater Pond System^{TM} (or AIWPS). After considerable study by the CSD's engineers and after numerous public hearings, the CSD Board concluded that there was insufficient data from AIWPS systems currently in operation to conclude that it could meet Regional Board standards for the removal of nitrates. The District then proceeded to investigate alternative treatment technologies with a proven track record of nitrate removal. A computer program sanctioned by the State Water Resources Control Board was employed to help sift through the different treatment technologies to determine which one(s) best meet the goals of the community while satisfying the Regional Board. The program assigns a weighting scheme to each key decision-making criteria which may then be scored and ranked quantitatively for comparison. The criteria and sub-criteria used in the comparison process are illustrated by Figure 1-1.

Following numerous public hearings, a range of alternatives were identified and a preferred project configuration was selected, as described in Chapter 5.

Statement of Purpose and Need/Legal Authority

The proposed Wastewater Facilities Project requires the discretionary approval of the Los Osos Community Services District, San Luis Obispo County and the State Water Resources Control Board. Therefore, it is considered a "project" as defined by Section 21000 et seq. of the Public Resources Code (the California Environmental Quality Act, or CEQA), and is subject to the environmental review requirements specified by the statute. CEQA requires that an environmental impact report (EIR) be prepared when a project has the potential to result in significant adverse impacts to the environment. This EIR has been prepared in accordance with CEQA and the State CEQA Guidelines. In accordance with Section 15121(a) of the State CEQA Guidelines, the purpose of this EIR is to serve as an informational document that:

> *" . . . will inform public agency decision-makers and the public generally of the significant environmental effect of a project, identify possible ways to minimize the significant effects, and describe reasonable alternatives to the project . . . "*

An EIR is intended as a decision-making tool that enables the lead agencies to fully evaluate potential environmental impacts and the consequences of their decision to approve or carry out a project.

Lead, Responsible & Trustee Agencies/Agency Use of this Document

The State CEQA Guidelines distinguishes among "Lead, Responsible and Trustee" agencies on the basis of their responsibilities for approving or carrying out certain aspects of a project. The Los Osos Community Services District (LOCSD) is the Lead Agency and has the primary responsibility for approving and constructing the Wastewater Facilities Project.

A "Responsible Agency" is an agency other than the Lead Agency that has discretionary approval over the project (or certain aspects of the project). The California Coastal Commission, RWQCB and the County of San Luis Obispo have discretionary approval authority over the proposed project as responsible agencies pursuant to Section 15381. Other responsible agencies include the SWRCB, the U.S. Fish and Wildlife Service, EPA and the U.S. Army Corps of Engineers.

Pursuant to Section 15386, trustee agencies for a project include all state agencies having jurisdiction over natural resources affected by project implementation, including the California Department of Fish and Game and the State Water Resources Control Board.

The California Coastal Commission

The Wastewater Facilities Project lies entirely within the coastal zone and is subject to the provisions of the San Luis Obispo County General Plan and Local Coastal Program (LCP). This project is being considered as a new and distinct project for purposes of compliance with relevant provisions of the Coastal Act.

U.S. Army Corps of Engineers

A permit from the Corps of Engineers will be required in the event that any aspect of the project or alternatives affects a wetland, creek or other "Waters of the United States".

Scope & Content

In accordance with State CEQA Guidelines, the Los Osos Community Services District, as Lead Agency, solicited comments from the public and other interested agencies through the preparation and distribution of an Initial Study and Notice of Preparation (NOP) (Appendix B). The initial study, along with the comments received from the Notice of Preparation, concluded that the project could result in potentially significant adverse impacts in the following topical areas:

Biological Resources	Cultural Resources	Hydrogeology and Water Resources
Geology	Air Quality	Consistency with Adopted Plans and Policies
Noise	Visual Resources	
Traffic and Circulation	Public Health and Safety	Growth-inducing Impacts
Alternatives	Cumulative Impacts	Drainage

Organization of This DEIR

The purpose of the EIR is to foster informed decision-making by disclosing to the public and decision-makers the possible adverse environmental consequences associated with the Wastewater Facilities Project. To help meet these objectives, this DEIR has been organized to provide information that is succinct and understandable to the layperson. The analysis of Environmental Issues is divided into separate sections that assess the impacts of the different Wastewater Facilities components: Wastewater Treatment Technologies and Sites, Wastewater Collection, Wastewater Disposal, and Bio-Solids Disposal and Recycling. Each sub-section contains the range of topical analyses corresponding to the environmental factors germane to the particular project component (traffic, air quality, biology, etc.). The Draft EIR/EIS is divided into the following major sections:

1. Introduction. Provides the Statement of Purpose and Need for the project.

2. Summary. Provides an overview of the project, and summary tables describing the major impacts identified in the analysis. A summary of the alternatives and cumulative impacts is also provided.

3. Project Description. Identifies the Statement of Purpose and Need for the project.

4. Environmental and Regulatory Setting

5. Alternatives Screening Analysis. Describes the alternatives for the proposed project. A screening analysis is provided for the alternatives. This is broken down into Treatment sites, Collection, Disposal, and Biosolids.

6. Impact Analysis. Describes the existing conditions found on the project site and vicinity and assesses the potential environmental impacts that may be generated by implementation of the proposed project. These potential project impacts are compared to various "Thresholds of Significance" in order to determine the severity of the direct and indirect impacts. Mitigation measures are recommended actions which would lessen or eliminate the significant impacts identified in the impact analysis, and Residual Impacts are those effects which, after mitigation, remain significant.

7. Cumulative and Growth Inducing Impacts

8. Alternatives and the Environmentally Superior Alternative. Summarizes the environmental advantages and disadvantages associated with the proposed project and the alternatives. Based on this discussion, the environmentally superior alternative is identified as required by CEQA. The CEQA guidelines, Section 15126 (d) (2) state that if the environmentally superior alternative is the No Project Alternative, then the next most environmentally superior alternative must also be identified.

9. Report Preparation/Persons Contacted

10. References

11. Appendix

Environmental Impact Review Process

The environmental impact review process, as required under CEQA and SWRCB Guidelines, is outlined below. The steps are presented in sequential order.

1. Notice of Preparation (NOP) Mailed. Immediately after deciding that an EIR is required, the lead agency must file an NOP soliciting input on the EIR scope to "responsible," "trustee," and involved federal agencies; to the State Clearinghouse, if one or more state agencies is a responsible or trustee agency; and to parties previously requesting notice in writing (State CEQA Guidelines Section 15082; Public Resources Code Section 21092.2). The NOP must be posted in the County Clerk's office for 30 days. A scoping meeting to solicit public input on the issues to be addressed in the EIR is not required, but may be conducted by the Lead Agency.

2. Draft Environmental Impact Report (DEIR) Prepared. The DEIR must contain: a) table of contents or index; b) summary; c) project description; d) environmental setting; e) significant impacts (direct, indirect, cumulative, growth-inducing and unavoidable impacts); f) alternatives; and g) mitigation measures.

3. Public Notice and Review. A lead agency must prepare a Public Notice of Availability for an EIR. The Notice must be placed in the County Clerk's office for 30 days (Public Resources Code Section 21092). The lead agency must send a copy of its Notice to anyone requesting it (State CEQA Guidelines Section 15087). Additionally, public notice of DEIR availability must be given through at least one of the following procedures: a) publication in a newspaper of general circulation; b) posting on and off the project site; and c) direct mailing to owners and occupants of contiguous properties. The lead agency must consult with and request comments on the DEIR from responsible and trustee agencies, and adjacent cities and counties (Public Resources Code section 21104 and 21253). The minimum public review period for a DEIR is 30 days. When

a DEIR is sent to the State Clearinghouse for review, the public review period must be 45 days unless a shorter period is approved by the Clearinghouse (State CEQA Guidelines Section 15305). CEQA does not require public hearings on the DEIR, although in practice, most agencies conduct such hearings.

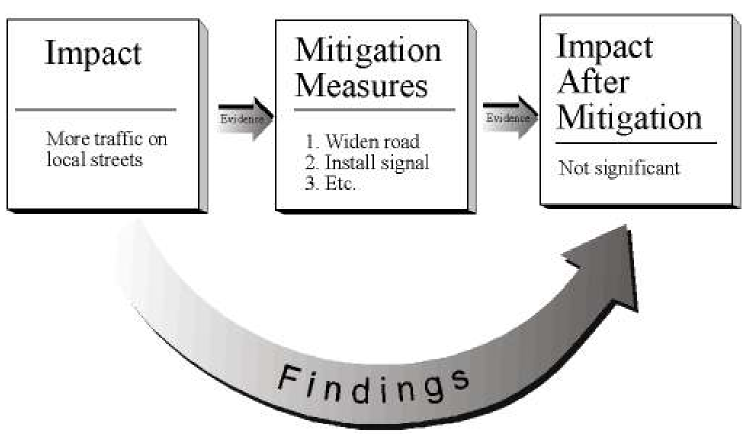
4. Notice of Completion. A lead agency must file a Notice of Completion with the State Clearinghouse as soon as it completes a DEIR.

5. Final EIR (FEIR). A FEIR must include: a) the DEIR; b) copies of comments received during public review; c) list of persons and entities commenting; and d) responses to comments.

6. Certification of FEIR. The lead agency shall certify: a) the FEIR has been completed in compliance with CEQA; b) the FEIR was presented to the decision-making body of the lead agency; and c) the decision-making body reviewed and considered the information in the FEIR prior to approving a project (State CEQA Guidelines Section 15090).

7. Lead Agency Project Decision. A lead agency may: a) disapprove a project because of its significant environmental effects; b) require changes to a project to reduce or avoid its significant environmental effects; or c) approve a project despite its significant environmental effects, if the proper findings and statement of overriding considerations are adopted (State CEQA Guidelines Section 15042 and 15043).

8. Findings/Statements of Overriding Considerations. For each significant impact of the project identified in the EIR, the lead or responsible agency must find, based on substantial evidence, that either: a) the project has been changed to avoid or substantially reduce the magnitude of the impact; b) changes to the project are within another agency's jurisdiction and such changes have or should be adopted; or c) specific economic, social, or other considerations make the mitigation measures or project alternatives infeasible (State CEQA Guidelines section 15091). If an agency approves a project with unavoidable significant environmental effects, it must prepare a written Statement of Overriding Considerations that set forth the specific social, economic or other reasons supporting the agency's decision.



9. Mitigation Monitoring/Reporting Program. When an agency makes findings on significant effects identified in the EIR, the agency must adopt a reporting or monitoring program for mitigation measures that were adopted or made conditions of project approval to mitigate significant effects.

10. Notice of Determination. An agency must file a Notice of Determination after deciding to approve a project for which an EIR is prepared (State CEQA Guidelines Section 15094). A local agency must file the Notice with the County Clerk. The Notice must be posted for 30 days and sent to anyone previously requesting notice. Posting of the Notice starts a 30-day statute of limitations on CEQA challenges (Public Resources Code Section 21167[c]).

Discretionary Approvals Required

The Wastewater Facilities Project will require approvals from the following agencies:

Los Osos Community Services District. The LOCSD is the agency with primary responsibility for approving and carrying out the project.

San Luis Obispo County. A Coastal Development Permit/Development Plan is required in accordance with the San Luis Obispo County General Plan, Local Coastal Program – Framework for Planning.

California Coastal Commission. The project lies within the coastal zone and will be subject to relevant provisions of the California Coastal act.

California State Water Resources Control Board – Division of Clean Water Programs (SWRCB). The SWRC Clean Water Programs division administers the State Revolving Fund (SRF) Loan Program which provides low interest loans for the construction of public wastewater collection and treatment facilities. As part of the SRF process, the SWRCB, acting through the local Regional Water Quality Control Board, is responsible for review and approval of the Project Report, which documents:

- A description of the proposed wastewater system;
- The need for the proposed wastewater system;
- Its cost effectiveness over a twenty year period;
- An evaluation of alternative methods of treating and disposing wastewater;
- The capital cost of building, operating and maintaining the system;
- How the water quality and effluent discharge standards adopted by the Regional Water Quality Control Board will be achieved and maintained;
- Other details.

Regional Water Quality Control Board (RWQCB). In addition to review and approval of the Project Report, the RWQCB is responsible for enforcement of the requirements of the federal Clean Water Act at the local level. The project must also obtain a National Pollution Discharge Elimination System (NPDES) permit for construction and operation. As part of this responsibility, the Regional Board has adopted discharge and water quality standards that must be achieved by any wastewater treatment system. The treatment and disposal system must be approved by the Regional Board and a discharge permit must be issued prior to operation.

San Luis Obispo County Air Pollution Control District (APCD). Certain aspects of the construction and operation of a wastewater system may be subject to the permitting requirements of the Air Pollution Control District.

United State Fish and Wildlife Service (USF&WS). Certain aspects of the project will involve the disturbance or loss of habitat that supports special status species listed in accordance with the federal Endangered Species Act. When a project could adversely impact habitat for special status plants or animals listed by the Endangered Species Act, certain permitting requirements apply which are administered by the USFWS.

Figure 1-2 -- Regional Location

LOS OSOS COMMUNITY SERVICES DISTRICT
WASTEWATER FACILITIES PROJECT

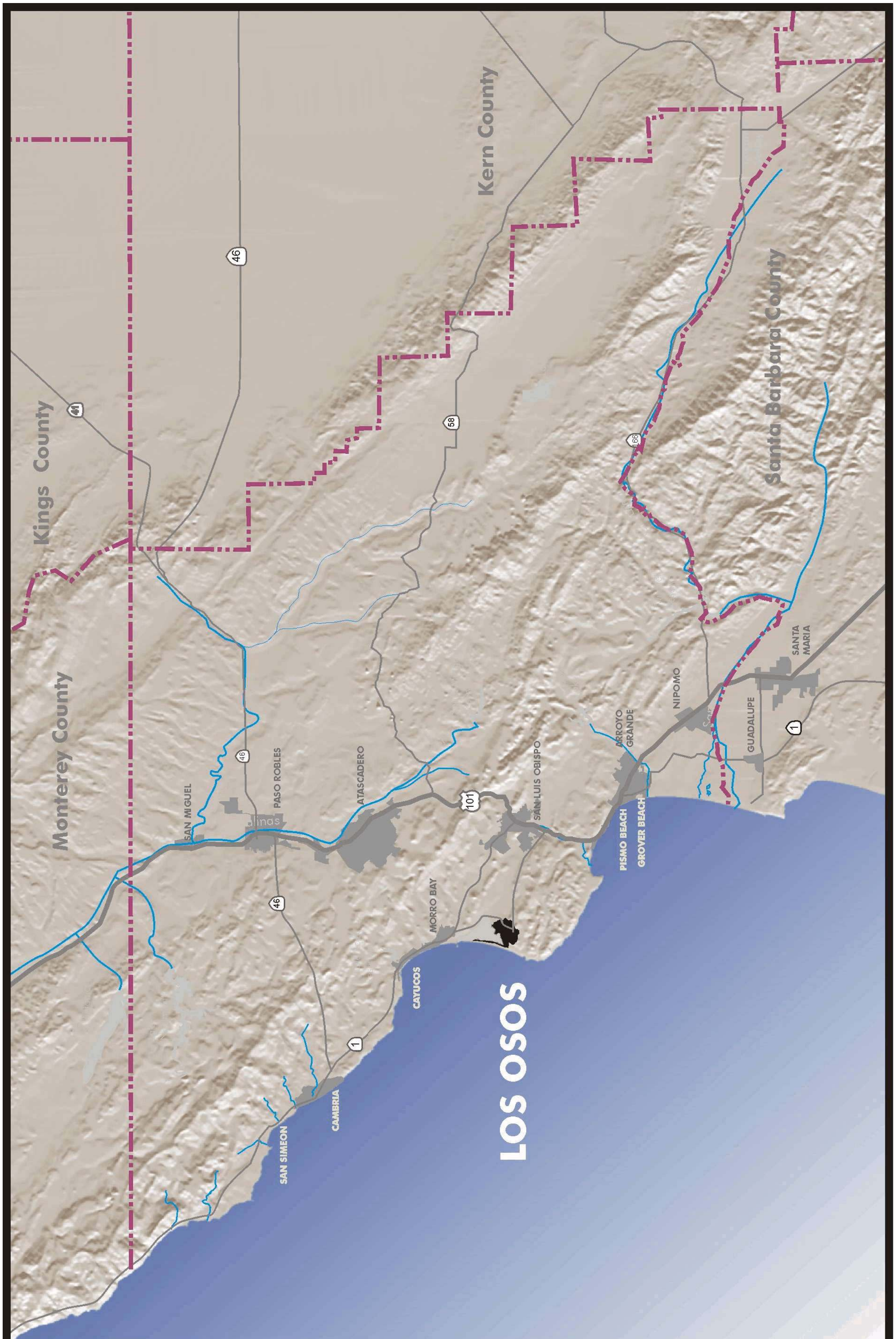


Figure 1-3 -- County Location

LOS OSOS COMMUNITY SERVICES DISTRICT
WASTEWATER FACILITIES PROJECT

2. Summary of DEIR Findings and Recommendations

To aid the public and decision makers in understanding the findings and recommendations of an EIR, Section 15123 of the State CEQA Guidelines requires that a summary be provided which discusses the significant environmental effects and mitigation measures; areas of controversy, and issues to be resolved (if any). Issues left unresolved by an EIR may include such things as choosing among a range of alternatives and/or whether or how to mitigate the significant effects.

The summary that follows is divided into two parts. The first provides a brief synopsis of the project and any areas of controversy known to the Lead Agency (the Los Osos Community Services District). The second summarizes the individual and cumulative environmental effects associated with the project along with a summary table listing the impacts and recommended mitigation measures.

Project Synopsis

Proponent

Los Osos Community Services District
2122 9th Street
Los Osos, CA 93402

Summary Project Description

Construction of a wastewater collection, treatment and disposal system with an average dry-weather flow of 1.365 million gallons per day and capable of serving a buildout population of 17,283. The treatment system would consist of a hybrid Extended Aeration system that would be underground and fully odor scrubbed. Disposal would be accomplished by recycling (spraying) treated wastewater on play fields and the Sea Pines Golf Course during dry weather and by the use of sub-surface leach fields designed to re-introduce the treated water to the upper aquifer. The project would also involve the development of a Septic System Maintenance Management Program (SSMMP) which would include all properties within the Los Osos Urban Area urban reserve line as described by the San Luis Obispo County General Plan.

Areas of Known Controversy

The most constantly recurring controversy regarding the Wastewater Facilities Project is the precise nature of the aquifer underlying the community and the source(s) of nitrogen pollution. Although skepticism remains with regard to the source of pollution, the authority to regulate water quality resides with the State Regional Water Quality Control Board who have concluded that the community-wide use of septic systems is the principal cause.

Summary of Environmental Impacts and Mitigation Measures

Table 2-1 provides a summary of the potential significant environmental impacts that could result from the project. Throughout the summary table and within the topical sections of this DEIR, impacts are categorized according to their level of significance after mitigation has been applied. Four categories are used:

> Class I. Class I impacts are significant and unavoidable. To approve a project that results in one or more Class I impacts, the CEQA Guidelines require decision makers to make specific findings of overriding consideration that *"...specific legal, technological, economic, social, or other considerations make infeasible the mitigation measures or alternatives identified in the EIR."*.

Class II. Class II impacts are significant but can be mitigated to a level of insignificance by measures identified in this EIR and the project description. When approving a project with Class II impacts, the decision-makers must make findings that changes or alternatives to the project have been incorporated that reduce the impacts to a less than significant level.

Class III. Class III impacts are adverse but not significant. No mitigation is required.

Class IV. Class IV impacts are beneficial.

Impacts Found To Be Less Than Significant

Based on evidence provided in the project description and initial study, the following impacts were found to be less than significant.

Agricultural Resources. The project will not directly or indirectly affect agricultural resources within or surrounding the community of Los Osos. However, one of the alternative treatment plant sites evaluated by this DEIR consists of agricultural land of local significance.

Public Services. The project is not expected to significantly increase the demand for public services in the area, such as police and fire protection; schools; and other government services.

Maintenance costs for the wastewater collection, treatment and disposal system will increase, as will the cost to individual property owners for sewer service. However, these are not considered significant environmental impacts in accordance with the definition provided in Section 15358(b) of the State CEQA Guidelines.

Operational Noise, Light and Glare. The majority of the wastewater project components, including the treatment plant, will be constructed underground. Therefore, impacts associated with noise, and light and glare associated with the day-to-day operation of the wastewater collection, treatment and disposal system is not expected to be significant.

Summary of Significant Adverse Impacts

Table 2-1 summarizes the environmental impacts that may result from the project and classifies the impacts after mitigation according to the classifications described above.

Alternatives

A fundamental aspect of environmental analysis under CEQA is the identification and examination of alternatives to the proposed project {CEQA Guidelines Section 15126(d)}. The number and type of alternatives is not specified by law, but is left to the *"...rule of reason..."* {Citizens of Goleta Valley v. Santa Barbara (1990) 54 Cal 3rd. 353). While the alternatives need not be studied to the same level of detail as the proposed project, the analysis should provide the reviewer with a reasonable opportunity to compare impacts of various alternatives. The discussion should focus on alternatives capable of eliminating any of the significant adverse impacts, or reducing them to a level of insignificance, even if these alternatives would impede to some degree the attainment of project objectives, or would be more costly {CEQA Guidelines 15125(d)(3)}.

The selection and screening of alternatives to be evaluated by this DEIR are discussed in detail in Chapter 5: Alternatives Screening Analysis. The relative environmental impacts associated with each alternative are discussed in the topical sections of this DEIR (Chapter 6) and summarized in Chapter 8: Alternatives. Chapter 8 compares the alternatives capable of eliminating or reducing significant adverse environmental effects associated with the project, while feasibly attaining the project objectives. These alternatives include:

Alternative Wastewater Collection
- STEP/STEG and combination STEP/STEG/gravity system

Alternative Wastewater Treatment Technologies
- Extended Aeration (conventional)
- Sequencing Batch Reactor

Alternative Wastewater Treatment Sites
- Holland
- Morro Shores Southwest
- Pismo
- Andre

Alternative Disposal Systems
- None

Alternative Bio-Solids Disposal -- Recycling
- Recycling Sites
  - Ogle
  - Low
  - Andre

Cumulative Impacts

Each topical section of this DEIR assesses the cumulative impacts associated with reasonably foreseeable projects in the vicinity of the project site, recognizing that development activities may be individually limited but cumulatively significant.

Mitigation Monitoring Program

Section 21081.6 of the Public Resources Code requires all state and local agencies to establish mitigation monitoring or reporting programs whenever approval of a project relies upon a mitigated negative declaration or an environmental impact report. The monitoring or reporting program must ensure implementation of the measures being imposed to mitigate or avoid the significant environmental impacts identified in the mitigated negative declaration or EIR.

A mitigation monitoring and reporting program will be prepared at the time the Final EIR is certified which summarizes the recommended mitigation measures, the parties responsible for mitigation implementation by resource topic, the method of monitoring the mitigation and the timeframe for monitoring.

Environmentally Superior Alternative

The discussion of alternatives provided in Section 8 of this DEIR ranks the alternatives as shown on the following table, including the environmentally superior alternatives.

Ranking of Alternatives (Environmentally Superior Alternatives Shown In Bold)	
Project Component	Alternative
Collection	STEP/STEG
	STEP/STEG Hybrid
	Gravity (proposed)
Treatment	Extended Aeration Hybrid (proposed
	Extended Aeration
	Sequencing Batch Reactor
Treatment Sites	Andre
	Holland
	Morro Shores Southwest
	Tri-W (proposed)
	Pismo
Disposal	Subsurface Leach Fields (proposed)
Bio-solids	Hauling

Table 2-1: Summary of Significant Adverse Impacts and Mitigation Measures By Environmental Topic

Impact		Significance	Mitigation Measures		Significance of Residual Effect After Mitigation
5.1 Geology					
Impact GEO-1:	Construction of the collection system (including the collection pipes and up to 11 pump stations) will involve trenching within road rights-of-way and easements at 200-foot increments. Such disturbance will temporarily increase the potential for erosion and reduce the stability of the soil. These impacts are considered significant unless mitigated (Class II).	Class II	Mitigation GEO-1:	An NPDES Construction Activity Storm Water Permit shall be obtained prior to the onset of construction activities. Appropriate BMPs, as established in the project NPDES Construction Storm Water Permit, shall be employed during project construction, which may include, but are not limited to, temporary sand bagging; construction of berms; installation of geofabric, and revegetation of areas by hydroseeding and mulching; and the use of trench stabilizing and de-watering. The NPDES permit shall apply to all proposed facilities, and shall address 50 to 100-year precipitation events to the extent feasible. The Pollution Prevention Plan portion of the NPDES permit shall be reviewed and approved by the County Engineering Department and the RWQCB. (Impacts GEO-1, GEO-2,GEO-4, GEO-5, GEO-6, GEO-11)	Less Than Significant
			Mitigation GEO-2:	Project implementation shall include a long-term Erosion Control Plan. The plan shall include the treatment plant site, the collection system, and the disposal sites. The Erosion Control Plan shall identify erosion control practices to be implemented throughout the construction and operation of these facilities. These measures may include, but are not limited to, recompaction of soils; revegetation of disturbed areas; utilization of soil binding; or other methods for reducing short-term and long-term erosion. The Plan shall be reviewed by the County Office of Planning and Building, and shall be included in contractor bid and contract documents.	
Impact GEO-2:	The collection system will require the installation of up to 11 pump stations in sub-surface vaults. Excavation and construction of the pump/lift stations will increase the potential for erosion and soil instability. These impacts are considered significant unless mitigated (Class II).	Class II	Mitigation GEO-1, GEO-2		Less Than Significant
Impact GEO-3:	The collection system infrastructure (pipes, pump stations, etc.) could be damaged or ruptured as a result of a seismic event due to ground shaking or liquefaction. These impacts are considered significant unless mitigated (Class II).	Class II	Mitigation GEO-6:	Implementation of CDMG Liquefaction Mitigation. Where determined necessary by geotechnical investigations, design of system components shall incorporate recommendations contained in the CDMG publication "Guidelines for Evaluating and Mitigating Seismic Hazards in California." Mitigation cited in this publication include recompaction of liquefiable soils and use of reinforced shallow foundations.	Less Than Significant
			Mitigation GEO-7:	Prior to construction, a complete grading and drainage plan shall be submitted to the LOCSD and County Department of Planning and Building for review and approval. Such grading and drainage plan shall address the requirements of the geotechnical investigation described in Measure GEO-5, above.	
			Mitigation GEO-8:	Rehabilitation of disposal leach fields shall be rotated so that no more than one field is under re-construction at a time.	
			Mitigation GEO-9:	In addition to the long-term erosion control plan cited in Measure GEO-2, above, plans for the Broderson disposal site shall designate access routes for review and approval by the LOCSD which intrude minimally into the landscape. Plans shall include prompt re-vegetation of disturbed areas.	
Impact GEO-4:	Periodic maintenance of the collection system could result in a temporary increase in the potential for erosion. These impacts are considered potentially adverse but less than significant (Class III).	Class II	Mitigation GEO-1, GEO-2		Less Than Significant

Table 2-1: Summary of Significant Adverse Impacts and Mitigation Measures By Environmental Topic

Impact		Significance	Mitigation Measures	Significance of Residual Effect After Mitigation
Impact GEO-5:	The construction of the Hybrid Extended Aeration system will require the excavation of about 193,600 cubic yards of soil material. Sandy soils associated with the treatment plant site are potentially unstable and will require stabilization to enable construction. Impacts associated with soil instability are considered significant unless mitigated (Class II).	Class II	Mitigation GEO-1, GEO-2, GEO-7	Less Than Significant
Impact GEO-6:	Grading of the treatment plant site to accommodate the treatment plant, water feature(s) and landscaping will result in soil disturbance and a temporary increase in erosion potential. This impact is considered significant unless mitigated (Class II).	Class II	Mitigation GEO-1, GEO-2, GEO-7	Less Than Significant
Impact GEO-7:	The treatment plant site is located in proximity to the inferred trace of Strand B of the Los Osos Fault. The exact location of the fault is unknown, and therefore a precise determination of its potential to produce surface rupture is likewise unknown. However, should the trace of the fault coincide with the treatment plant, a seismic event associated with the fault could damage facilities associated with the treatment plant. These impacts are considered significant unless mitigated (Class II).	Class II	Mitigation GEO-5: Prior to construction, a geotechnical investigation shall be carried out as part of final facility design. This geotechnical investigation shall include analysis of the proposed treatment plant site, the disposal system, and the collection system, where determined necessary by the LOCSD and governing regulatory agencies. The geotechnical investigation shall address the following issues: ▸ Design of facility foundations and walls such that potential impact associated with fault rupture onsite would be reduced to the extent feasible. Design measures for rapid repair of facilities shall be identified as necessary. ▸ The investigation shall determine onsite ground water levels, and identify soil layers that could be subject to liquefaction during a seismic event. Specific measures, such as excavation/recompaction of foundation areas, long-term dewatering, or utilization of foundation piles, should be identified as necessary to reduce potential impacts to a less than significant level. ▸ The investigation shall identify the potential for settlement or lurching associated with seismic events. Specific measures, such as excavation/recompaction, shall be identified as necessary to reduce potential impacts to a less than significant level. ▸ The investigation shall identify the potential for disruption of collection associated with fault rupture. Design measures for isolation and rapid repair of facilities shall be identified, where necessary. ▸ The County Engineering Department shall review and approve the scope and findings of the geotechnical investigation, and shall review final project design to ensure incorporation of recommended measures.	Less Than Significant
Impact GEO-8:	A seismic event associated with any of the potentially faults described in "Setting", above, could adversely impact the treatment plant and its function. These impacts are considered significant unless mitigated (Class II).	Class II	Mitigation GEO-3: All proposed facilities shall be designed and constructed in accordance with UBC Seismic Zone 4 regulations. Mitigation GEO-4: Prior to finalization of project design, the LOCSD shall consult with the California Division of Mines and Geology CDMG to determine the Design Basis Earthquake for system components. Mitigation GEO-5	Less Than Significant
Impact GEO-9:	Soils associated with the treatment plant site consist of unconsolidated sands which may pose a significant risk of liquefaction. This impact is considered significant unless mitigated (Class II).	Class II	Mitigation GEO-7	Less Than Significant
Impact GEO-11:	Construction of the disposal leach fields will result in the temporary disturbance of soils and potential erosion at the Broderson site and various street rights-of-way within the community. These impacts will be temporary but are considered significant unless mitigated (Class II).	Class II	Mitigation GEO-2	Less Than Significant

Impact		Significance	Mitigation Measures		Significance of Residual Effect After Mitigation
Impact GEO-12:	The Los Osos area is within Seismic Zone 4 as defined by the UBC. A seismic event associated with one or more of the active faults affecting the region could result in ground shaking that could damage the leach fields. These impacts are considered significant unless mitigated (Class II).	Class II	Mitigation GEO-3 Mitigation GEO-4 Mitigation GEO-5		Less Than Significant
Impact GEO-13:	The disposal leach fields would release treated wastewater into potentially liquefiable zones which may increase the potential for liquefaction over existing conditions. These impacts are considered significant unless mitigated.	Class II	Mitigation GEO-8:	Rehabilitation of disposal leach fields shall be rotated so that no more than one field is under re-construction at a time.	Less Than Significant
			Mitigation GEO-9:	In addition to the long-term erosion control plan cited in Measure GEO-2, above, plans for the Broderson disposal site shall designate access routes for review and approval by the LOCSD which intrude minimally into the landscape. Plans shall include prompt re-vegetation of disturbed areas.	
Impact GEO-15:	The disposal system will consist of a series of sub-surface leach fields which will periodically (about every 10 years) require maintenance and rehabilitation. Impacts associated with these activities will be temporary and comparable to those associated with leach field construction. These impacts are considered significant unless mitigated (Class II).	Class II	Mitigation GEO-9		Less Than Significant
5.2 Hydrology and Water Resources					
Impact H-1:	Construction of the collection system may require dewatering of trenches. Impacts to water quality stemming from such activities are considered adverse but not significant (Class III) because of mitigation incorporated into the project description.	Class II	Mitigation H-1:	NPDES Permit. The LOCSD will obtain and comply with an NPDES permit from the RWQCB and will develop an SWPPP for the project, which will include, among other requirements, the identification of Best Management Practices (BMPs) to be used for erosion control, actions for control of potential fuel or drill tailing release, and requirements for disposal (i.e., location, quality) of water from dewatering activities.	Less Than Significant
Impact H-2:	Operating a centralized wastewater collection system will allow the use of septic system leach fields to be eliminated over a large portion of the collection area. Eliminating this source of groundwater re-charge in favor of subsurface leach fields in specified locations will alter the replenishment characteristics of the groundwater basin and will alter groundwater levels over much of the community. This impact is considered significant and adverse unless mitigated (Class II).	Class II	Mitigation H-3:	The Los Osos Community Services District shall prepare and implement a comprehensive water management plan for the Los Osos groundwater basin. The purpose of the plan is to identify management strategies aimed at achieving a sustainable water supply to serve buildout of the community in accordance with the Estero Area Plan, as it may be amended from time to time.	Less Than Significant
Impact H-5:	The cumulative long-term demand for water in the Los Osos area will increase as a result of the installation of a community-wide wastewater treatment system and the removal of the building moratorium enacted by the RWQCB. These impacts are considered significant unless mitigated (Class II).	Class II	Mitigation H-1 Mitigation H-3		Less Than Significant

Table 2-1: Summary of Significant Adverse Impacts and Mitigation Measures By Environmental Topic

Table 2-1: Summary of Significant Adverse Impacts and Mitigation Measures By Environmental Topic

Impact	Significance	Mitigation Measures	Significance of Residual Effect After Mitigation
5.3 Drainage and Surface Water Quality			
Impact WR-2: Construction activities at the treatment plant site will increase the potential for erosion, which could adversely affect the quality of stormwater entering the site as well as waters downstream. These impacts are considered significant unless mitigated (Class II).	Class II	Mitigation WR-1: Grading, Drainage and Erosion Control Plan. Construction plans for the Tri-W site shall include a complete grading and drainage plan incorporating the recommendations of a geotechnical engineering evaluation (see Mitigation GEO-5). Measures to be considered for the mitigation of potential drainage, erosion, seepage and water quality impacts include, but are not limited to: ▸ The incorporation of an on-site runoff collection system which includes energy dissipation, berms, temporary settling basins, and/or a silt/hydrocarbon separator for the collection and removal of hazardous materials and sediments. ▸ The incorporation of an on-site drainage system to collect runoff from all impervious onsite services, including parking spaces, roads and buildings. ▸ Surface runoff should be collected by curbs, gutters and drainage swales and conveyed to an appropriate point of disposal. Discharges of greater than five feet per second should be released through an energy dissipater or outlet. ▸ The incorporation of sub-surface drains to intercept seepage and convey it to an acceptable point of disposal. ▸ Watering the site at least twice per day during construction, or more frequently if determined necessary by the LOCSD. ▸ Re-vegetating portions of the site exclusive of paved areas as soon as reasonable following grading. ▸ Incorporating rain gutters and downspouts for buildings. ▸ Grading surfaces adjacent to buildings so that runoff is conveyed away from foundations and onto paved surfaces or underground collection pipes. Mitigation WR-2: NPDES Permit. The LOCSD will obtain and comply with an NPDES permit from the RWQCB and will develop an SWPP for the project, which will include, among other requirements, the identification of Best Management Practices (BMPs) to be used for erosion control, actions for control of potential fuel or drill tailing release, and requirements for disposal (i.e., location, quality) of water from dewatering activities.	Less Than Significant
Impact WR-4: Constructing a treatment plant and park on the Tri-W site will alter the volume and velocity of runoff leaving the site and will alter existing drainage patterns. The increase in surface runoff could adversely affect downstream drainage courses. This impact is considered significant unless mitigated (Class II).	Class II	Mitigation WR-4, WR-5	Less Than Significant
Impact WR-5: Heavy metals and other hazardous materials washed from on-site parking could enter the surface flow during a rainstorm, adversely affecting water quality downstream. This impact is considered significant unless mitigated (Class II).	Class II	Mitigation WR-2	Less Than Significant
Impact WR-6: Construction of the disposal leach field on the Broderson property will involve soil and vegetative disturbance which will alter on-site drainage and may increase the potential for erosion. These impacts are considered significant unless mitigated (Class II).	Class II	Mitigation WR-2 Mitigation WR-3: Revegetation Plan. A comprehensive revegetation plan will be developed for the Broderson and Powell sites, which at a minimum, will include re-planting of exposed surfaces with native vegetation.	Less Than Significant
Impact WR-7: Construction of the disposal leach fields in street rights-of-way will increase the potential for erosion and runoff into surface water bodies. This impact is considered significant unless mitigated (Class II).	Class II	Mitigation WR-2	Less Than Significant
Impact WR-8: Periodic renovation of the sub-surface leach fields will require excavation activities which have the potential to result in short-term runoff impacts similar to those associated with construction. This is considered a significant adverse impact unless mitigated (Class II).	Class II	Mitigation WR-2	Less Than Significant

Table 2-1: Summary of Significant Adverse Impacts and Mitigation Measures By Environmental Topic			
Impact	Significance	Mitigation Measures	Significance of Residual Effect After Mitigation
5.4 Cultural Resources			
Impact C-1: Construction of the collection system could result in disturbance of previously unknown archaeological resources. This impact is significant, but mitigable (Class II).	Class II	Mitigation C-1 Undiscovered Resources. All cultural resources discovered during construction must be avoided in order to eliminate any potential impacts. All work in the vicinity of the suspected resource will stop and the proper authorities will be notified. Prior to restart of work, a qualified archaeologist will determine the significance of the resource. Suggested measures for mitigation shall be adhered to. If the resource is suspected to contain human remains, the County Coroner and an approved Native American consultant shall be contacted to determine the nature and significance of the find.(Mitigation C-2 Archeological Monitoring. If a resource is discovered and an area is deemed potentially sensitive, archaeological monitoring will be required. The monitoring shall be conducted by a qualified archaeologist recognized as such by the County of San Luis Obispo with sufficient experience with local archaeological resources to make accurate determinations if cultural resources are exposed. In addition, in all areas determined to be sensitive because of prehistoric remains, a Native American monitor should be present as well. The presence of Native American monitoring will assist in identification of archaeological resources, should they be encountered. More importantly, the Native American monitor will act as a representative of the local tribe (Obispeño or Northern Chumash) in the event that human remains or traditional cultural properties are encountered. If such remains are found, they would assist in the decision making process and would act as a consultant on issues related to state and local applications of the Native American Graves Protection and Repatriation Act (NAGPRA) and the American Indian Religious Freedom Act (AIRFA). Finally, if significant resources are discovered, efforts will be made by local law enforcement as well as designated monitors to prevent looting of the sites by non-professionals.	Less Than Significant
Impact C-3: Construction of the treatment plant may disturb previously undiscovered resources. Impacts are significant, but mitigable (Class II).	Class II	Mitigation C-1, C-2	Less Than Significant
Impact C-5: Portions of the Broderson site may contain previously undiscovered archaeological resources. Impacts are significant, but mitigable (Class II).	Class II	Mitigation C-1, C-2	Less Than Significant
5.5 Consistency With Adopted Plans and Policies			
[No significant adverse impacts were identified, See Chapter 6.5]]			

Table 2-1: Summary of Significant Adverse Impacts and Mitigation Measures By Environmental Topic

Impact	Significance	Mitigation Measures	Significance of Residual Effect After Mitigation
5.6 Traffic and Circulation			
Impact TR-2: Installation of the collection and disposal systems will result in temporary lane closures and the disruption of local circulation. These impacts to circulation are considered significant unless mitigated (Class II).	Class II	Mitigation TR-1: Construction Traffic Mitigation Plan. The LOCSD shall prepare a construction traffic mitigation plan which identifies the location of equipment and trenches to be used; sequencing/phasing of installation; the location of materials and equipment staging areas; and proposed detour routes. The plan shall also provide for adequate emergency access, and routing of construction-related vehicles to minimize impacts to sensitive land uses. The plan shall also provide for the scheduling of construction related traffic so that it does not create safety hazards to school children and other pedestrians. Mitigation TR-2: Public Notice of Construction. The public shall be notified of potential obstructions and alternative access provisions. This notification may be accomplished by posting signs near the construction area at least one week in advance of the commencement of construction. In addition, information signs shall be posted on Los Osos Valley Road, with a phone number to call for questions. Phone inquiries shall be answered by a live public relations official, and not a pre-recorded message. Alternative access provisions and parking will be provided where necessary, with guide signs to inform the public. There will also be alternative pedestrian facilities provided to avoid obstruction to pedestrian circulation.	Less Than Significant
Impact TR-3: Construction traffic associated with the treatment facility at the Tri-W site could adversely impact the safety of local streets used by school children and other nearby residents that travel Los Osos Valley Road. This impact would be short-term and temporary, lasting for approximately 2 years. These impacts are considered significant unless mitigated (Class II).	Class II	Mitigation TR-1, TR-2	Less Than Significant

Table 2-1: Summary of Significant Adverse Impacts and Mitigation Measures By Environmental Topic			
Impact	Significance	Mitigation Measures	Significance of Residual Effect After Mitigation
5.7 Air Quality			
Impact AQ-1: Construction activities associated with the treatment plant, collection and disposal facilities will generate emissions which may exceed thresholds of significance adopted by the SLO APCD. These impacts are considered adverse and unavoidable (Class I).	Class I	Mitigation AQ-1.Equipment Emission Control Measures. The applicant shall fully implement CBACT for the highest emitting piece of diesel-fired heavy equipment used to construct each major component of the proposed project. It is expected that tandem scrapers or tracked tractors would be the highest emitters. CBACT includes: Fuel injection timing shall be retarded 1.5 to 2.0 degrees from the manufacturer's recommendation; High pressure fuel injectors shall be installed in all engines; Reformulated diesel fuel shall be used on the project site; Ceramic coating of the combustion chamber; Installation of catalytic converters; In addition, Caterpillar pre-chamber, diesel-fired engines (or equivalent low NO_x engine design) shall be used in heavy equipment used to construct the project to further reduce NO_x emissions. These requirements shall be noted on the grading plan and listed in the contractor and subcontractor contracts. If implementation of such measures is not feasible within the time-frame mandated for the proposed project, other vehicle fleets would be considered as alternatives, subject to APCD approval. At a minimum, if the above CBACT or an equivalent are not considered for mitigation, all heavy duty equipment operation onsite should have the timing retarded 4 degrees. Mitigation AQ-2.Dust/PM10 Control Measures. Dust generated by construction activities shall be kept to a minimum by full implementation of the following measures: During clearing, grading, earth moving, excavation, or transportation of cut or fill materials, water trucks or sprinkler systems are to be used to prevent dust from leaving the site and to create a crust after each day's activities cease; During construction, water trucks or sprinkler systems shall be used to keep all areas of vehicle movement damp enough to prevent dust from leaving the site. At a minimum, this would include wetting down such areas in the morning and after work is completed for the day and whenever wind exceeds 15 miles per hour; Stockpiled earth material shall be sprayed as needed to minimize dust generation; During construction, the amount of disturbed area shall be minimized, and onsite vehicle speeds should be reduced to 15 mph or less; Exposed ground areas that are planned to be reworked at dates more than one month after initial grading should be sown with a fast-germinating native grass seed and watered until vegetation is established; After clearing, grading, earth moving, or excavation is completed, the entire area of disturbed soil shall be treated immediately by watering or revegetating or spreading soil binders to minimize dust generation until the area is paved or otherwise developed so that dust generation will not occur; Grading and scraping operations shall be suspended when wind speeds exceed 20 mph (one hour average); All roadways, driveways, and sidewalks associated with construction activities should be paved as soon as possible. In addition, building and other pads shall be laid as soon as possible after grading unless seeding or soil binders are used.	Significant and Adverse
Impact AQ-2: Dust generated by construction activities may be exceed thresholds of significance adopted by the APCD for respirable particulate matter. This impact is considered significant unless mitigated (Class II).	Class II	Mitigation AQ-1, AQ-2	Less Than Significant

Table 2-1: Summary of Significant Adverse Impacts and Mitigation Measures By Environmental Topic

Impact	Significance	Mitigation Measures	Significance of Residual Effect After Mitigation
Impact AQ-4: Operation of the treatment facility may result in periodic odors that would adversely affect surrounding neighborhoods. These impacts are considered significant unless mitigated (Class II).	Class II	Mitigation AQ-3. Odor Performance Standard. Neighbors of the Tri-W site shall be informed that odor nuisance complaints are to be directed to the APCD for documentation. Any odor complaints received by the County Engineering Department or plant staff shall be forwarded within one day of receipt to the APCD. The APCD will contact plant staff following each odor nuisance complaint to determine the nature and cause of the odor sources. The Los Osos Community Services District shall utilize a threshold of three nuisance complaints per year as a performance guideline with respect to odor generation. Should nuisance complaints exceed this number, the District shall assess odor levels at the treatment plant site. The assessment shall include the following: Utilization of a scentometer to assess odor concentration with respect to the BAAQMD dilution to threshold ratio (D/T ratio). This ratio indicates the number of equal volume dilutions to the point at which 50% of the population below the age of 45 first detects the odor. Regulation 7 adopted by the BAAQMD restricts the release of odorous substances to 4 D/T at the property line. If the D/T ratio exceeds the 4 D/T ratio threshold established by the BAAQMD, the district shall provide a letter report to the APCD summarizing the nature and cause of the odor source, the frequency at which this source has caused complaints in the past, the frequency at which this source is anticipated to occur, and a course of action to reduce onsite odor generation. Measures may include, but are not limited to, the following: Upstream addition of ferrous chloride to the influent stream to reduce septic conditions; Establishment of additional "negative air" containment areas; Additional treatment component enclosure, and; Installation of air flow baffles to improve odor dissipation.	Less Than Significant
5.8 Noise			
Impact N-1: Construction of the collection and disposal systems will generate temporary noise levels in excess of applicable standards. These impacts are considered significant unless mitigated (Class III).	Class II	Mitigation N-1: Construction will be limited to the hours of 7 a.m. to 6 p.m. on weekdays, and 8 a.m. to 5 p.m. on weekends. Mitigation N-2: The construction contractor shall agree to the following upon hire: • Equipment shall be fitted with mufflers, in good operating condition and fitted with factory standard silencing features; • A hauling route and staging plan shall be submitted to the LOCSD which is designed to minimize noise impacts with sensitive land uses; • When available and proper for the task, contractor shall use electric versus diesel equipment; • Portable noise barriers shall be employed where necessary to minimize noise impacts;	Less Than Significant
Impact N-3: Construction of the treatment plant will generate temporary, short-term impacts on surrounding noise-sensitive uses. These impacts are considered significant unless mitigated (Class II).	Class II	Mitigation N-1, N-2	Less Than Significant
Impact N-5: Construction of the disposal leachfields within street rights-of-way and on the Broderson property will temporarily subject nearby residences to noise levels in excess of County Standards. These impacts are considered significant unless mitigated (Class II).	Class II	Mitigation N-1, N-2	Less Than Significant
5.9 Public Health, Safety and Services			
Impact PS-1: Construction activities could accidently break main water supply lines, creating a localized loss of water for fire fighting. This impact is significant unless mitigated (Class II).	Class II	Mitigation PS-4 The Los Osos CSD shall mitigate the potential temporary loss of water for fire fighting that may occur as a result of construction activities by either 1) acquiring a water tender, to the satisfaction of the Fire Chief, or 2) through some other equivalent means as determined by the Fire Chief and the CSD Board.	Less Than Significant

Table 2-1: Summary of Significant Adverse Impacts and Mitigation Measures By Environmental Topic

Impact	Significance	Mitigation Measures	Significance of Residual Effect After Mitigation
Impact PS-2: Construction activities may result in additional calls for emergency personnel and may require specialized safety and rescue training and equipment. This impact is considered adverse but not significant (class III).	Class III	Mitigation PS-5 All contractors shall comply with relevant provisions of CAL-OSHA CAC Title 8 regarding the provision of safety and rescue equipment, to the satisfaction of the Fire Chief.	Less Than Significant
Impact PS-3: A break or malfunction in the collection system could result in the accidental release of untreated effluent. These impacts are considered significant unless mitigated (Class II).	Class II	Mitigation PS-1 Hazardous Materials Management Plan. A Hazardous Materials Management Plan shall be developed and submitted to the County of San Luis Obispo Health Department for approval. The plan shall identify hazardous materials utilized onsite and their characteristics; storage, handling and training procedures; and spill contingency procedures. Additionally, the Plan should address fuel storage at the pump station sites.	Less Than Significant
Impact PS-4: Pump stations will be equipped with emergency generator facilities to ensure operation during power outages. Each pump station will include an underground diesel storage tank which could release fuel to the pump enclosure in the event of upset. These impacts are considered adverse but less than significant (Class II).	Class II	Mitigation PS-1	Less Than Significant
Impact PS-5: Chemicals utilized within the proposed treatment process would be limited to agents utilized for bio-solids thickening, and to ensure adequate removal of nitrogen. Agent utilized (alum, polymer and methanol) are liquids with low human contact risks. This is considered to be potentially significant, but mitigable (Class II).	Class II	Mitigation PS-1 Mitigation	Less Than Significant
Impact PS-6: Operation of the collection, treatment and disposal system will increase the demand for electrical power. This impact is considered adverse but not significant (Class III).	Class III	Mitigation PS-2Best Available Technology. Project implementation shall be designed to conform with energy efficiency requirements outlined in Title 24 of the California Code. To the extent feasible, design of the proposed project should incorporate best available technology for energy efficiency . Additionally San Luis Obispo County APCD recommends the following measures be implemented to further reduce or offset long term emissions: • Provide an on-site lunch room with refrigeration and food preparation (i.e., microwave) appliances to reduce daily trips to and from the treatment facility; • Use of double paned windows in office area where interior heating/air conditioning will occur; • Use of energy efficient interior lighting where applicable.	Less Than Significant
Impact PS-8: A malfunction of the treatment process could adversely affect water quality in a portion of the supply serving Los Osos. This impact is considered adverse but not significant because of measures incorporated into the project description (Class III).	Class III	None required	Less Than Significant
Impact PS-9: Disposal of bio-solids in a Class I or Class II landfill could adversely impact landfill capacity. This impact is considered significant unless mitigated (Class II).	Class II	PS-3 Prior to operation of the wastewater treatment system, the Los Osos CSD shall either 1) secure a contract for bio-solids disposal with a land disposal or recycling facility or 2) construct a bio-solids recycling facility that satisfies Title 40, Section 503 of the Code of Federal Regulations.	Less Than Significant
5.10 Visual Resources			
Impact AES-3: Construction activities associated with the treatment plant would result in temporary, short-term impacts on views from Los Osos Valley Road as well as nearby land uses. These impacts are considered significant unless mitigated (Class II).	Class II	Mitigation AES-1: Construction staging Area. For all aspects of the project, construction staging areas shall be located away from sensitive viewing areas to the extent feasible. Before construction activities begin, an area for construction equipment storage away from direct views of sensitive viewing corridors (e.g. residences and major roads in the project area) shall be designated.	Less Than Significant

Table 2-1: Summary of Significant Adverse Impacts and Mitigation Measures By Environmental Topic

Impact	Significance	Mitigation Measures	Significance of Residual Effect After Mitigation
Impact AES-4: Construction of the treatment facility and park would permanently alter the visual character of views from Los Osos Valley Road and Palisades Drive, and to a lesser degree from Skyline Drive and Ramona Avenue. The quality of the views from Los Osos Valley Road are considered vivid and in tact. In addition, the quality of the views from the surrounding residences will also be altered. These impacts are considered significant unless mitigated (Class II).	Class II	Mitigation AES-2:Conformance With County Development Standards. The final design and construction plans for the park and treatment plant site shall be consistent with relevant visual resource protection policies and standards of the San Luis Obispo County General Plan, Estero Area Plan, Coastal Zone Framework for Planning, and the Agriculture and Open Space Element. Mitigation AES-3:Landscaping Plan. A final landscaping plan shall be prepared for the entire project site and approved by the County prior to building permit issuance for the Tri-W site. Said landscaping plan shall emphasize native plant materials and shall include sufficient planting to screen views of the project from nearby roads and residential developments. The goal for the landscaping plan shall be to visually integrate the project into the community by creating a park-like setting, while preserving and enhancing existing views. Mitigation AES-4:Revegetation Plan. A revegetation plan shall be prepared to the satisfaction of the US Fish and Wildlife, California Department of Fish and Game and San Luis Obispo County for the 8-acre portion of the Broderson site that will be disturbed by the installation of the disposal leach fields. The plan shall be prepared by a qualified landscape architect and/or botanist and shall, to the extent feasible, restore the site to its condition prior to disturbance.	Less Than Significant
5.11 Biological Resources			
Impact BIO-2 Construction of the collection system will largely take place in existing road rights-of way, and is not likely to impact sensitive plants or animals. Impacts are less than significant (Class III). Where construction will impact sensitive biota, such as in undeveloped lots, pre-construction surveys will take place to minimize impacts. This impact is significant, but mitigable (Class II).	Class II	Mitigation BIO-1. Where construction will necessitate disturbance in undeveloped lots, wetlands and other potentially sensitive areas, a pre-construction survey will be conducted to assess and minimize any potential impacts.	Less Than Significant
Impact BIO-4 Loss of coastal scrub habitat of Morro shoulderband snail (Class I).	Class I	Mitigation BIO-4 Mitigate for Loss of Coastal Scrub Habitat. Agency Consultation/Permitting. Project implementation would result in direct or indirect disturbance or potential take of several federal and state listed species. Project implementation would require authorization for this disturbance or potential take from both the U.S. Fish and Wildlife Service (USFWS) and the California Department of Fish and Game (CDFG). Authorization requirements are outlined below: A. USFWS. Authorization for take by USFWS would require formal consultation with USFWS pursuant to section 7 of the Endangered Species Act. B. CDFG. Authorization for take by CDFG would require a Memorandum of Understanding (MOU) and Management Authorization (MA) pursuant to Section 2050 et seq. of the California Fish and Game Code. Development of a MOU/MA would be based upon the Section 7 USFWS consultation discussed above. C. Acquire Additional Habitat. As part of the consultation efforts described above, the District will acquire additional habitat sufficient to compensate for the loss of habitat of the Morro shoulderband snail, Morro Bay kangaroo rat, Morro Bay blue butterfly, and other species dependent upon the coastal scrub habitat due to the direct impacts of the project. The land acquired should have the following qualities: ‣ The land should be a parcel or group of parcels containing approximately 40 acres. The preferred site for mitigation is the northerly Broderson parcels. ‣ The land should be habitat in or contiguous to the proposed critical habitat area as designated by the USFWS. Ideal land that meets this criteria is located around the community of Los Osos in the area studied for the greenbelt program by the Land Conservancy.	Significant and Adverse

Table 2-1: Summary of Significant Adverse Impacts and Mitigation Measures By Environmental Topic			
Impact	Significance	Mitigation Measures	Significance of Residual Effect After Mitigation
Impact BIO-4	Class I	▸ Any disturbed portion of the land should be capable of restoration to a native habitat. This would mean that the soils have not been removed or fill placed on the site that are unsuitable for the native plantings (other than small amounts). The land should be free of structures or debris, or capable of being cleared of any structures. ▸ The land should have primarily aeolian sand deposits; be in a stabilized condition (not mobile); have an open canopy; be of the appropriate aspect and other meteorological conditions. ▸ The land should be granted to an appropriate agency or conservation organization in perpetuity with deeded guarantees of non-development or transfer (unless to another like organization). The protection of the land may allow for some passive public activities, such as hiking, scientific investigation, and low-impact education. D. Restoration. After securing the land, the District should restore the land so that it functions as suitable habitat for many of the local species of plants and wildlife described in this EIR whose existence is endangered or of concern. One of the benefits of this mitigation approach is that a single program will mitigate the impacts to all or most of the species described in the setting section. Restoration of the land should include the following: ▸ Removal of invasive exotic plant species. This may mean removal of all plants by grading, or a program of hand labor, depending upon the condition of the land. If the amount of invasives is relatively small, the work should leave as much of the existing native vegetation intact. ▸ Removal of structures or debris. ▸ Regrading of any unnatural mounds, holes or berms previously created on the site. ▸ A planting program of a mixture of indigenous plant species that serve to restore the site *and* serve multiple species' needs, especially the Morro shoulderband snail, Morro Bay blue butterfly, Black legless lizard, and potential future re-introduction of the Morro Bay Kangaroo Rat. This will include Dune Lupine for the Morro Bay blue butterfly. The final planting program should be developed in consultation with CNPS, CDFG and USFWS. ▸ An ongoing maintenance and observation program. Mitigation BIO-6 Relocate Sensitive Species. Qualified biologists should remove as many Morro shoulderband snails as practicable from any area of proposed disturbance. These should be relocated nearby to suitable habitat. Mitigation BIO-15 Compensate for loss of habitat at the Powell or Eto leach field site. The proponent shall acquire land between one to two as much taken for the designed area of the leach fields. The approach to this mitigation will be the same as described in BIO-4.	Significant and Adverse

Table 2-1: Summary of Significant Adverse Impacts and Mitigation Measures By Environmental Topic				
Impact		Significance	Mitigation Measures	Significance of Residual Effect After Mitigation
Impact BIO-4			Mitigation BIO-16 The LOCSD, in conjunction with the California Department of Fish and Game (CDFG), the US Fish and Wildlife Service (USF&WS), San Luis Obispo County and the California Coastal Commission shall prepare and implement a Habitat Conservation Plan (HCP) or Natural Community Conservation Plan (NCCP) for the long-term preservation of habitat remaining within the Los Osos Greenbelt, including habitat remaining on individual vacant lots. The HCP/NCCP shall identify the habitat resources and the quality of those resources on the remaining vacant properties within the Greenbelt. The range of potential conservation programs to be considered in the HCP/NCCP shall include, but not be limited to the following: ▸ The identification of policies and programs to be incorporated into the Estero Area Plan aimed at the long-term preservation of sensitive biological resources in the Los Osos area; such policies and programs may include: – Transfer of development credits – Clustering – Avoidance of sensitive resources in site design – Changes in density and land use – Incorporation of open space into the design of new development ▸ Programs aimed at facilitating coordination among agencies and organizations involved in management and conservation/preservation of sensitive resources, including USF&WS, CDFG, California Coastal Commission, San Luis Obispo County, the LOCSD, MEGA, NEP, Land Conservancy of San Luis Obispo County, and others; ▸ The creation of a landbank program to facilitate the purchase of properties with high quality habitat within the Greenbelt, to be repaid over time from fees on new building permits; ▸ Programs for the acquisition of properties within the Greenbelt with significant habitat resources;	
Impact BIO-5	Potential Loss of Wintering Monarch Butterfly Roost Sites. Monarch butterflies use eucalyptus trees as winter roost sites. Although this species is not listed, the removal of roosting sites is considered to be a significant, but mitigable impact (Class II).	Class II	Mitigation BIO-2. Loss of Wintering Monarch Butterfly Roost Sites. The project proponent shall avoid habitat where feasible. A qualified monarch butterfly specialist will conduct preconstruction surveys for the monarch butterfly during the months of October to February. Potential roost sites that could be affected during construction will be fenced.	Less Than Significant
			Mitigation BIO-11. Avoid the Loss of Wintering Monarch Butterfly Roost Sites. The project proponent shall avoid habitat. A qualified monarch butterfly specialist will conduct preconstruction surveys for the monarch butterfly within 0.5 miles of the proposed access road and groundwater injection sites. Potential roost sites that could be affected during construction will be fenced.	

Table 2-1: Summary of Significant Adverse Impacts and Mitigation Measures By Environmental Topic			
Impact	Significance	Mitigation Measures	Significance of Residual Effect After Mitigation
Impact BIO-6 Morro Bay blue butterfly. The proposed project will not impact areas of suitable habitat for the butterfly (namely dune lupine scrub). Impacts are less than significant (Class III).	Class II	Mitigation BIO-12. Avoid or Compensate for Loss of Morro Bay blue Butterfly Habitat. Where feasible, the project proponent will avoid Morro Bay blue butterfly habitat. Surveys for Morro Bay blue butterfly presence will be conducted by a qualified wildlife biologist in late April or early May. If the habitat is likely to be disturbed during construction, fencing will be placed around areas of suitable habitat. Where avoidance is not feasible, the project proponent, will compensate for the loss of potential Morro Bay blue butterfly habitat by setting aside an area of equal or better quality than the habitat to be impacted (see Mitigation BIO-4). The project proponent will ensure that the compensation area is not adversely affected by human disturbance, vandalism, off-road vehicle use, or pesticide application. Selection of a specific compensation site will be made by mutual agreement between the project proponent, the California Department of Fish and Game, the United State Fish and Wildlife Service, and the agency or entity responsible for managing the compensation site. Mitigation BIO-4	Less Than Significant
Impact BIO-7 Potential Loss of or Disturbance to Raptors. Eucalyptus stands, in the absence of other tall trees, are used by raptors for nesting purposes. Raptors such as the white-tailed kite, sharp-shinned hawk, Cooper's hawk, and potentially the golden eagle may utilize eucalyptus as nesting habitat. In addition, species such as the red-shouldered hawk and the red-tailed hawk may utilize these groves for nesting habitat. The groves may also be potential wintering habitat for species such as the prairie falcon and sharp-shinned hawk (Class II).	Class II	Mitigation BIO-3. Loss of Raptor Habitat. The project proponent will conduct a preconstruction survey for nesting raptors. Depending on the timing of construction, the project proponent will conduct a preconstruction survey during spring or early summer (April to early July) to determine whether nesting raptors or species protected by State and/or Federal law are present on or within the project area. Winter surveys are also recommended and should be done by a qualified wildlife biologist. If the survey results indicate that nesting raptors or protected species are present on or within the project area, the nest tree or area will be fenced or otherwise demarcated and a 500-foot no-disturbance buffer will be established until the nesting activity is completed and the young have fledged. The distance and placement of the buffer area will be determined in consultation with the CDFG. Only after nesting activities have ceased will construction be allowed to continue. All potentially suitable nesting trees will be removed prior to the breeding season.	Less Than Significant
Impact BIO-7	Class II	Mitigation BIO-13. Avoid Loss of Nesting Raptor Habitat. The project proponent will conduct a preconstruction survey for nesting raptors. Depending on the timing of construction, the project proponent will conduct a preconstruction survey during spring or early summer (April to early July) to determine whether nesting raptors or species protected by State and/or Federal law are present on or within the project area. Winter surveys are also recommended. If the survey results indicate that nesting raptors or protected species are present on or within the project area, the nest tree or area will be fenced or otherwise demarcated and a 500-foot no-disturbance buffer will be established until the nesting activity is completed and the young have fledged. The distance and placement of the buffer area will be determined in consultation with the CDFG. Only after nesting activities have ceased will construction be allowed to continue. Nesting habitat will be marked and avoided during construction and operation activities of the proposed project.	Less Than Significant

Table 2-1: Summary of Significant Adverse Impacts and Mitigation Measures By Environmental Topic					
Impact		Significance	Mitigation Measures		Significance of Residual Effect After Mitigation
Impact BIO-8	Potential Destruction of Morro Bay Kangaroo Rat Habitat. The Morro Bay kangaroo rat is a federally and state listed endangered species. The Morro Bay kangaroo rat has not been seen observed on the Morro Shores or Broderson sites previously. Recent surveys (June 2000) did not find tracks or sign. Dr. Michael O'Farrell has determined that additional surveys using trapping protocol at Morro Shores and Broderson would not be fruitful (Class I).	Class I	Mitigation BIO-10.	Avoid or Compensate for Loss of Morro Bay Kangaroo Rat Habitat. Due to the limited and localized distribution of the Morro Bay kangaroo rat, the project proponent will make every effort to avoid the loss of suitable Morro Bay kangaroo rat habitat. Preconstruction surveys will be conducted by a qualified wildlife biologist. These surveys may include a combination of techniques. The project proponent will work with CDFG and USFWS to determine the best means of surveying for the kangaroo rat. The project proponent will compensate for loss of habitat in an area within the limited range of the Morro bay kangaroo rat and of equal or better quality than the habitat that will be impacted (see Mitigation BIO-4). The project proponent shall ensure that the site is not adversely affected by human disturbance, domestic animal disturbance, or the use of substances toxic to the Morro Bay kangaroo rat.	Significant and Adverse
			Mitigation BIO-14.	Avoid or Compensate for Loss of Morro Bay Kangaroo Rat Habitat. Due to the limited and localized distribution of the Morro Bay kangaroo rat, the project proponent will make every effort to avoid the loss of suitable Morro Bay kangaroo rat habitat. Preconstruction surveys will be conducted by a qualified wildlife biologist. The project proponent will work with CDFG and USFWS to determine the best method of survey for this species. Where avoidance is not feasible, the project proponent will compensate for loss of habitat in an area within the limited range of the Morro bay kangaroo rat and of equal or better quality than the habitat that will be impacted. (See Mitigation BIO-4) The project proponent shall ensure that the site is not adversely affected by human disturbance, domestic animal disturbance, or the use of substances toxic to the Morro Bay kangaroo rat. Selection of a compensation site will be made by mutual agreement of the project proponent, CDFG, USFWS, and the entity or agency responsible for managing the compensation site.	
			Mitigation BIO-4		
Impact BIO-12	Construction of the leach fields will result in disturbance of vegetation considered sensitive by CDFG. Impacts are significant, and adverse (Class I).	Class I	Mitigation BIO-5	Minimize Disturbance of Coastal Scrub, Chaparral, and Coast Live Oak Woodland Habitats Located Around the Perimeter of the Leach Field Sites During Construction. Minimize, to the extent feasible, the amount of disturbance of land beyond the actual area of development. This can be accomplished by identifying minimum activity area required, and establishing a physical construction limit beyond which equipment and storage of material would not extend. ▸ Clearly identify and mark the perimeter of the proposed leachfield construction zone prior to and during construction onsite with highly visible temporary fencing. ▸ Restrict the use of all heavy equipment and vehicles to areas located inside of the identified construction zone throughout the duration of construction. ▸ Clearly identify and mark the proposed access route to the construction zone of the leachfield, and limit all construction traffic to areas located within the identified access route. ▸ Leave areas of undisturbed habitat between portions of the leachfield, rather than clearing a single, contiguous area.	Significant and Adverse

Table 2-1: Summary of Significant Adverse Impacts and Mitigation Measures By Environmental Topic				
Impact	Significance	Mitigation Measures		Significance of Residual Effect After Mitigation
		Mitigation BIO-7	Restore Sensitive Habitats Disturbed During the Construction Phase of the Leach Fields. Following completion of construction of the proposed leach fields, revegetate all areas located within or around the area that previously contained native vegetation and that were disturbed during construction. ▸ Revegetate only with appropriate indigenous native vegetation. At a minimum, the structure and composition of habitats restored should reflect pre-project site conditions or better. ▸ All exotics that escape cultivation should be removed on a regular basis. ▸ All plantings should be grown from native parent stock collected onsite, and will be propagated by a native plant nursery specialist. In addition, the health and maintenance of all replacement vegetation should be monitored for a sufficient duration and frequency to ensure successful establishment of the vegetation.	
Impact BIO-12	Class I	Mitigation BIO-8	Control Introduction of Invasive Exotic Plants. To control introduction of invasive exotic plants on site, implement the following measures during construction and incorporate into the design guidelines of the proposed leach fields, as appropriate. ▸ Use only clean fill material (free of weed seeds) within the construction zone of the proposed project. ▸ Thoroughly clean all construction equipment prior to being moved onto and used at the site. ▸ Prohibit planting or seeding of disturbed areas with nonnative plant species; ▸ Control the establishment of invasive exotic weeds in all disturbed areas.	Significant and Adverse

Table 2-1: Summary of Significant Adverse Impacts and Mitigation Measures By Environmental Topic			
Impact	Significance	Mitigation Measures	Significance of Residual Effect After Mitigation
		Mitigation BIO-9 Avoid or Minimize Disturbance of Special-Status Plants Located Within and Adjacent to the Perimeter of the Project Site Construction Zone. Implement the following measures prior to and during construction to avoid or minimize unnecessary disturbance of special-status plants occupying the vicinity of the project site. ‣ Retain a qualified botanist to conduct focused surveys for special-status plant species during the appropriate flowering periods for the various species that are known to occur or have potential to occur within the construction zone of the project site, based on the presence of suitable habitat. ‣ Clearly map and identify each individual or groups of special- status plants observed during the focused survey with highly visible flagging. Morro Manzanita located in the southern portion of the Broderson site should be marked with highly visible flagging and completely avoided. ‣ Provide instruction to construction personnel on avoiding unnecessary disturbance of areas marked with flagging and identify the locations of all groups of special-status plants. ‣ Transplant Individual Special-Status Plants Located With the Construction Zone of the Leach Fields. Individual special-status plants that are identified as occurring within the proposed construction zone should be identified. If it is determined that avoidance or disturbance of the identified plants is not feasible, implement transplanting operations for the identified species. It should be noted that the success of transplanting is highly dependent on the specific taxon. Transplanting of some species currently occupying the site may not be as successful as for others, or may fail entirely. Therefore, prior to implementing these operations, previous case studies should be researched to determine which plants are expected to have reasonable opportunities for survival following transplantation, and determine which techniques have been successful previously. If transplanting is then determined to be a viable option for some identified special-status plants, implement the following measures: 1.Avoid disturbance of the root system of each plant during transplanting. 2.A plant should only be moved to a habitat that contains site conditions similar to the location previously occupied by each plant. 3. Closely monitor the success of transplanted species. Mitigation BIO-4	
Impact BIO-13 Destruction of proposed critical habitat for the Morro shoulderband dune snail. The development of eight acres of leach field will result in the degradation or loss of habitat in this area. This is a significant, unmitigable impact (Class I).	Class I	Mitigations BIO-5, BIO-6, BIO-7, BIO-8, BIO-9	Significant and Adverse
Impact BIO-14 Potential Destruction of Wintering Monarch Butterfly Roost Sites. Monarch butterflies use eucalyptus trees as winter roost sites. Although this species is not listed, the removal of roosting sites is considered to be a significant impact. The construction of the proposed access road and the use of the proposed access road may create noise disturbance that could affect the roosting sites of the monarch butterfly. Construction and operation of the proposed disposal sites may cause loss of habitat and increase the noise disturbance to the monarch butterfly roosting sites as well (Class II).	Class II	Mitigation BIO-2, BIO-5, BIO-7, BIO-8, BIO-9, BIO-11	Less Than Significant
Impact BIO-15 Potential Disturbance to the Morro Bay Blue Butterfly. The Morro bay blue butterfly is a federal species of concern. This species is found in coastal sage scrub habitats. Implementation of the proposed project will result in the removal and/or destruction of coastal sage scrub acreage in the Broderson site (Class II).	Class II	Mitigations BIO-5, BIO-7, BIO-8 BIO-9, BIO-12	Less Than Significant

Table 2-1: Summary of Significant Adverse Impacts and Mitigation Measures By Environmental Topic

Impact	Significance	Mitigation Measures	Significance of Residual Effect After Mitigation
Impact BIO-16 Potential Loss or Disturbance to Raptors. Eucalyptus stands, in the absence of other tall trees, are used by raptors for nesting purposes. Raptors such as the white-tailed kite, sharp-shinned hawk, Cooper's hawk, and potentially the golden eagle may utilize eucalyptus as nesting habitat. In addition, species such as the red-shouldered hawk and the red-tailed hawk may utilize these groves for nesting habitat. The groves may also be potential wintering habitat for species such as the prairie falcon and sharp-shinned hawk (Class II).	Class II	Mitigations BIO-3, BIO-5, BIO-7, BIO-8, BIO-9, BIO-13	Less Than Significant
Impact BIO-17 Potential Destruction of Morro Bay Kangaroo Rat Habitat. The Morro Bay kangaroo rat is a federally and state listed endangered species. Though the Morro Bay kangaroo rat has not been seen in the project area during previous site visits, there is potential for this species to occur (Class I).	Class I	Mitigations BIO-4, BIO-5, BIO-7, BIO-8, BIO-9, BIO-10, BIO-14	Significant and Adverse
Impact BIO-18 Disturbance of Suffrutescent Wallflower and Dune Almond. Suffrutescent wallflower is considered a plant of limited distribution by CNPS (List 4). The dune almond is considered a plant of limited distribution and is on List 4 on the CNPS Inventory. Both of these plants occur in the Broderson site. Impact to these plants is not considered significant due to their distribution in the area (Class III).	Class II	Mitigations BIO-5, BIO-7, BIO-8	Less Than Significant
Impact BIO-19 Destruction of proposed critical habitat for the Morro shoulderband dune snail. The development of four acres of leach field will result in the degradation or loss of habitat in this area. This is a significant, unmitigable impact (Class I).	Class I	Mitigations BIO-4, BIO-6, BIO-7, BIO-8, BIO-15	Significant and Adverse
Impact BIO-20 Potential Destruction of Morro Bay Kangaroo Rat Habitat. The Morro Bay kangaroo rat is a federally and state listed endangered species. Though the Morro Bay kangaroo rat has not been seen in the project area during previous site visits, there is potential for this species to occur. This is a significant, unmitigable impact (Class I).	Class I	Mitigations BIO-4, BIO-7, BIO-8, BIO-15	Significant and Adverse
Impact BIO-21 Long-term operation of leach fields could result in the disturbance of Coastal Scrub habitats from increased groundwater elevations. However, ground water modeling conducted by Metcalf and Eddy (1996) indicate that operation of the disposal system would not significantly affect ground water levels within the root zone below the site. However, plants growing directly above the leach lines may encounter higher soil moisture content. Therefore, this impact is considered *significant but mitigable (Class II).*	Class II	Mitigation BIO-9	Less Than Significant

3. Project Description

Project Proponent

Los Osos Community Services District
2122 9th Street
Los Osos, California 93402

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Project Location

Los Osos is an unincorporated coastal community of 14,606 residents located at the south end of Morro Bay about twelve miles west of the City of San Luis Obispo (see Figure 1-2). Los Osos which extends to the south and east of the Bay into the lower foothills of the Irish Hills. The City of Morro Bay lies about two miles to the north.

The physical development of Los Osos began as a scattering of beach vacation homes in the early 1960s. Drawn by the scenic bay-front setting and affordable land costs, the community's permanent population grew steadily during the 1970s and into the mid-1980s, spurred in part by the construction and operation of Diablo Canyon Nuclear Power plant and by the expansion of the California Polytechnic State University at San Luis Obispo.

The development pattern in Los Osos consists of fairly long, narrow (25'-50') residential lots located on wide (40'-80') streets arranged generally in a grid. The majority of the community was constructed on the ancient dune systems formed by centuries of wind-blown beach sand deposited along the south end of Morro Bay. As a result, the terrain consists of gently rolling hills and sandy, unconsolidated soils. The sandy soils and marine climate combine to produce a unique coastal ecosystem that is home to several plant and animal species found nowhere else in the world.

Project Objectives

The Los Osos Community Services District has established the following objectives for the initial phase of the Wastewater Facilities Project:

1. Collect, treat and dispose of wastewater within the Regional Water Quality Control Board Prohibition Zone and manage septic systems outside the collection area so as to improve basin groundwater quality, protect public health, and minimize degradation of the natural environment related to the management of wastewater.

2. Protect Morro Bay and the Morro Bay Estuary by cleansing basin groundwater and storm water crossing wastewater project sites.

3. Provide wastewater collection, treatment and disposal capacity for existing and future land uses within the District's Wastewater Collection Area in accordance with the Estero Area Plan.

4. End the building moratorium so that the community of Los Osos may continue to evolve in accordance with the community's vision for the future and the Estero Area Plan.

5. Construct and operate groundwater harvesting improvements aimed at achieving a sustainable water supply for full community buildout without importing water from outside sources.

6. Minimize the project's economic impact on property owners and customers by selecting technologies and facilities with low capital cost and high cost effectiveness.

7. Minimize adverse societal impacts by selecting appropriate technologies that minimize energy use and sludge production.

8. Minimize disruption to the community and risk to construction workers by selecting low impact construction technologies and scheduling.

9. Provide for the mitigation of habitat loss on project sites and small undeveloped lots within the Prohibition Zone by facilitating the preservation and management of suitable replacement habitat.

10. Provide sufficient redundancy to satisfy routine maintenance needs and meet unexpected emergency conditions.

11. Provide for initial disposal of treated wastewater so as to maximize cost effective recycling on open space and initiate cleansing of portions of the upper aquifer.

12. Implement a water conservation program to minimize consumption of this valuable resource.

13. Design the collection system to facilitate future connection of development concentrations outside the Prohibition Zone but within the Los Osos Community Services District.

14. Enhance Los Osos' "Sense of Community" by providing the opportunity for aesthetically pleasing multi-use facilities that include amenities such as trails, bikeways and open space.

In addition, the Los Osos Community Services District has established the following objectives for the subsequent phases of the Wastewater Facilities Project:

1. Pursue a strategy for the composting and recycling of treated wastewater sludge (bio-solids) into a soils amendment or other use.

2. Connect additional areas of development concentration outside of the Prohibition Zone ordered to be served by the RWQCB.

Specific Objectives that Qualify the Project for a State Revolving Fund (SRF) Loan

As mentioned above, the community of Los Osos is currently subject to a moratorium on the installation of new septic systems imposed by the RWQCB due to nitrate contamination in the shallow groundwater aquifer. A primary purpose of the proposed wastewater collection, treatment and disposal project is to correct these water quality problems as a means to protect public health and to alleviate the degradation of the natural environment from such pollution.

Discharge Objectives

The Wastewater Facilities Project is being designed to meet the following interim discharge requirements for the community of Los Osos established by the Regional Water Quality Control Board through Order No. 97-8 Waste Discharge Requirements for San Luis Obispo County Services Area 9, Baywood Park/Los Osos, San Luis Obispo County:

The effluent discharged to the disposal system shall not exceed the following tentative limitations set by the Regional Water Quality Control Board:

Table 3-1: Tentative Effluent Discharge Requirements
Source: WDR Order No. 97-8

Constituent	Units	Monthly (30 day) Average Concentration	Daily Maximum Concentration
Settleable Solids	milliliters per liter	0.1	0.5
Biochemical Oxygen Demand	milliliters per liter	60	100
Suspended Solids	milliliters per liter	60	100
Total Nitrogen (as N)	milliliters per liter	7	10
Dissolved Oxygen	Minimum 2 milligrams per liter at any given time.		

Project Description

Components

The Project evaluated by this combined DEIR is the implementation of a comprehensive wastewater management program for the community of Los Osos, consisting of the following components:

A. A Septic System Maintenance and Management Program (SSMMP);
B. A wastewater collection system;
C. A wastewater treatment facility;
D. Wastewater disposal facilities and harvesting and monitoring wells;
E. Wastewater sludge handling facilities at the wastewater treatment plant to enable the hauling of treated to a disposal or recycling facility;
F. Appurtenant structures and on-site amenities;
G. Construction activities;
H. A program for the mitigation of direct impacts to habitat for endangered species;

Description

A. Septic System Maintenance and Management Program (SSMMP). A Septic System Maintenance and Management Program is proposed which would affect all properties within the General Plan urban reserve line that lie outside the RWQCB Prohibition Area, as illustrated by (see Figure 3-2), in addition to the neighborhoods of Bayview Heights and the Martin Tract, which are within the Prohibition Area but outside the wastewater collection area. Within the SSMMP, each of the 1,051 remaining septic tanks and leach fields would remain in place and would be maintained by the Los Osos Community Services District. On a regular schedule (about once every five years) each septic tank would be pumped of septage and the septage would be transported to the wastewater treatment facility. Substandard septic systems would need to be upgraded to current standards by individual property owners.

The purpose and function of the SSMMP are:

- To provide periodic inspections of all septic tanks and leaching systems outside the collection area;
- To adopt standards for the maintenance, repair and/or replacement of tanks and leaching systems to conform with State and County requirements;
- To collect and transport septage from septic tanks to a septage treatment facility;
- To provide information regarding proper septic system maintenance and household waste management;
- To promote water conservation;
- To provide free or reduced cost biodegradable toilet paper to reduce lignin-based toilet paper sludge buildup.

The program would include initial inspections of septic tanks to determine their efficacy and age, as well as ongoing routine inspections and septage hauling and disposal.

B. Collection System. The collection system is conceptually illustrated by Figure 3-3 and consists of the installation of about 204,000 feet of sewer pipe; Table 3-2 provides a preliminary breakdown of the pipe sizes and corresponding lengths. Within the collection area (the RWQCB Prohibition Area) all of the septic tanks would be abandoned and all sewage would be collected through a series of gravity and pressurized (pumped) sewer lines which would convey waste to a treatment plant. The collection system would also include control telemetry to monitor and manage collection operations.

The proposed collection system would serve a buildout population of 17,963 within the Collection/RWQCB Prohibition Zone (4,774 connections), or an area roughly 87 percent of the community as shown on Figure 3-2. Collection system components include main laterals, piping connections to the property line, pumps and effluent filters. Preliminary estimates are that about 22% of the individual connections would occur at the rear of a property and that about 600 connections will require an onsite pump.

The collection system will be a conventional gravity system consisting of three major components:

- Connection lines at each property to convey flow from the dwellings to the sewer main in the street;
- Sewer mains to convey to flow to the treatment plant;
- Pump stations to lift the flow over hills and high areas.

The connection lines will be four inch diameter pipes generally buried to a depth of two to three feet; approximately 4,774connections will be made. The length of the connection lines will vary depending upon the individual property and whether the existing septic tank is in the front yard or back yard.

Approximately 204,000 feet of sewer mains will be constructed. The sewer mains will vary between eight inches and 15 inches in diameter. It is expected that more than 90 percent of mains will be eight-inch diameter. Most of the mains will be buried at a depth of less than 11 feet. Half of these pipes will be buried at less than seven feet. It is expected that less than 5 percent of the mains will be at depths greater than 11 feet. As can be seen from these numbers, the conventional system will be fairly shallow to minimize surface and street disruption during construction.

In addition to the gravity and pressurized sewer lines, a series of up to 11 pump stations would be needed (see Figure 3-3). Pump stations provide continuous pressure in the sewer line to enable the transfer of wastewater to the treatment plant from areas that cannot be served by gravity. Pump stations would be located on vacant lots purchased by the LOCSD or within public rights-of-way. These stations will generally be required in low-lying areas and where sewer depths approach 11 feet in depth. The stations will use electrically driven submersible pumps set in precast concrete vaults with two pumps per station. In approximately half of the pump stations the pumps will be 10 horsepower or less. These stations will require a concrete vault approximately 6 feet wide by 8 feet long. The remainder of the stations will require pumps between 30 and 85 horsepower in concrete vaults approximately 8 feet wide by 12 feet long. The depth of all the pump stations will generally be less than approximately fifteen feet. The concrete vaults will be sited within lightly traveled public right of ways. They will be fitted with traffic rated access hatches which will allow maintenance of the pumps and station structure. The pumps will be guide rail mounted to allow rapid and easy removal or installation, minimizing the amount of time that the access hatches will have to be opened. The precast vaults will be designed to minimize solids deposition and holding time in order to avoid odor generation. The pumps will run nearly silently and will not cause noise nuisances to nearby residences. Immediately adjacent and behind the pump station vault will be a shallow valve vault with the valves and discharge piping needed to operate the pump station. Also mounted close to the pump station will be a weather proof and vandal resistant electrical control panel to control the operation of the pumps. Table 3-3 provides a summary of the different pump station components.

Solids from all septic systems outside the collection system area and within the SSMMP will be periodically pumped and transported by truck to the septage receiving and treatment facility incorporated into the treatment plant (see below). Septage will be pumped from every maintained septic tank at least once every five years. Assuming 1,051 septic tanks and 250 working days per year, this amounts to an average of about 210 septic tanks per year, or about 4,000 gallons per week (2-3 tanker truck loads). The septage receiving station, consisting of a truck drive-through, discharge area and underground vaults, would be enclosed within the Wastewater Treatment Facility and would be fully odor scrubbed.

Table 3-2
Collection System Components

Pipe Diameter	Estimated Length
8" - 12"	194,000 feet
> 12"	10,000 feet
Total:	204,000 feet

Table 3-3
Pump System Sizes and Quantities

Pump Size	Quantity
10 horsepower or less	3
30 - 85 horsepower	8

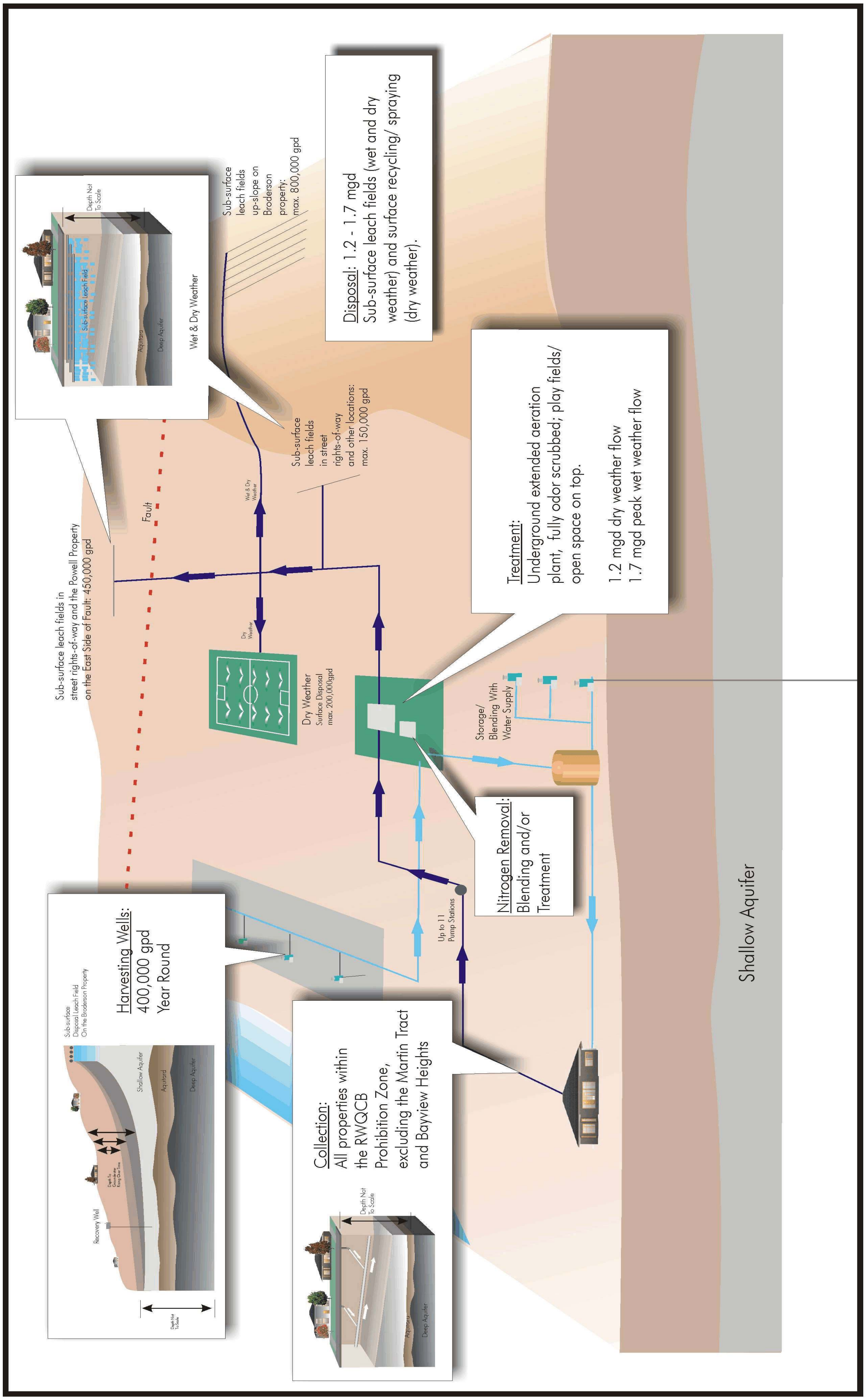

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Figure 3-1
Wastewater Facilities Project Components

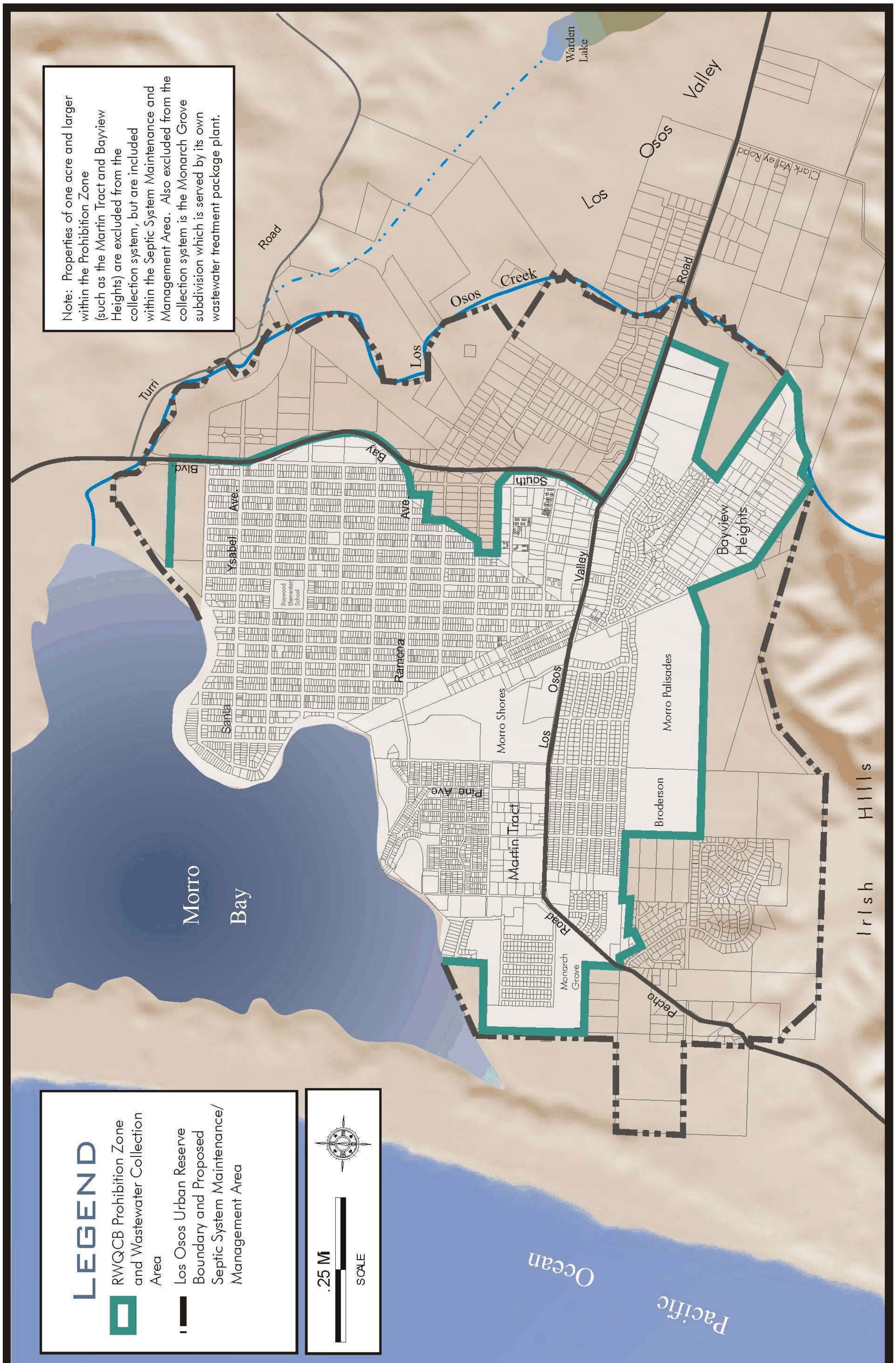

Figure 3-2
Wastewater Collection Area & Proposed Septic System Maintenance and Management District

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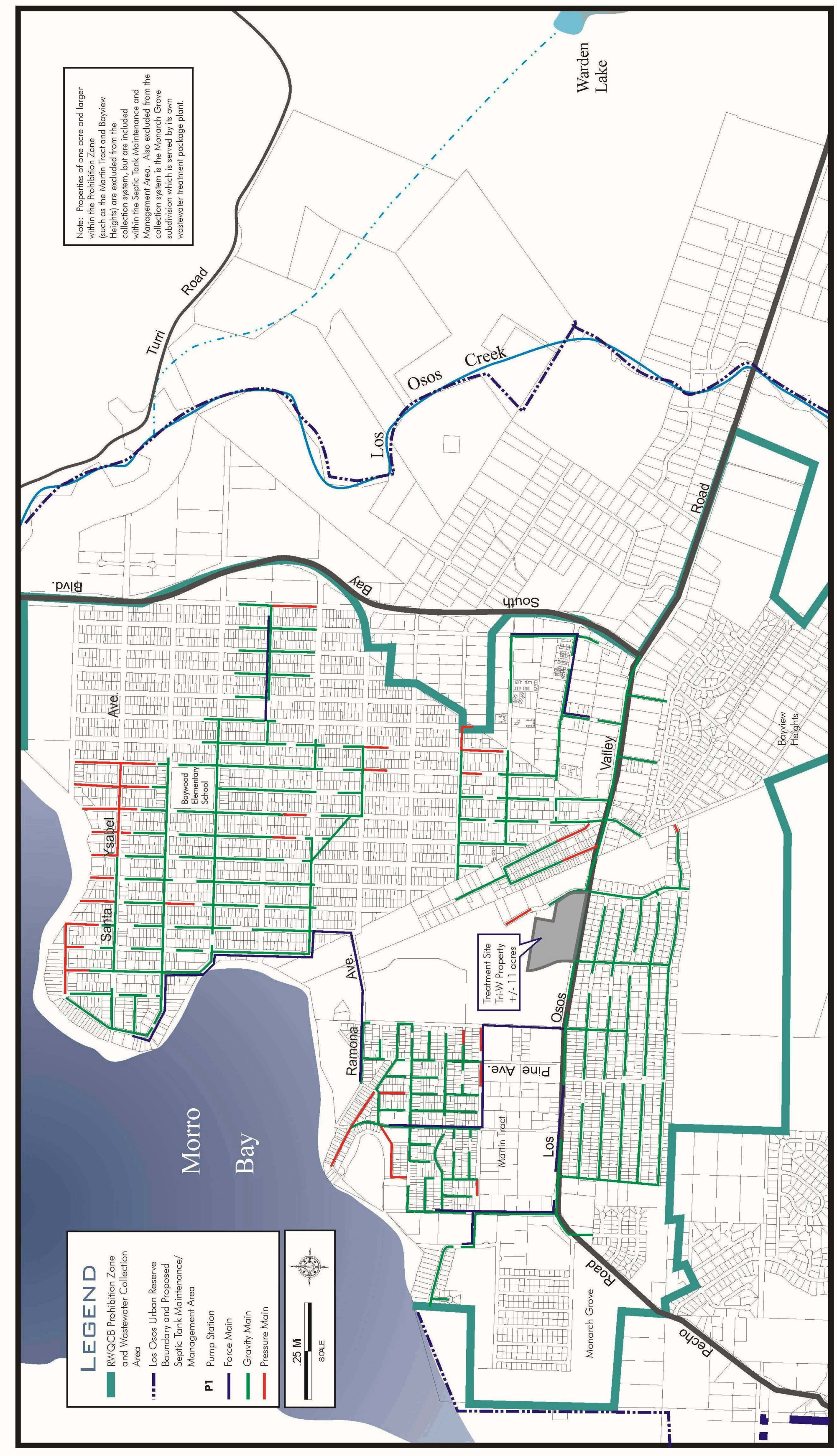

Figure 3-3
Wastewater Treatment Plant Site & Preliminary Wastewater Collection System

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C. Wastewater Treatment Facility. The preferred treatment facility would consist of a Hybrid Extended Aeration Wastewater Treatment Plant which relies primarily on natural systems to treat collected wastewater. The preferred configuration is considered a hybrid, because it will be constructed almost entirely underground and will be fully odor scrubbed. The Facility will be designed to treat the collected wastewater to achieve water quality standards established by the Regional Water Quality Control Board, primarily as they relate to the removal of excess nitrate from the effluent stream. The treated wastewater will also undergo filtration and final disinfection to permit safe, approved disposal and/or reuse.

The Treatment Facility will be designed with a capacity to treat an average daily dry weather flow (ADWF) of approximately 1.365 million gallons per day (mgd). Implementation of a water conservation program is expected to conserve 150,000 gallons per day, making the adjusted average dry weather flow about 1.2 mgd which is intended to serve a buildout population of 17,283 residents within the Collection/Prohibition Zone. Septage pumped periodically from the septic tanks within the service area of the SSMMP will be received and treated at the Wastewater Facility site.

The preferred location for the Treatment Facility is an 11 acre parcel owned by Tr-W Inc. located at the northwest corner of Los Osos Valley Road and Palisades, across the street from the Los Osos Community Center and adjacent to the community library (see Figure 3-4 and 3-5). The Wastewater Treatment Facility is expected to occupy about 5-6 acres of the site, with the remainder devoted to landscaped open space. The preferred location is fairly central to the community and was chosen, in part, to minimize collection system costs. A more complete discussion of treatment site selection and the screening of alternatives is provided in Chapter 5: Alternatives Screening Analysis. The site is currently vacant. The treatment plant would not displace any of the adjoining existing uses.

Buildings proposed for the site will include the operations center office which will include collection, treatment, and disposal instrumentation, supervisorial control and data acquisition (SCADA) system control center, water quality control laboratory, and a 25 ft. X 60 ft. building to house the nitrate reduction system; another small building will provide equipment storage space and a maintenance shop.

Extended Aeration is a proven wastewater treatment technology employed in hundreds of locations worldwide. More importantly, EA plants consistently demonstrate the ability to remove dissolved nitrate from wastewater effluent to the levels required by the Regional Water Quality Control Board for the community of Los Osos.

The extended aeration process is a form of wastewater treatment known as 'activated sludge'. The activated sludge process has been successfully used since 1914 and is one of the most proven wastewater treatment processes available. The form of extended aeration process proposed for this project has been in wide use for Biochemical Oxygen Demand, suspended solids, and nitrate removal since the 1970's. Experience with plants in South Africa, Florida, California and other states has shown that this process can reliably meet the tentative discharge requirements set forth by the Regional Water Quality Control Board's Waste Discharge Requirements (WDR) 97-8. There are treatment plants in California that use extended aeration to meet even more stringent requirements that those set forth in WDR 97-8.

The components of an extended aeration system are summarized in Table 3-4 and illustrated in Figure 3-6.

The flow will be screened to remove large objects that might foul treatment equipment. It will then move to a grit removal process that will settle out sand, rocks and other dense inorganic materials. The screened, degritted sewage will then be split into two streams and enter into a series of basins. The first of these basins is known as a pre-anoxic chamber in which naturally occurring microorganisms convert nitrate to harmless nitrogen gas. This gas is neither explosive nor odorous. The flow then moves into the aeration basins where mechanical mixer/aerators mix atmospheric oxygen with the wastewater. Naturally occurring microorganisms convert the organic matter in the wastewater to CO_2, water, and nitrate. A large portion of the flow is recycled back to the pre-anoxic basins where, as previously stated, the nitrate is converted to harmless nitrogen gas.

The remainder of the flow is passed to sedimentation basins where the microorganisms are removed from the flow. At this point the wastewater is low in BOD, suspended solids and total nitrogen. However, to meet Title 22 requirements, which allow unrestricted nonpotable reuse of the flow, the wastewater will then be subjected to sand filtration to further removed suspended solids and turbidity. After filtration, the flow will be subjected to ultraviolet disinfection. Ultra violet disinfection has gained wide acceptance in the US and overseas and has been shown to be highly effective against bacterial and viral pathogens and can handily meet Title 22 disinfection requirements.

A portion of the microorganisms removed in the sedimentation basins are recycled to the preanoxic basins in order to provide the mass of ‘activated’ biomass needed to treat the organics in the flow. The remainder of the microorganisms is completely removed from the flow and becomes ‘biosolids’. The biosolids are then thickened and dewatered, which produces a product that is readily handled. The extended aeration process produces biosolids that are stabilized and therefore non-putrescible. It is estimated that the treatment plant will generate approximately 1,400 pounds per day (dry weight basis) of biosolids, which will be hauled to a Class I or II landfill.

The entire treatment plant will be covered and odor scrubbed. The buildings and enclosure structures of the treatment plant will be held under negative air pressure, meaning that clean outside air will be drawn into the air spaces above the treatment processes. This approach prevents the ‘leakage’ of unscrubbed air to the outside.

Air from the air spaces above the treatment processes will be collected and conveyed to the odor scrubbing unit(s). The deodorized air will then be discharged to the atmosphere. Given the degree of odor scrubbing and the set back distances in the siting of the treatment facility, it is expected that the frequency of odor detection by individuals will be very low and that the character of any detected odors will be mild. Other wastewater treatment plants that have taken this approach have had a very low number of odor complaints.

Table 3-4: Extended Aeration Treatment Typical System Components

Component	Description
Land Requirements	3-4 acres, exclusive of buffer area.
Odor Potential	Potential for odors prior to scrubbing is low to moderate; aeration basins have a slightly musty odor that is not normally offensive or associated with sewage; portions of the system with higher odor potential include the septage handling, and solids handling, all of which would be inside buildings and provided with odor control facilities. The entire treatment plant will be covered and odor scrubbed. The buildings and enclosure structures of the treatment plant will be held under negative air pressure, meaning that clean outside air will be drawn into the air spaces above the treatment processes. This approach prevents the 'leakage' of unscrubbed air to the outside. Air from the air spaces above the treatment processes will be collected and conveyed to the odor scrubbing unit(s). The deodorized air will then be discharged to the atmosphere.
Biofilter Odor Beds	Captured odors from the septage, headworks, and solids processing facility would be scrubbed in biofilter media which would be a raised bed of selected media covering an air distribution system. The bed would be about 5 feet high and cover about 3,000 sq.ft.
Headworks	These include the influent pumping and possibly grit removal systems; most of structure would likely be underground (20 ft.), with a single story building above grade 30 feet square.
Septage Handling Facility	Below grade tank 20 ft. X 20 ft. which will receive septage from septage trucks, about 2 truck loads per week.
Extended Aeration Basins	Two basins 80 ft. X 320 ft., 15 ft. deep; aerated with fine bubbles or surface aerators; contains activated biomass for treatment.
Clarifiers and Filters	Two secondary clarifiers 75 feet in diameter 3-10 ft. above grade; filters are partially buried 25 ft. X 25 ft. structure with filter system and pumps.
UV Disinfection	Partially buried concrete structure consisting of a channel 4 ft. wide by 50 ft. with banks of UV lamps.
Solids Processing Building	Two-story 40 ft. X 100 ft. building with biosolids pumping, thickening, stabilization, de-watering and cake loading and storage. Biosolids produced would be about 3-4 wet tons per day which would take about three truck loads per week to remove.
Operations Building	Single story 2,500 sq.ft. building containing the control room; laboratory; restrooms, shower and lavatory; maintenance shop; spare parts room; office; library/meeting room
Electrical Building	Will house the plant electrical service; single story, 400 sq.ft.
Nitrate Reduction Building	A 25 ft. X 60 ft. building where nitrogen removal is accomplished by 1) blending with water containing a lower concentration of nitrogen and/or 2) through additional treatment processes which may include ion exchange or other denitrification systems.

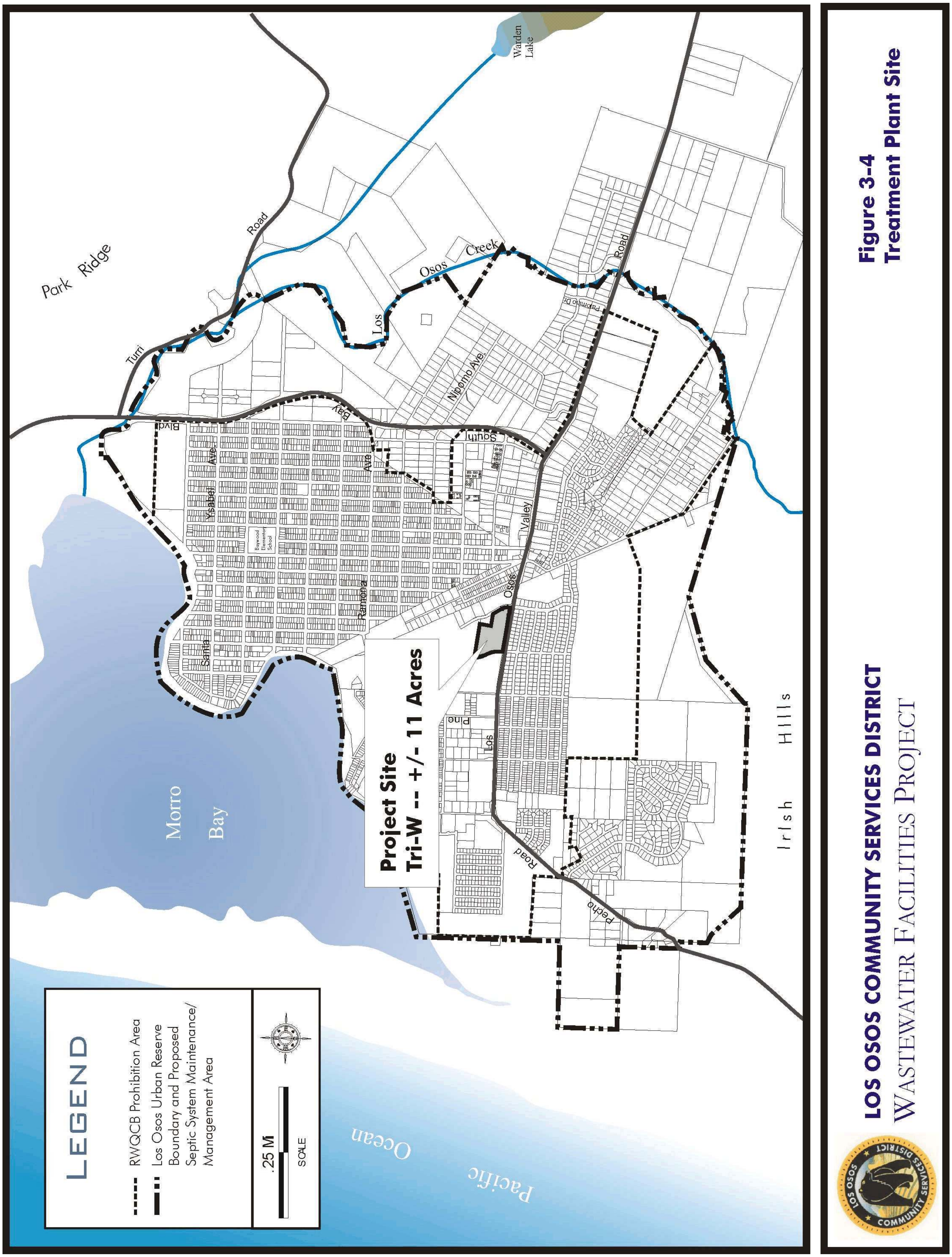

Figure 3-4
Treatment Plant Site

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Figure 3-5
Aerial View of Treatment Plant Site

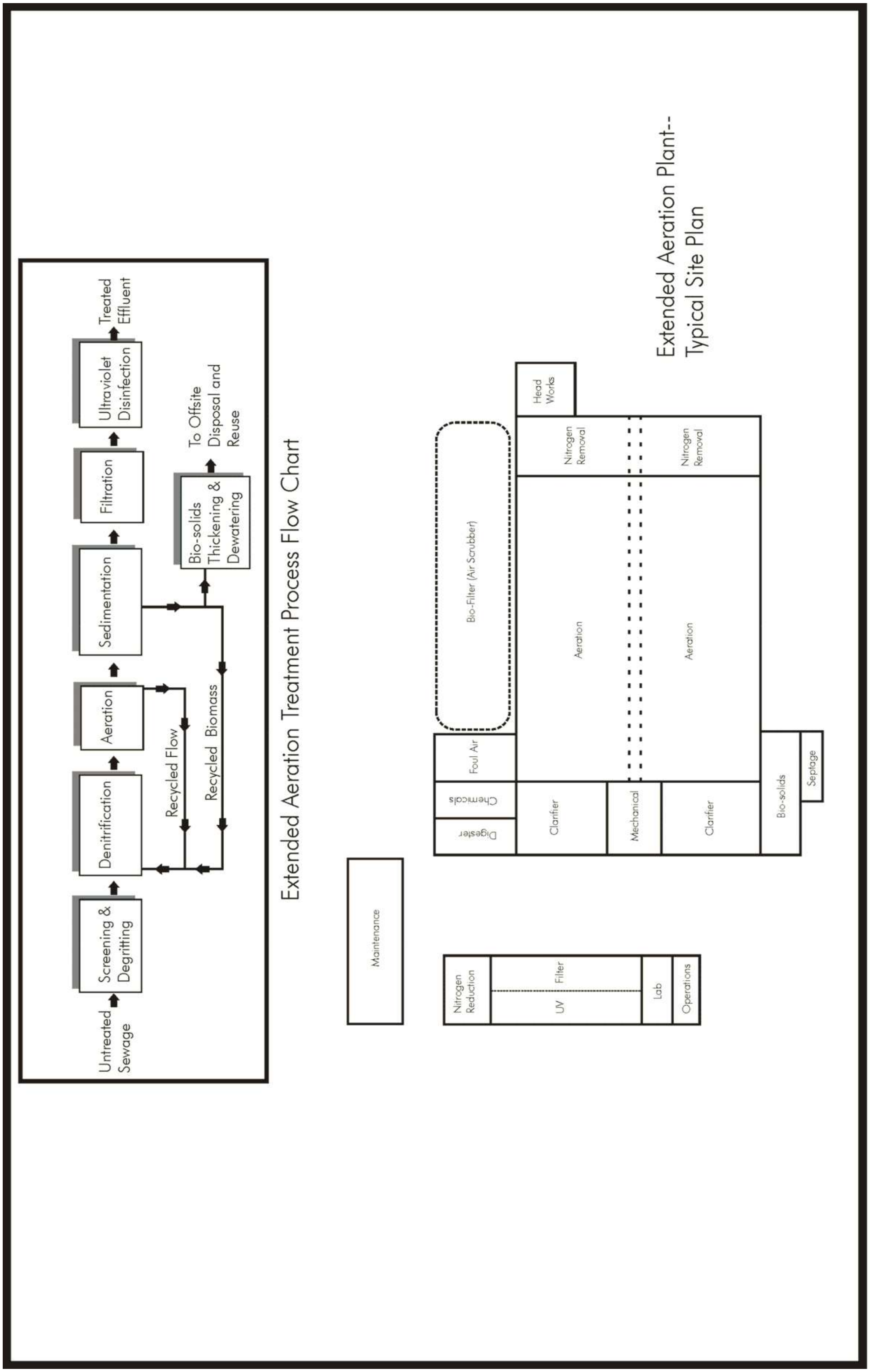

Figure 3-6
Extended Aeration Treatment Plant Site Plan and Flowchart

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WASTEWATER FACILITIES PROJECT

D. Effluent Disposal. At buildout of the Prohibition Area, wet weather flows through the treatment system could reach as high as 1.7 million gallons per day at buildout of the community. However, during the dry season (most of the year) the flow will be lower, around 1.365 mgd. Implementation of a water conservation program is expected to reduce water consumption by about 150,000 gallons per day which will reduce the amount of water entering the collection system. Therefore, between 1.2 - 1.7 mgd of treated wastewater will need to be disposed of. The preferred disposal method is to percolate the highly treated and disinfected wastewater into the groundwater by way of sub-surface leach fields.

A variety of geotechnical factors complicate wastewater disposal in Los Osos. First, a branch of the Los Osos fault (Strand "B") is inferred to extend roughly parallel to Palisades Drive between Sweet Springs and the primary east-west trace of the fault along the base of the Irish Hills. The fault appears to divide the shallow portion of the Paso Robles formation into two groundwater sub-basins, a conclusion supported in part by the generally greater depth to groundwater west of the inferred fault trace. Its is essential, that treated wastewater be re-introduced into each sub-basin so that they remain in balance with the continued extraction of groundwater by wells, and to prevent seawater intrusion from adversely affecting production wells. Previous modeling work by URS suggests that about 230,000 gallons per day of treated wastewater disposed of on the east side of the fault will be sufficient to mitigate the effects of seawater intrusion.

Another issue with regard to wastewater disposal is the localized rise in groundwater levels, or "mounding", that is predicted by groundwater modeling to occur where the treated wastewater is re-introduced to the sub-basin. To prevent the groundwater from surfacing and/or to prevent the surface soils from becoming saturated, it is also important that sufficient separation be maintained between the ground surface and the mounded groundwater.

The preferred disposal strategy addresses these factors through a combination of recycling and sub-surface disposal. During dry weather up to 200,000 gallons per day of treated wastewater will be recycled by irrigating play fields and landscaping within the community. Among the sites being considered are the four public schools (Bayview Elementary, Monarch Grove Elementary, Sunnyside Elementary and Los Osos Middle School) and the Sea Pines Golf Course. The balance of the highly treated and disinfected wastewater (about 950,000 gallons per day during dry weather) will be pumped to sub-surface leach fields where it will percolate into the shallow aquifer. Also during the dry season, leach field use will be rotated to maximize the long-term life of the system and to ensure that the sub-surface soils do not become saturated.

During the rainy season, treated wastewater passing through the treatment process could reach as high as 1.7 mgd for short periods (60 days or less) and require disposal. During wet weather when surface irrigation is unavailable, all of the treated wastewater will be disposed of exclusively through the sub-surface leach fields. Over time, the reintroduction of treated wastewater, together with the elimination of individual septic leach fields within the collection area, is expected to flush the shallow aquifer of excess nitrates.

Leach fields will be located in portions of the community where sufficient depth to groundwater (30 feet or more) exists to accept the treated wastewater without resulting in the saturation of surface soils. Percolation rates are expected to be between 0.001" - 0.002" per minute. The leach fields would be composed of perforated pipe installed about 5-6 feet deep and 4 feet on center running parallel with the street right-of-way. The areas tentatively chosen are located primarily within street rights-of-way and on other lands the District may consider acquiring in fee or by easement (see Figure 3-7). Every five to ten years the disposal leach fields will require maintenance in which the field would be completely exposed and rehabilitated.

Groundwater modeling indicates that the area west of the fault has the capacity to accept about 950,000 gallons per day of treated effluent, once individual septic leach fields are no longer in use. The primary disposal site is a 40 acre portion of an 80 acre parcel located south of Broderson Avenue (the Broderson site) adjacent to a developed residential neighborhood. Leach fields would be constructed in linear arrays parallel with Highland Drive on an eight-acre portion of the property located toward the southerly property boundary (up-slope). Preliminary sub-surface geotechnical investigations suggest that the Broderson site can accommodate up to 800,000 gallons per day of treated effluent. Other locations proposed for disposal on the west side of the fault are:

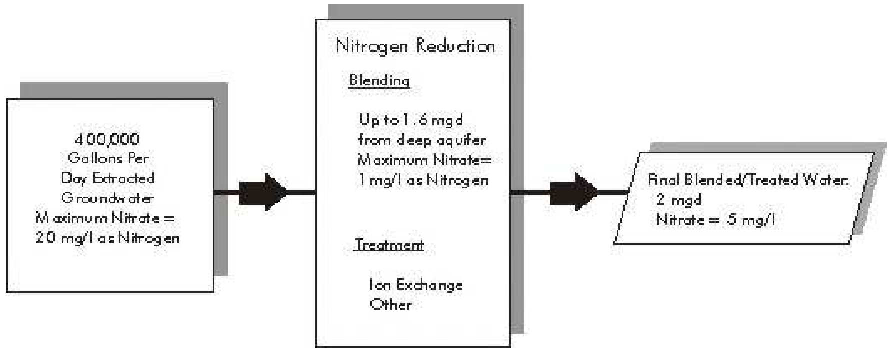
- Vista de Oro property on the east side of Pecho Valley Road south of Monarch.
- The Los Osos Valley Road right-of-way between Broderson Avenue and Doris Avenue, and the Pine Avenue right-of-way from LOVR north.
- A portion of Monarch Grove Elementary School (backup)

To prevent the mounded groundwater from surfacing downslope of the Broderson site, a series of four harvesting wells (and one alternate) will be employed, as follows:

Harvesting Well Location	Ownership of Well Site	New or Existing
Skyline Drive	Cal Cities Water Company	Existing well, retrofitted to extract water from shallow aquifer.
Rosina Right-of-Way	Cal Cities Water Company	New
Broderson Right-of-Way	LOCSD	New
County Library	LOCSD	New
S&T Well No. 1	S&T Mutual water Company	(Alternate)

Each well will be designed with a capacity of 200 gallons per minute (ave. 100 gpm). Each well would be perforated only in the upper ground water layer to harvest the surplus sub-surface flow. It is estimated that 400,000 gallons per day will need to be harvested. A series of up to 30 monitoring wells will also be required to monitor the sub-surface groundwater mounding and to monitor groundwater quality.

The preferred option for the disposal of recovered water is to undergo additional nitrogen reduction through either blending with water from the deep aquifer, or through additional treatment which may include ion exchange or some other denitrification process to meet drinking water standards. The denitrified and disinfected water will then be used to augment the water supplies of Cal Cities Water Company and the Los Osos CSD.



Nitrate Reduction From Harvested Water

The 400,000 gallons/day extracted from the shallow aquifer may have nitrate concentrations of up to 20 mg/l (as N). As shown in the diagram, this flow will undergo nitrate reduction by either treatment, such as through ion exchange, and/or through blending with deep aquifer water with a lower nitrogen concentration. The final treated/blended water entering the water supply will have nitrate concentrations of approximately 5 mg/l (as N).

If ion exchange is employed, the system will generate approximately 9,500 gallons per day of brine solution and miscellaneous rinse water. This water will be high in sodium, chloride and nitrate. Discussions with the Regional Water Quality Control Board indicate the preferred location for disposal of the brine would be at the Duke Energy Morro Bay Power Plant ocean outfall which currently discharges about 7.25 million gallons per day to the ocean.

The extraction wells will be located in the vicinity of the Skyline Drive area, which is approximately 3,500 feet from the Broderson disposal site. Ground water modeling indicates that particle travel times from the Broderson site to the Skyline Avenue area will be on the order of 8.5 years.

The area east of the inferred fault trace is more limited in its capacity to accept treated wastewater for disposal. This is due to the generally shallower depth to groundwater and the prevalence of perched clays which restrict percolation. Areas on the east side of the fault considered for disposal include:

- A portion of the Pismo Avenue right-of-way between 7th and 14th Streets
- A portion of the Santa Maria Avenue right-of-way between 13th Street and 17th Street.
- Los Osos Middle School (stand-by only)
- A portion of the Santa Paula Avenue right-of-way between South Bay Boulevard and 15th Street
- A four acre portion of the 30 acre Powell property located east of the Middle School at the end of El Moro.

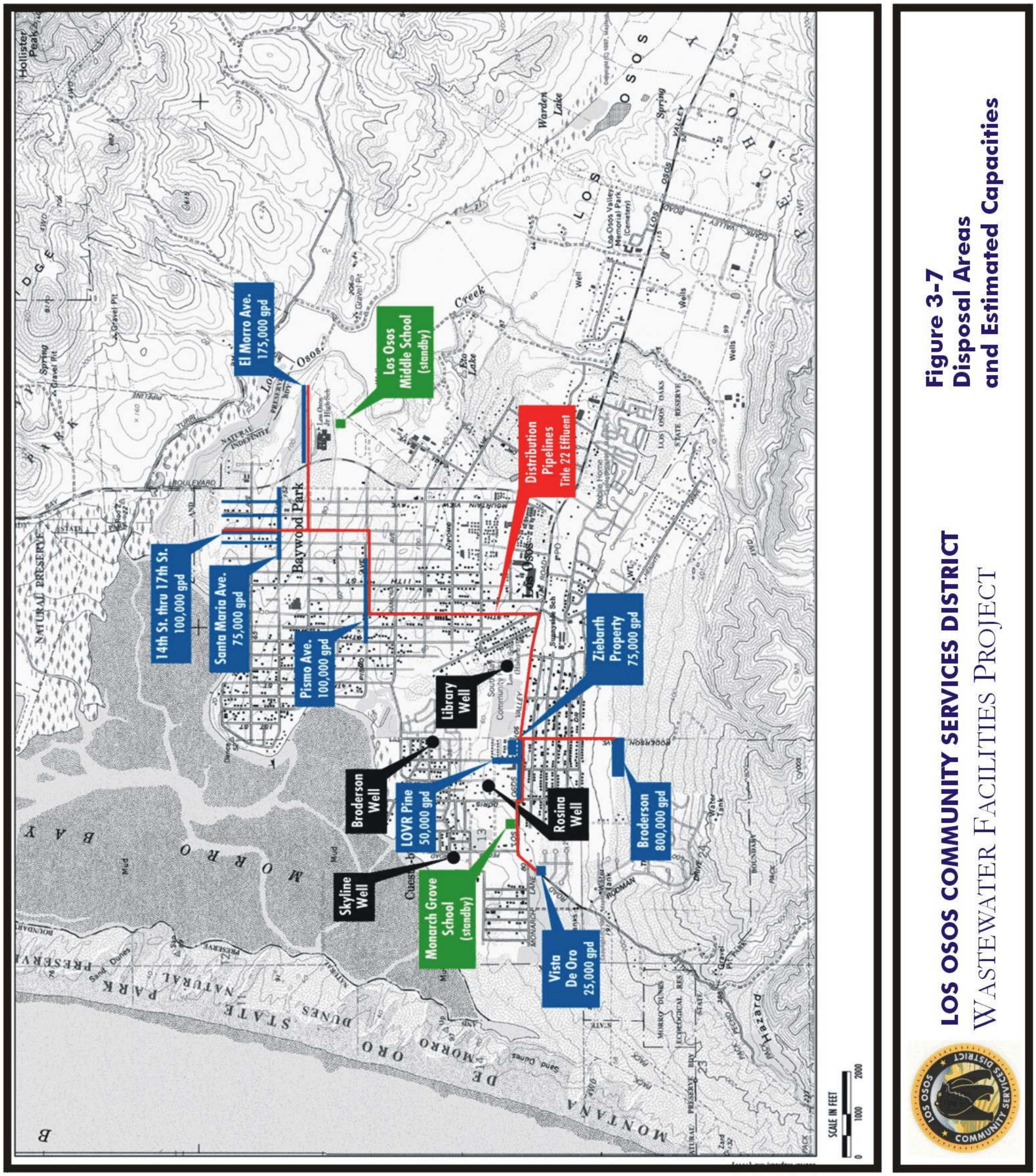


Figure 3-7
Disposal Areas
and Estimated Capacities

E. Wastewater Bio-Solids Disposal. An extended aeration treatment plant serving the Prohibition Area would produce approximately 1,400 pounds of bio-solids per day and non-toxic chemicals (40 lbs.). Once treated to satisfy federal and state requirements, treated sludge would be removed from the Wastewater Treatment facility about three times per week and hauled (initially) to a Class I or Class II landfill. To be disposed of in a landfill, bio-solids must meet the pollutant concentrations specified by Title 40 Section 503.23 of the Code of Federal Regulations, which also prescribes landfill management practices to be followed for sludge handling. A more complete discussion of bio-solids disposal and management regulations is provided in Chapter 6.2: Hydrogeology and Water Resources.

F. Wastewater Facility Appurtenant Structures.

The Los Osos Wastewater Facility treatment plant site is a multi-use facility intended to benefit the entire Los Osos/Baywood Park community by providing a state of the art wastewater treatment plant in a parklike setting.

The treatment facility consists of two major components, the principal treatment areas, which are buried beneath the park; and a cluster of buildings that include final treatment and processing, lab facilities, visitor and operations space and maintenance facilities. The buildings are clustered low on the site set into the natural grade so that only a portion of the roofs are visible from Los Osos Valley Road. Approximately three-quarters of the treatment facility will be located below grade, thereby minimizing visual impacts, and creating additional area for recreational uses. Vehicular access to the treatment facility by employees visitors and the septage and bio-solids trucks will be directly from the northerly extension of Ravenna Avenue. The bio-filter/odor scrubber is located between the underground portion of the treatment facility, separating the more active park and play fields from uses on top of the treatment facility structure.

Open Space and Landscaping. Constructing the treatment plant underground provides an opportunity for most of the site to be landscaped or otherwise improved to provide an open space and recreation amenity for the community. A preliminary design is illustrated by Figure 3-8 which incorporates a large grass area suitable for youth soccer or other types of active recreation. The site will also incorporate a system of pedestrian/bicycle trails and visitor parking.

A wide range of possible uses desired by the community have been proposed for the park design. These uses include:

- Picnic areas including covered group area
- Informal open grass play areas near Palisades Avenue and Los Osos Valley Road (also serves as stormwater detention area).
- Amphitheater with use-activated lights.
- Child play area.
- Large, unlighted, turf playfields(soccer, baseball, informal play)
- Parking to serve the park, CSD offices and park uses.
- Grass or hard court areas (bocce ball, horseshoes, croquet, volleyball, etc.)
- Extensive system of walks and pathways around the perimeter and throughout the site.
- Safety lighting for the exterior of the office and treatment plant, and for selected walkways.
- Fenced dog park, located primarily above the underground wastewater treatment facility.
- Demonstration/community gardens with water features.
- Riparian gardens and stream.
- Native, drought-tolerant buffer planting around entire site.

Appurtenant Structures and Offsite Improvements. The cluster of buildings include the LOCSD offices, visitor/reception and information area (4,000 square feet), and public meeting hall for the CSD. This building is located near the County Library site and the proposed parking lot to serve the park and public uses in the vicinity. A covered walkway/arbor directly connects the CSD offices with the treatment facility.

In addition, a stormwater retention basin is provided in the northwest corner of the site which is designed to accept runoff expected from a 50-year storm. The retention system also provides for up to 18 hours of emergency storage in the event of a major failure of the treatment plant.

Full street frontage improvements will be installed along Los Osos Valley Road (curb, gutter, sidewalk, Class I bicycle path, and parking) and a two-thirds street construction of Ravenna Avenue north of Los Osos Valley Road along the property frontage to provide direct access to the treatment plant site.

G. Construction Activities. Construction of the project is expected to take about 16-24 months. Construction of the collection system will involve the installation of collection pipes within easements and public rights-of-way using trenching techniques. Because of the predominance of sandy soils in the Los Osos area, a given trench will be limited to a maximum of 1,000 feet open at any given time. Trenching will require de-watering in shallow groundwater areas as well as stabilizing measures. In general, construction activities will have as many as 6 pipe runs excavated at a time to avoid disrupting traffic. The collection system will also involve the installation of submersible pump stations which will involve excavation and construction of underground vaults.

Construction of the treatment plant and the recreation amenities will involve grading, excavation and building construction. Due to the shallow groundwater associated with the treatment plant site, it may need to be de-watered during construction activities.

Lastly, individual property owners will be responsible for the de-commissioning their septic tanks, the installation of on-site collection laterals and for the replacement of plumbing fixtures with water conserving fixtures. Septic tank de-commissioning involves pumping the tank out, removing the top of the tank and backfilling the tank with sand.

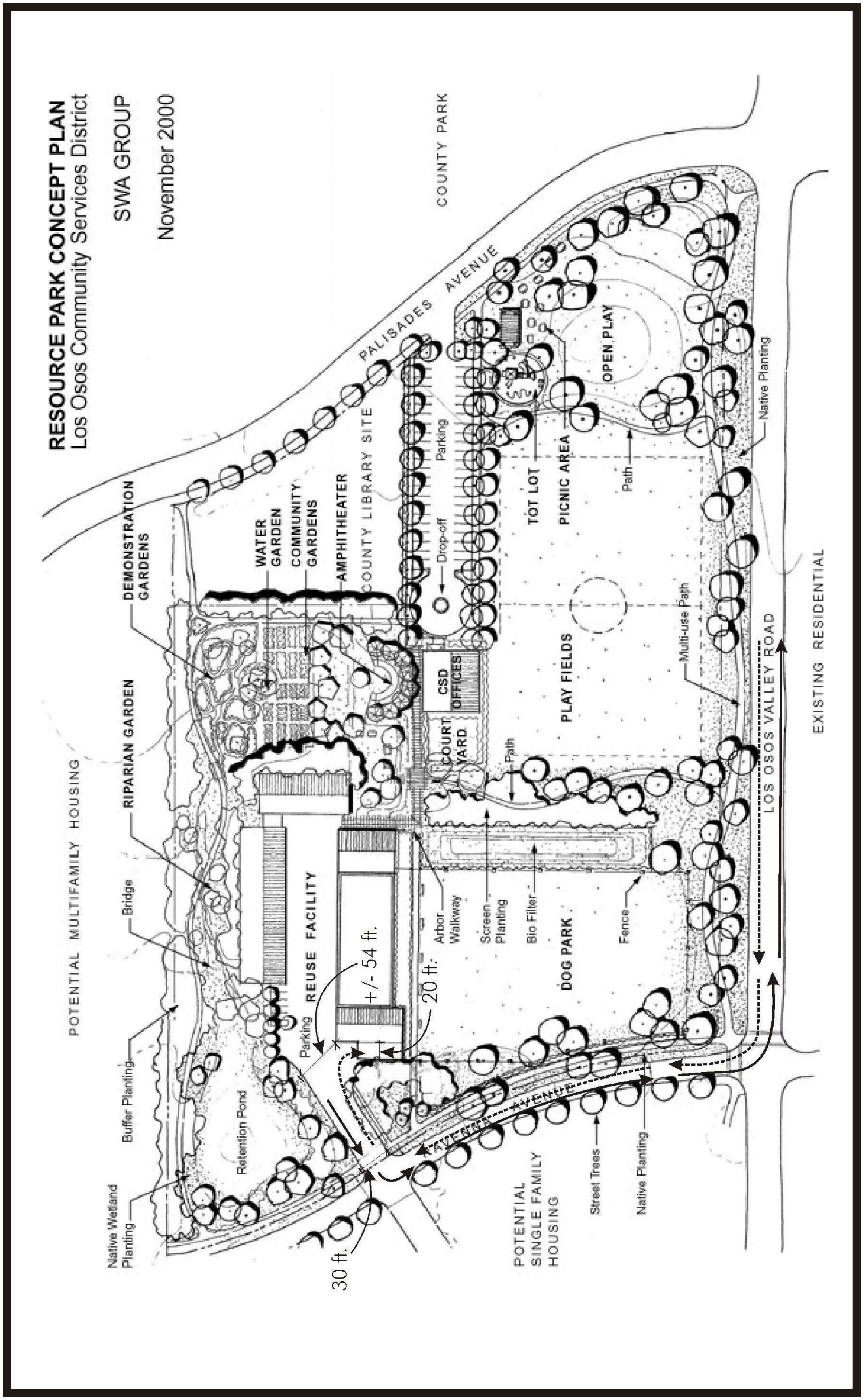


Figure 3-8
Conceptual Treatment Plant Site Plan

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WASTEWATER FACILITIES PROJECT

H. Mitigation of Biological Impacts. As discussed in Chapter 6:11: Biological Resources, construction the various components of the Wastewater Facilities Project will result in the permanent loss of habitat for special status plant and animal species. The species of most concern is the federally endangered Morro Shoulderband Dune Snail whose habitat includes portions of the proposed treatment plant site, and may occupy undeveloped lots throughout the community.

Impacts to federally listed plant or animal species are governed by the federal Endangered Species Act and enforced by the United State Fish and Wildlife Service (USFWS). Recognizing that any permanent loss of habitat for an endangered species will be considered a significant and irreversible environmental impact, the Los Osos CSD has made the following mitigation proposal to the USFWS:

Primary Impacts

A. Purchase outright a parcel of land designated by the USFWS as critical habitat for the Morro Shoulderband Dune Snail which also contains habitat for other special status plant and animal species adversely affected by the Wastewater Facilities Project. This parcel should be a significant addition to the community's greenbelt protection program. One such property is the northern 40 acres of the so-called Broderson property located south of Highland Avenue and west of Broderson Avenue. This property is designated critical habitat for the dune snail and provides excellent habitat for the Morro Kangaroo rat (federally endangered) and Morro manzanita. Another advantage is that this property adjoins the 204 acre Morro Palisades property which was recently approved for purchase by the State Coastal Conservancy.

B. Grant this parcel to an appropriate conservation organization (perhaps the same as will receive the Morro Palisades property) in exchange for:

- Satisfaction of all direct impacts of the wastewater facility's collection, treatment & disposal systems.
- An eight acre easement across the southerly portion of the Broderson property for the purpose of installing leachfields.

Secondary Impacts

A. The LOCSD, in conjunction with the California Department of Fish and Game (CDFG), the US Fish and Wildlife Service (USF&WS), San Luis Obispo County and the California Coastal Commission shall prepare and implement a Habitat Conservation Plan (HCP) or Natural Community Conservation Plan (NCCP) for the long-term preservation of habitat remaining within the Los Osos Greenbelt, including habitat remaining on individual vacant lots. The HCP/NCCP shall identify the habitat resources and the quality of those resources on the remaining vacant properties within the Greenbelt. The range of potential conservation programs to be considered in the HCP/NCCP shall include, but not be limited to the following:

- The identification of policies and programs to be incorporated into the Estero Area Plan aimed at the long-term preservation of sensitive biological resources in the Los Osos area; such policies and programs may include:

  – Transfer of development credits
  – Clustering
  – Avoidance of sensitive resources in site design
  – Changes in density and land use
  – Incorporation of open space into the design of new development

- Programs aimed at facilitating coordination among agencies and organizations involved in management and conservation/preservation of sensitive resources, including USF&WS, CDFG, California Coastal Commission, San Luis Obispo County, the LOCSD, MEGA, NEP, Land Conservancy of San Luis Obispo County, and others;

- The creation of a landbank program to facilitate the purchase of properties with high quality habitat within the Greenbelt, to be repaid over time from fees on new building permits;

- Programs for the acquisition of properties within the Greenbelt with significant habitat resources;

Population and Estimated Wastewater Flows

Population

The design capacity of the proposed wastewater treatment system is based on population projections and calculated flows for the service area in the year 2020. Population projections for the community have been calculated by various entities over the years, including the SWRCB (1982-2007), the County of San Luis Obispo (*Draft Estero Area Plan*, 2000), and members of the LOCSD Wastewater Committee. The population served by the proposed system is summarized on Tables 3-5 and 3-6.

Table 3-5: Buildout Estimate and Adjustments Within The Urban Reserve Line
Source: LOCSD and Montgomery Watson Americas, 2000

Buildout Population of Collected Area:	19,306
Buildout Population of Uncollected Areas:	2,628
Sub-Total:	21,934
Adjustments:	
Morro Palisades (204 acres)	-1,325
Broderson (north 40 acres)	-18
Total:	20,590

Table 3-6: Summary of Population Served By the Wastewater Facilities Project
Source: LOCSD, 2000

Area	Population At Buildout	Percent of Urban Reserve Line
Urban Reserve Line	20,590[1]	100%
Adjustment for Uncollected Areas:	-2,628	13%
RWQCB Prohibition Zone/Collection Area	17,963	87%

1. See Table 3-5.

The collection area is approximately 78% of the total area within the RWQCB Prohibition Zone (see Figure 3-2) and about 47% of the area within the Urban Reserve Line for Los Osos. Areas within the Prohibition Zone with lot sizes of one acre or more are excluded from the collection system. These areas include the Martin Tract, which surrounds Monarch Grove Elementary School, and Bayview Heights, which lies south of Los Osos Valley Road. In addition, the Monarch Grove subdivision has been excluded from the collection system because it has its own package treatment plant.

Wastewater Flows

Based on the population described above in Table 3-5, wastewater flows were estimated as follows:

Dry Weather Flow:	1.365 million gallons per day
Estimated Savings from Water Conservation Program:	0.150 mgd
Adjusted Average Dry Weather Flow:	1.200 mgd
Peak Wet Weather Flow:	1.700 mgd

Supporting Public Services

Public services necessary to construct, operate and maintain the facility include water and electric power; fire and police protection services may be also required in the event of an emergency. Water used by the facility will be minimal. Electric power is currently provided to the community by a number of companies. Reliance on police services is expected to be minimal. Fire service is located nearby, but due to the nature of the facility, would rarely be summoned.

Reasonably Foreseeable Future Phases

This project is designed to serve the 2020 buildout population of the Los Osos area as envisioned by the Estero Area Plan. Although future phases may be necessary, the project incorporates reasonable estimates of long-term growth and is considered cumulative. In the future it may be necessary (or desirable) to collect septic tank effluent from areas outside the Prohibition Zone adopted by the RWQCB, such as Cabrillo Estates. For this reason, the collection system is being designed so that it can be readily extended to these areas if necessary in the future.

Another option being considered for future phases of the Wastewater Facilities project is the recycling of bio-solids for re-use as a soil amendment as an alternative to hauling. Under this alternative, treated sludge would be removed from the Wastewater Treatment facility about three times per week and hauled to bio-solids recycling center where it would be combined with green-waste (organic mulch) and allowed to decompose. The bio-solids recycling facility would consist of about four acres and would contain a two-acre covered concrete pad and support facilities as illustrated by Figure 5-11.

4. Environmental and Regulatory Setting

Introduction

The analysis contained in this DEIR is intended to aid decision-makers and the public by providing factual information about the potential environmental consequences of the proposed Wastewater Facilities Project. To succeed in this task, the analysis must be founded on a thorough understanding of the environmental context, or setting, within which the project will be undertaken. This section discusses the overall environmental setting both locally and regionally. Each topical analysis provided in Chapter 6 includes a more detailed discussion of the environmental setting as it pertains to the given subject (air quality, biological resources, transportation, etc.). The environmental setting is illustrated by Figure 4-1.

Regional Setting

The community of Los Osos is located in west-central San Luis Obispo County about mid-way between the San Francisco and Los Angeles metropolitan areas. The County is blessed with a diversity of landscapes, from fertile coastal plains and valleys, to rolling hills and mountain ranges rising to over 4,000 feet.

Los Osos is located at the south end of the Morro Bay estuary, recognized as one of the most important biological resources on the entire west coast of the United States. In addition to providing a resting place for dozens of species of migratory waterfowl, the Bay is a nursery to both marine and anadromous fish, and provides a forage and resting area for marine mammals. The coastal dunes which surround the community to the west (and upon which the community has developed) are one of the most sensitive – and threatened – environments in California. Species of plants that have adapted to the harsh coastal dune environment are among the most rare, with many occurring nowhere else on earth. The biological richness and sensitivity of the Morro Bay estuary have given rise to a number of conservation efforts. Most recently, the Bay achieved Natural Estuary status which affords a higher level of protection at the federal, State and local levels.

The Morro Bay watershed stretches inland to the foothills of the Santa Lucia Range. Coastal creeks and their tributaries, including Los Osos, Chorro and Morro Creeks, support rich riparian plant and animal communities.

Topographic Features

Los Osos sits on a series of ancient dunes formed by centuries of wind-driven sand that accumulated at the south end of Morro Bay. The resulting topography is a series of gently-rolling hills stretching eastward from the Bay to the foothills of the Irish Hills. Although present day urban development masks the dynamic processes associated with dune formation; today the process continues, albeit at a much more arrested rate.

Stretching to the east from Morro Bay are a series of small peaks of volcanic origin, called *Morros*, which provide a unique scenic backdrop of regional significance. The westernmost morro, Morro Rock, guards the entrance to Morro Bay. The fertile soils of the Los Osos Valley, formed by the Morros to the north and the Irish Hills to the south, supports productive agricultural operations.

Climate

The climate of San Luis Obispo can be described as semi-arid with warm, dry summers followed by a cool rainy period from November to March. Weather patterns are dominated by the eastern Pacific High Pressure System which persists off the California coast for much of the year, diverting storms northward. Dense morning fog followed by periods of afternoon sunshine is a pattern repeated daily during summer months near the coast and the numerous coastal valleys. Minimum temperatures in the Los Osos area range from a minimum average of 42 degrees Fahrenheit in January to 79 degrees Fahrenheit in September. The average annual rainfall is approximately 15.73 inches.

Population

San Luis Obispo County has estimated the current (March, 2,000) population of Los Osos to be about 14,606. Because of the building moratorium, population growth has remained low since 1988. If Los Osos were an incorporated city, it would rank 5th in population among the seven incorporated cities within San Luis Obispo County.

Table 4-1: Population of Incorporated Cities and San Luis Obispo County

Source: California Department of Finance

City	January, 1999 Population
San Luis Obispo	42,850
Atascadero	25,450
El Paso de Robles	22,500
Arroyo Grande	16,000
Los Osos	14,606
Grover Beach	12,650
Morro Bay	9,875
Pismo Beach	8,475
Total San Luis Obispo County	241,600

Water Resources

Surface water features in the area include the Pacific Ocean, Morro Bay Estuary and Sweet Springs Marsh. Other surface water systems drain the hillsides and the surrounding farmland, namely Los Osos Creek, Eto Creek, and several other unnamed, smaller tributaries. One such tributary drains Los Osos Valley through Warden Lake, a marshy depression to the east of the community. Eto Creek is a well-defined waterway within the dune sands which drains to Eto Lake before reaching the ocean.

Los Osos derives all of its drinking water from groundwater supplies. The nature of the groundwater system in the Los Osos area has been studied extensively since the Regional Board acted in 1988 to prohibit new septic systems. Generally, there are two distinct aquifers underlying the area, a more shallow aquifer that ranges in depth from 30 to 200 feet, and a deep aquifer, some 500 feet below the surface. The exact depth and shape of each aquifer is still under investigation.

The water quality of the shallow aquifer has been compromised by the presence of septic tank systems and other sources of nitrogen. The project evaluated by this DEIR is being undertaken to alleviate the groundwater contamination from septic systems in Los Osos.

In addition to the Los Osos Community Services District, two other water purveyors continue to serve Los Osos: California Cities Water Company and S & T Mutual Water Company.

Flooding

According to maps prepared by the Federal Emergency Management Agency (FEMA) there are no areas inundated by the 100-year floodplain within the community of Los Osos. However, areas of tidal and storm surge inundation do exist around the perimeter of Morro Bay. More problematic is the localized ponding that has occurred in recent years during periods of heavy rainfall, which can be attributed to the lack of an urban drainage system.

In 2000, a comprehensive drainage study was prepared for Los Osos by Engineering Development Associates Drainage. The report identifies localized and community-wide drainage problems and recommends improvements to alleviate these problems.

Cultural Resources

The combination of mild coastal climate and abundant food and water resources made the Los Osos area an attractive location for native peoples. As a result, the entire Los Osos area is rich in artifacts of archaeological importance. Cultural resources are discussed in Section 6.4.

Relationship to Other Planning Efforts

The Wastewater Facilities Project is being undertaken concurrently with a number of ongoing planning and resource management programs administered by other agencies. These other plans and activities include:

- The RWQCB Central Coast Basin Water Quality Management Plan
- San Luis Obispo County Regional Transportation Plan
- The Air Quality Management Plan
- Morro Estuary Greenbelt Alliance (MEGA)
- The Morro Bay National Estuary Program
- Habitat Conservation Plans prepared by the US Fish and Wildlife Service
- The update of the Estero Area Plan by San Luis Obispo County.

Each of these plans and activities, where relevant, are discussed in the topical analyses contained in Section 6 of this DEIR.

Existing and Planned Land Use

Figure 4-1 shows vacant land within the RWQCB Prohibition Zone, which is predominantly residential. Commercial development is concentrated along Los Osos Valley Road between Ninth Street and South Bay Boulevard. Smaller scale commercial development is also located along Second Street in the Baywood Park neighborhood.

Planned land uses are shown on Figure 4-2 which is the land use element map from the Estero Area Plan. It should be noted that the area plan is currently undergoing a comprehensive revision. A more complete discussion of project consistency with relevant plans and policies is provided in Chapter 6.5.

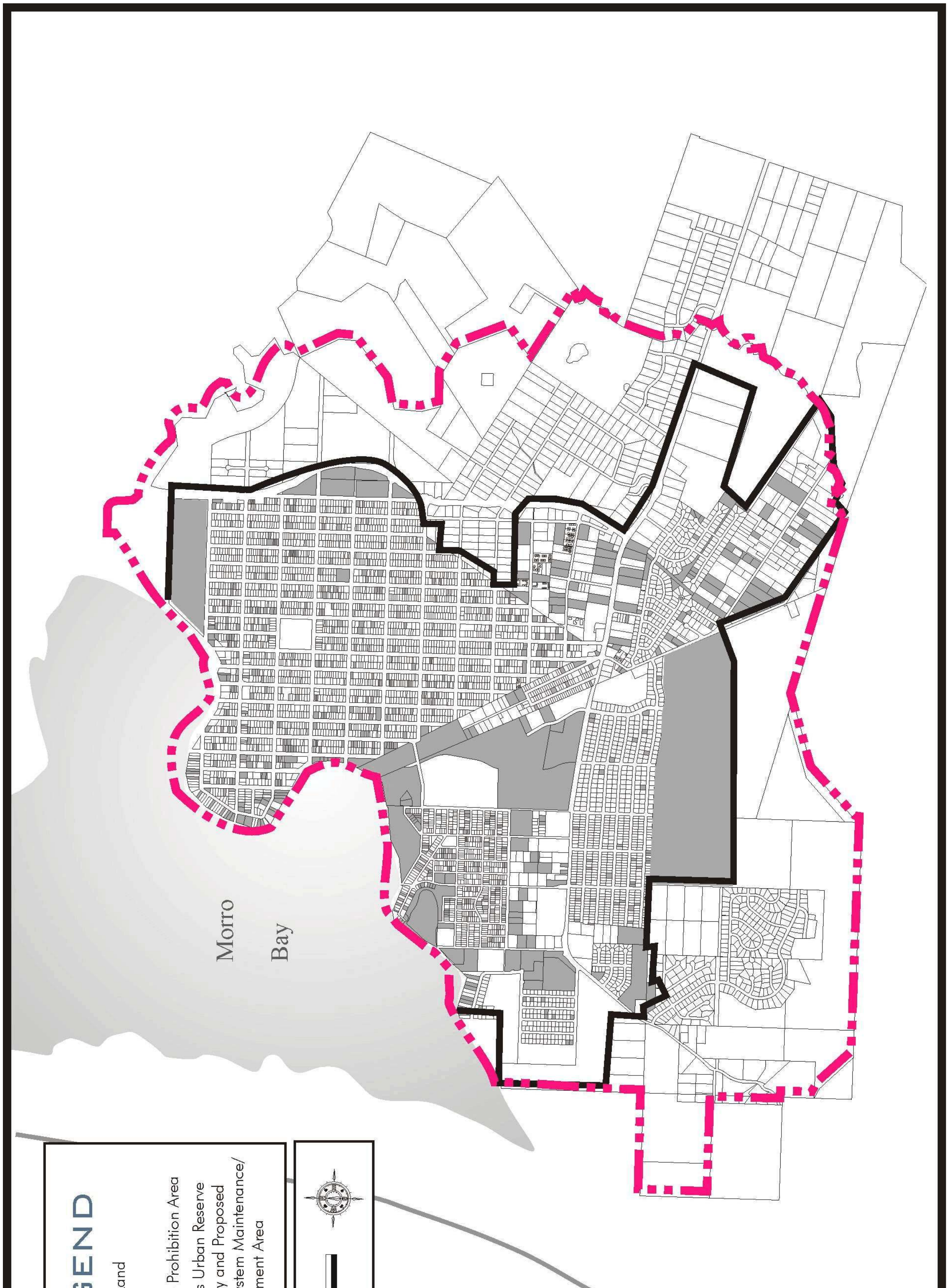
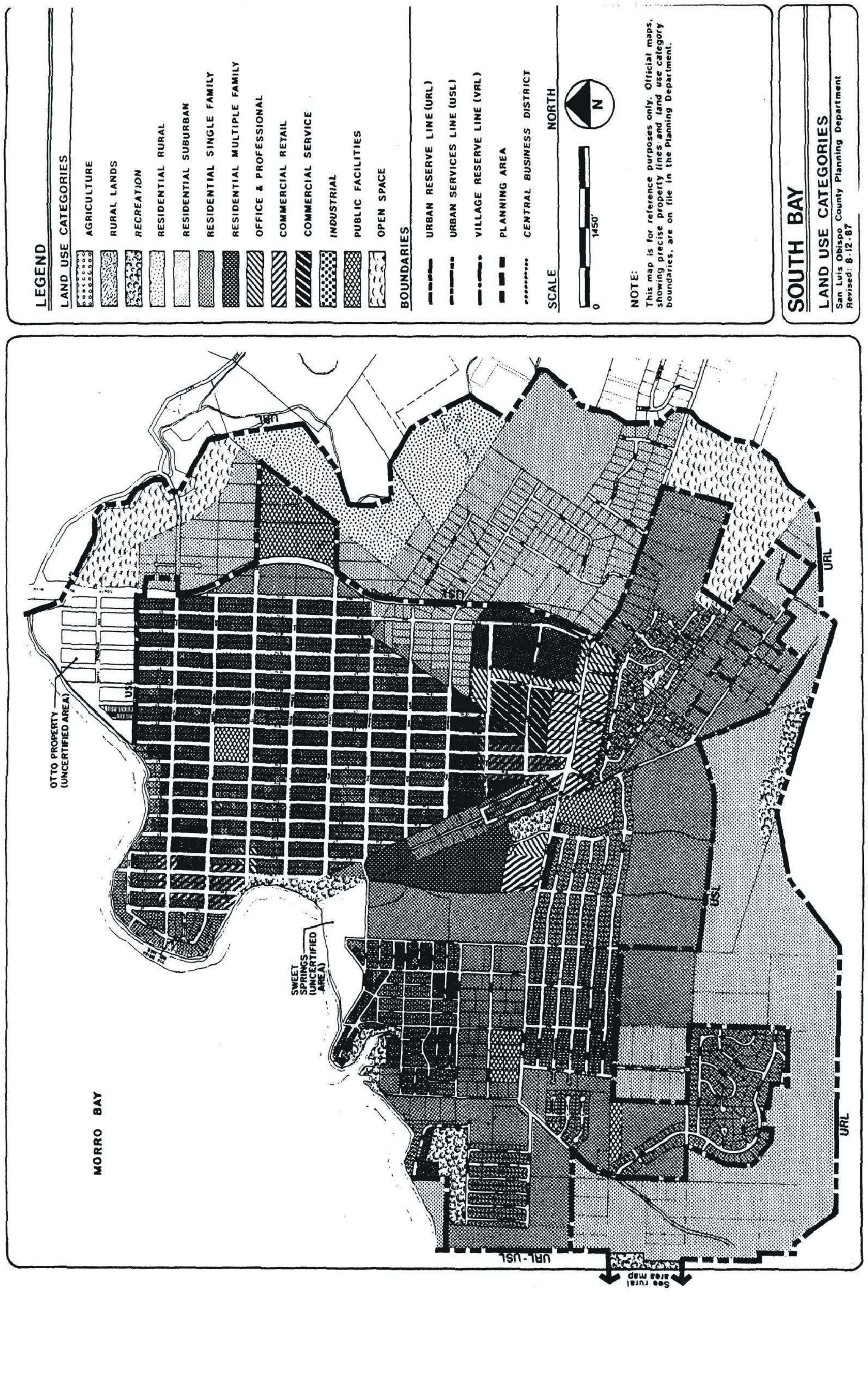


Figure 4-1
Vacant Land Within The Prohibition Zone

LOS OSOS COMMUNITY SERVICES DISTRICT
Wastewater Facilities Project



LOS OSOS COMMUNITY SERVICES DISTRICT
WASTEWATER FACILITIES PROJECT

Figure 4-2 General Plan Land Use Designations

5. Alternatives Screening Analysis

To limit the number of alternatives evaluated in this EIR, and to demonstrate the factual basis upon which certain alternatives were excluded from further consideration, a screening analysis was employed. Both CEQA, and its federal counterpart the National Environmental Policy Act (NEPA), provide considerable guidance with regard to the analysis of alternatives. CEQA Section 15126(d) speaks directly to the use of alternative screening:

> "[an EIR should] *describe a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives*."

Likewise, NEPA Section 1502.14 requires an analysis of alternatives that provides a clear basis for choice among these options for decision-makers and the public. More specifically, NEPA requires the alternatives analysis to:

a. *"Rigorously explore and objectively evaluate all reasonable alternatives, and for alternatives which were eliminated from detailed study, briefly discuss the reasons for their having been eliminated."*

b. *"Devote substantial treatment to each alternative considered in detail including the proposed action so that reviewers may evaluate their comparative merits."*

c. *"Include reasonable alternatives not within the jurisdiction of the lead agency."*

d. *"Include the alternative of no action."*

e. *"Identify the agency's preferred alternative or alternatives, if one or more exists, in the draft statement unless another law prohibits the expression of such a preference."*

f. *"Include appropriate mitigation measures not already included in the proposed action or alternatives."*

In sum, the use of an alternatives screening analysis provides the detailed explanation of why certain alternatives were rejected from further analysis, and assures that only the environmentally preferred alternatives are evaluated and compared in the EIR.

The notion that alternatives should be chosen that lessen or avoid the significant impacts associated with the proposed action is key. Although many alternatives to the proposed action may have been considered for a variety of reasons (cost, the ability of an alternative to meet other community objectives, etc.), the alternatives analysis is aimed specifically at identifying options that avoid or lessen potential environmental impacts associated with the proposed action. Moreover, the range of alternatives to be considered in an EIR is guided by the "*rule of reason*", which limits the discussion of alternatives to those that have the potential to diminish or avoid adverse environmental impacts, as described in the CEQA Guidelines:

> *"The alternatives shall be limited to ones that would avoid or substantially lessen any of the significant effects of the project. Of those alternatives, the EIR need examine in detail only the ones that lead agency determines could feasibly attain most of the basic objectives of the project."*

The Guidelines go on to further limit the analysis of alternatives as it relates to feasibility:

> *"Among the factors that may be taken into account when addressing the feasibility of alternatives are site suitability, economic viability, availability of infrastructure, general plan consistency, other plans or regulatory limitations, jurisdictional boundaries, and whether the proponent can reasonably acquire, control or otherwise have access to the alternative site."*

The alternatives must adequately represent the spectrum of environmental concerns in order to permit a reasonable choice of alternatives. The EIR must also provide the rationale for selecting or defining alternatives evaluated.

The Process of Selecting and Screening Alternatives for This DEIR

The selection of alternatives for consideration in this DEIR was guided by a continuing iterative process among the CSD Board, the Wastewater Committee who advised the Board, and input from the community. Also, the selection of alternatives was guided in part by environmental documents prepared on previous wastewater projects for Los Osos. The *1987 Final Program EIR* prepared for the initial treatment and collection project contained an extensive analysis of alternative treatment plant locations, as well as different collection and treatment technologies. The *Final Supplemental EIR for the CSA9 Wastewater Treatment Facilities* prepared in 1997 (Fugro West, Inc.) also included an extensive discussion of alternative treatment plant sites and treatment technologies.

For purposes of this DEIR, the process of selecting a reasonable range of alternatives involves the following steps:

Step 1: Define project objectives.

A complete discussion of project objectives for the Wastewater Facilities Project is provided in the project description contained in Chapter 3 of this DEIR. To summarize, the basic objectives of the project are to collect, treat and dispose of wastewater within the RWQCB Prohibition Zone and manage septic tank systems over the entire community to achieve and maintain the water quality standards mandated by the RWQCB, protect public health, and minimize degradation of the natural environment related to the management of wastewater. Included in this basic objective is achieving and maintaining a sustainable water supply for the community of Los Osos.

Step 2: Determine significant impacts to be avoided.

As discussed above, the purpose for considering alternatives is to identify those that have the potential to reduce or eliminate the potentially adverse environmental consequences associated with the proposed project. Based on the analysis contained in the initial study (Section 15350 of the State CEQA Guidelines), potentially significant impacts associated with the project include, but are not limited:

- Permanent loss of habitat for endangered species;
- Cumulative air quality impacts associated with construction activities;
- Potential loss or disruption of artifacts of cultural, historical and/or archeological significance;
- Potential impacts to groundwater hydrology and water quality;
- Consistency with adopted plans and policies;
- Others

Step 3: Select a reasonable range of alternatives that have the potential to avoid or lessen the significant impacts.

Recognizing that the purpose of the DEIR is to foster informed decision-making, the selection of a range of alternatives need only focus on those necessary to permit a reasoned choice while avoiding or minimizing significant adverse impacts. Thus, the list of alternatives for each project component is not exhaustive.

Step 4: Identify screening criteria to apply to alternatives.

Once a range of alternatives has been identified, the next step is to identify screening criteria with which to eliminate from further consideration those alternatives that are either infeasible or do not avoid or minimize the identified potentially significant affects associated with the preferred project. Screening criteria address a range of environmental, regulatory and social issues. For a given alternative to pass through the screen, it must enable the fundamental objectives of the project to be achieved while minimizing environmental, regulatory and/or social impacts.

Feasibility is an important consideration since an infeasible alternative cannot be implemented and consequently will not reduce or avoid impacts associated with the proposed project. It is essential, therefore, that alternatives be screened for feasibility. If an alternative is determined to be infeasible, an explanation of how this conclusion was reached must be provided.

Determining the feasibility of a given alternative is guided by the definition of "feasible" provided in Section 15364 of the State CEQA Guidelines:

> *"...capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social, and technological factors."*

Among the criteria used to assess the feasibility of various alternatives are:

<u>Project Cost</u>. Although cost is clearly an important consideration in the choice of alternatives, especially when the project involves a costly community-wide infrastructure system, an alternative may not be rejected solely on whether or not it is substantially more costly than the proposed project (CEQA Guidelines Section 15126(f)(2). Instead, project costs must be weighed against all the other screening factors in considering the feasibility of an alternative. On the other hand, in fulfilling its disclosure obligations under CEQA, the Lead Agency has wide latitude in determining the importance of project cost when weighing the different factors that contribute to the feasibility of an alternative.

<u>Environmental and Regulatory Constraints</u>. An alternative site or strategy may be constrained by multiple environmental factors such as the presence of special status species, significant archaeological resources, or hazardous geologic conditions. Under these conditions, the particular components of the Wastewater Facilities Project would be more difficult and costly to implement. With regard to regulatory constraints, an alternative may not be considered infeasible solely on the basis of whether a change in land use designation may be required to allow the given use. However, considering the feasibility of amending applicable plans and policies to accommodate a given project must be weighed against the other goals and objectives of the Plan that could be compromised if land is taken out of one classification and committed to another use.

Step 5: Apply screening criteria to determine which alternatives will be removed from further consideration and which will be analyzed in detail.

Screening criteria need not be overly detailed but should offer the reader a clear understanding of why certain alternatives were rejected.

Step 6: Evaluate potential impacts associated with alternatives.

The alternatives that emerge from the screening analysis are then analyzed in the topical sections of this DEIR. Sufficient factual analysis must be provided to enable a comparison of potential impacts based on objective criteria. "Alternative A is better than Alternative B", may not be adequate because the conclusion is largely qualitative and not supported by evidence.

Description and Analysis of Alternatives

For purposes of comparing alternatives, the Wastewater Facilities Project is divided into its constituent components: collection system, treatment system and disposal system (including bio-solids recycling).

Alternative I – No Project/No Action

The No Project/No Action Alternative is required by Section 15126.6(e) of the State CEQA Guidelines and NEPA Section 1502.14(d) . In this case, the No Project/No Action alternative refers to the potential environmental consequences of not implementing a Wastewater Facilities Project for Los Osos to alleviate nitrate contamination of groundwater.

Implementation of the No Project/No Action Alternative would result in the continued discharge of septic system effluent to ground water within the Los Osos area, thereby continuing the degradation of groundwater quality. Since the community derives all of its domestic water supply from groundwater resources, continued degradation is considered a significant unavoidable impact associated with the No Project/No Action Alternative. Additionally, the No Project/No Action Alternative would not achieve the basic objectives of the proposed project and would result in non-compliance with the RWQCB Cease and Desist Order No. 83-13. The LOCSD is legally bound by provisions of the California Water Code to comply with Orders issued by the RWQCB. Therefore, noncompliance is considered a significant unavoidable adverse impact associated with the No Project/No Action alternative. Lastly, the No Project alternative would not fulfill a fundamental objective of the wastewater Facilities Project which is to achieve and maintain a sustainable water supply for the community.

Implementation of the No Project/No Action Alternative would result in the proposed treatment plant not being constructed on the Tri-W site (or any other site). Therefore, significant impacts related to the permanent loss of habitat for endangered species; construction noise and air quality impacts; impacts to visual resources, and cultural resources would not occur.

Collection System Alternative

Collection Alternative I – STEP/STEG Collection System

With a STEP/STEG collection system, liquid effluent from individual septic systems within the Collection Area (see Figure 3-2) would be collected utilizing either a Septic Tank Effluent Pumping (STEP) and/or Septic Tank Effluent Gravity (STEG) system, in which liquid effluent is either pumped or gravity fed into small diameter pipes and conveyed to the treatment plant for treatment. The existing septic tank infrastructure currently in place would be retained (except those septic tanks installed prior to the establishment of the County septic tank standards and requirements) to be used as the primary collector and the primary reactor for the anaerobic breakdown of sewage solids. Septic tank solids would be collected directly from individual septic tanks on a regular basis and hauled to the treatment plant for treatment and disposal. Assuming 1,051 septic tanks and 250 working days per year, this amounts to an average of about 210 septic tanks per year, or about 4,000 gallons per week (2-3 tanker truck loads).

A STEP/STEG collection system would be designed in two ways. Most of the area would be served with small diameter septic tank effluent gravity (or STEG) sewers. This type of sewer uses a septic tank at each home, so only septic tank effluent is conveyed to the sewer main, relatively free of grit, grease, and other matter that may be troublesome to transport. The septic tank removes about 90% of the grease, 70%-90% of the suspended solids, and 50%-80% of the particulate biochemical oxygen demand (BOD). The partially treated domestic sewage then flows to a pump vault within the septic tank where a submersible pump conveys the effluent to the collection system or flows by gravity from the septic tank into the collection system mains, which in turn convey the effluent to the Wastewater Treatment Facility. The mains have comparatively small diameters (as small as three inches) and are more shallowly buried than conventional sewers because they can be placed on flatter slopes.

Where gravity flow is not effective, pump stations will be used similar to conventional sewerage practice. As an alternative to the use of mainline pump stations, some areas may be served by septic tank effluent pump (STEP) pressure sewers. As with STEG, STEP systems also use shallowly buried, small diameter PVC pipelines.

Assuming the entire collection area is served, this alternative offers certain environmental advantages over a conventional gravity system because it may be installed using trenchless technology that minimizes construction related impacts. However, it also requires each septic tank within the collection area to remain in place and to provide partial treatment of wastewater.

Another option is to use a STEP/STEG system in areas with shallow groundwater that are not readily served by a gravity system, and a conventional gravity system to collect the remaining portions of the Collection Area.

Wastewater Treatment Alternatives

The primary goal of a wastewater treatment facility is to remove components (pollutants) that have accumulated in domestic water as a result of human or commercial/industrial use and processes. Treated water must satisfy certain minimum standards established by the federal and State governments before it may be discharged back into the environment, or used for some other purpose. The most commonly used treatment systems in the United States involve primary, secondary and tertiary treatment schemes.

Primary Treatment. Primary treatment involves grit removal, screening, grinding, sedimentation, flocculation and skimming. Chemicals are sometimes added to speed up the sedimentation process. Flocculation is the agitation of wastewater by mechanical stirring, air injection, or chemicals to cause small suspended solids to collide and form larger particles (flocs) that can settle out more rapidly. Primary treatment removes about 60 percent of the solid materials in wastewater and about one-third of the oxygen-demanding wastes.

Secondary Treatment. Secondary treatment involves the use of biological methods, primarily trickling filters or activated sludge, that approximate natural degradation processes. Secondary treatment plants sometimes include chlorination to accomplish chemical oxidation and disinfection. In the activated sludge process, which is slightly more common, sewage is aerated with pure oxygen to increase bacteria degradation and then passed through a sedimentation tank where the sludge, rich in growing organisms, settles out. Part of the sludge is used to seed the next batch of wastes, the remainder is removed and may be dried and disposed of in a landfill. Primary plus secondary treatment still leaves 10 to 15 percent of the oxygen demanding wastes, 10 percent of the suspended solids, 50 percent of the nitrogen (mostly nitrates), 70 percent of the phosphorus, 95 percent of the dissolved salts and heavy metals, and any persistent organic materials such as pesticides.

Tertiary Treatment. Tertiary treatment refers to a series of specialized processes that reduce the concentration of one or more of the pollutants remaining after primary and secondary treatment. The pollutants to be removed depend on the characteristics of the wastewater and the area in which the treatment facility is located, and the intended use of the treated water. Some commonly used tertiary treatment methods include precipitation, adsorption, electrolysis or reverse osmosis, and the use of disinfectants such as ultraviolet light.

Wastewater Treatment Alternative I – Extended Aeration (above ground and without odor scrubbing)

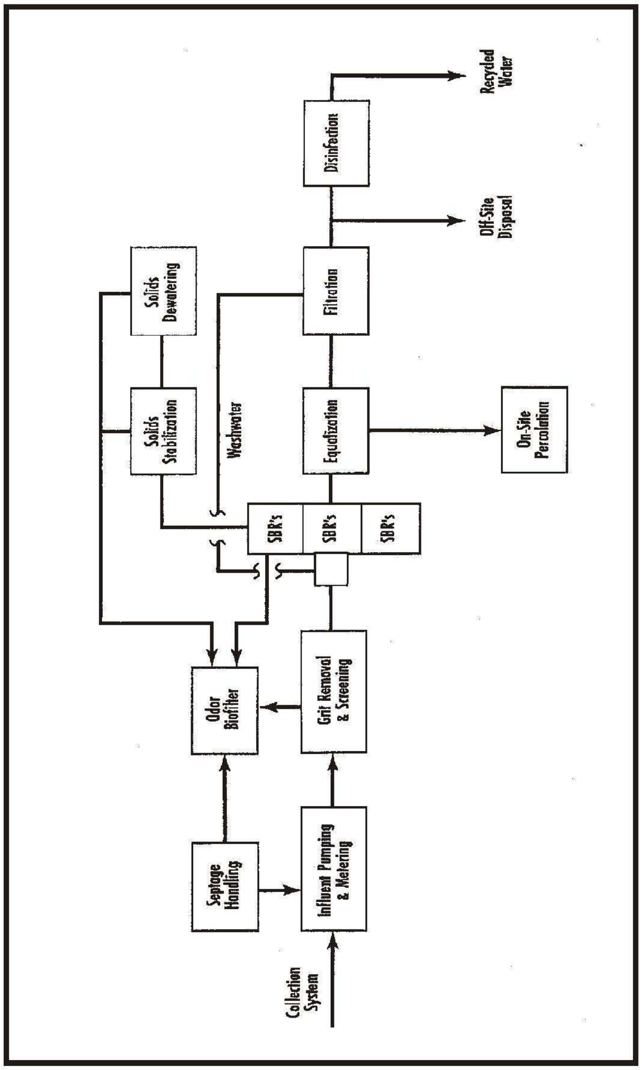
Extended aeration is the preferred method of wastewater treatment as determined by the Los Osos Community Services District. As described in Chapter 3 of this DEIR, extended aeration treatment systems have been in use in the United States and elsewhere for many years and have a demonstrated track record of removing nitrates from wastewater to meet the water quality standards established for Los Osos by the RWQCB. The preferred configuration of the extended aeration proposed for Los Osos is considered a “hybrid” because it would be constructed underground and would fully odor scrubbed. A more conventional extended aeration system, however, incorporates neither of these features if they are located away from sensitive receptors such as those associated with more urban setting. Accordingly, a conventional system results in greater nuisance impacts associated with noise and odors and would be more visible.

An Extended Aeration system employs a pair of aeration basins, 160 ft. square and 15 ft deep in the secondary treatment train which would be aerated with submerged fine bubble diffuser or surface aerators and the contents of the basins would be activated sludge.

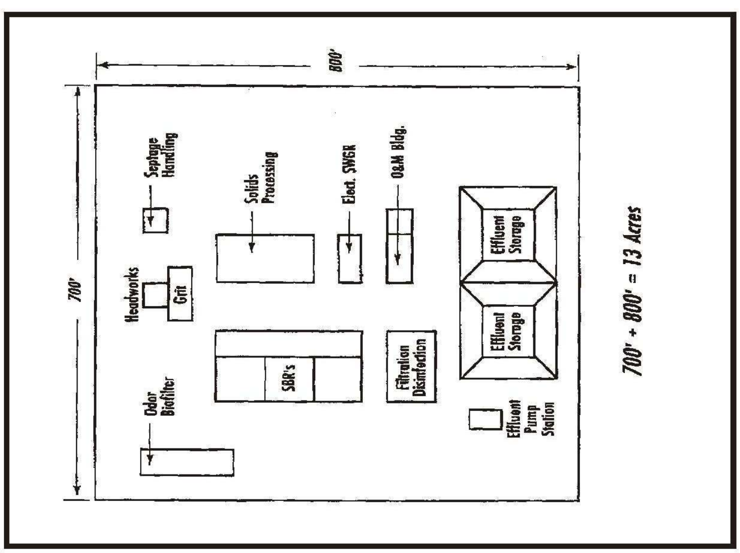
Wastewater Treatment Alternative II – Sequencing Batch Reactor (SBR)

A Sequencing Batch Reactor (SBR) system is a common type of secondary treatment in which wastewater is passed through bacteria suspended in a mixture of activated sludge to remove constituent pollutants. Table 5-1 summarizes the typical components of an SBR system.

An SBR system would fulfill the primary goal of the project which is to treat wastewater generated within the SWRCB Prohibition Zone and satisfy discharge requirements of the Regional Board. It may not meet other project objectives such as the provision of open space.



Sequencing Batch Reactor Treatment Process Flow Chart



Sequencing Batch Reactor-- Typical Site Plan

Figure 5-1 Sequencing Batch Reactor Treatment Plant Site Plan and Flowchart

LOS OSOS COMMUNITY SERVICES DISTRICT
WASTEWATER FACILITIES PROJECT

Table 5-1: Sequencing Batch Reactor (SBR) Typical System Components

Component	Description
Land Requirements	10-15 acres, exclusive of buffer area.
Odor Potential	Potential for odors is moderate; portions of the system with higher odor potential include the septage handling, SBR, and solids handling, all of which would be covered, ventilated and provided with odor control facilities.
Headworks	These include the influent pumping and possibly grit removal systems; most of structure would likely be underground (20 ft.) With a single story building above grade 30 feet square.
Septage Handling Facility	Below grade tank 20 ft. X 20 ft. which will receive septage from septage trucks; grit disposal from septage will likely consist of about 40 cubic yards per year, or about 6 truck loads annually.
Sequencing Batch Reactors	Two to three common wall concrete tanks with a total footprint of about 100 ft. X 250 ft., partially buried with a total depth of about 25 feet; SBR contains activated sludge.
Filters	Partially buried 25 ft. X 25 ft. structure with filter system and pumps.
UV Disinfection	Partially buried concrete structure consisting of a channel 4 ft. wide by 50 ft. with banks of UV lamps.
Solids Processing Building	Two-story 40 ft. X 100 ft. building with biosolids pumping, thickening, stabilization, de-watering and cake loading and storage. Biosolids (sludge) produced would be about 5 wet tons per day which would take about two truck loads per week to remove.
Biofilter Odor Beds	Foul odors from the septage, headworks, and solids processing facility would be scrubbed in soil biofilter which would be a raised bed of sand or compost covering an air distribution system. The bed would be about 5 feet high and cover about 3,000 sq.ft.
Operations Building	Single story 2,500 sq.ft. building containing the control room; laboratory; restrooms, shower and lavatory; maintenance shop; spare parts room; office; library/meeting room
Electrical Building	Will house the plant electrical service; single story, 400 sq.ft.

Wastewater Treatment Alternative III – Activated Ponds

Activated pond treatment systems rely on natural biochemical processes to treat collected wastewater. Pond systems treat wastewater aerobically using solar energy via algae growth, aerated mechanically to provide the needed oxygen for treatment. A by-product of this system is the production of bio-solids in the form of algal material.

Pond systems by their nature are land intensive. A typical activated pond system can require as much as 20 - 30 acres of land.

An activated pond system consists of the following components:

- *Advanced Facultative Ponds* (AFPs) each specially designed to maintain an anaerobic zone at the bottom, an anoxic facultative mid-depth zone and an aerobic surface layer. The fermentation pit is designed to optimize sedimentation and methane fermentation of sewage solids by allowing a very long solids retention time to ensure complete decomposition.

- *High Rate Ponds* (HRPs) designed to grow settleable species of algae which produce high levels of dissolved oxygen photosynthetically, supporting aerobic oxidation of the remaining BOD as they assimilate nutrients and carbon dioxide in the HRP.

- *Algal Settling Ponds* (ASPs) to allow the removal of algae by sedimentation. Periodically, one of the ASPs is decanted, and the concentrated algal slurry is dried onsite for subsequent use as a nitrogen-rich soil amendment or fermentation substrate.

- *Dissolved Air Flotation* (DAF) units that will remove most of the residual algal suspended solids in the ASP effluent by coagulation, flocculation and dissolved air flotation.

- The DAF units are followed by a final filtration process that will permit final disinfection by ultraviolet light (with chlorine backup) or other means prior to storage in a maturation pond and disposal and/or reuse for irrigation, recreation, or groundwater reintroduction.

- A *Septage Processing System* for the treatment of septage solids.

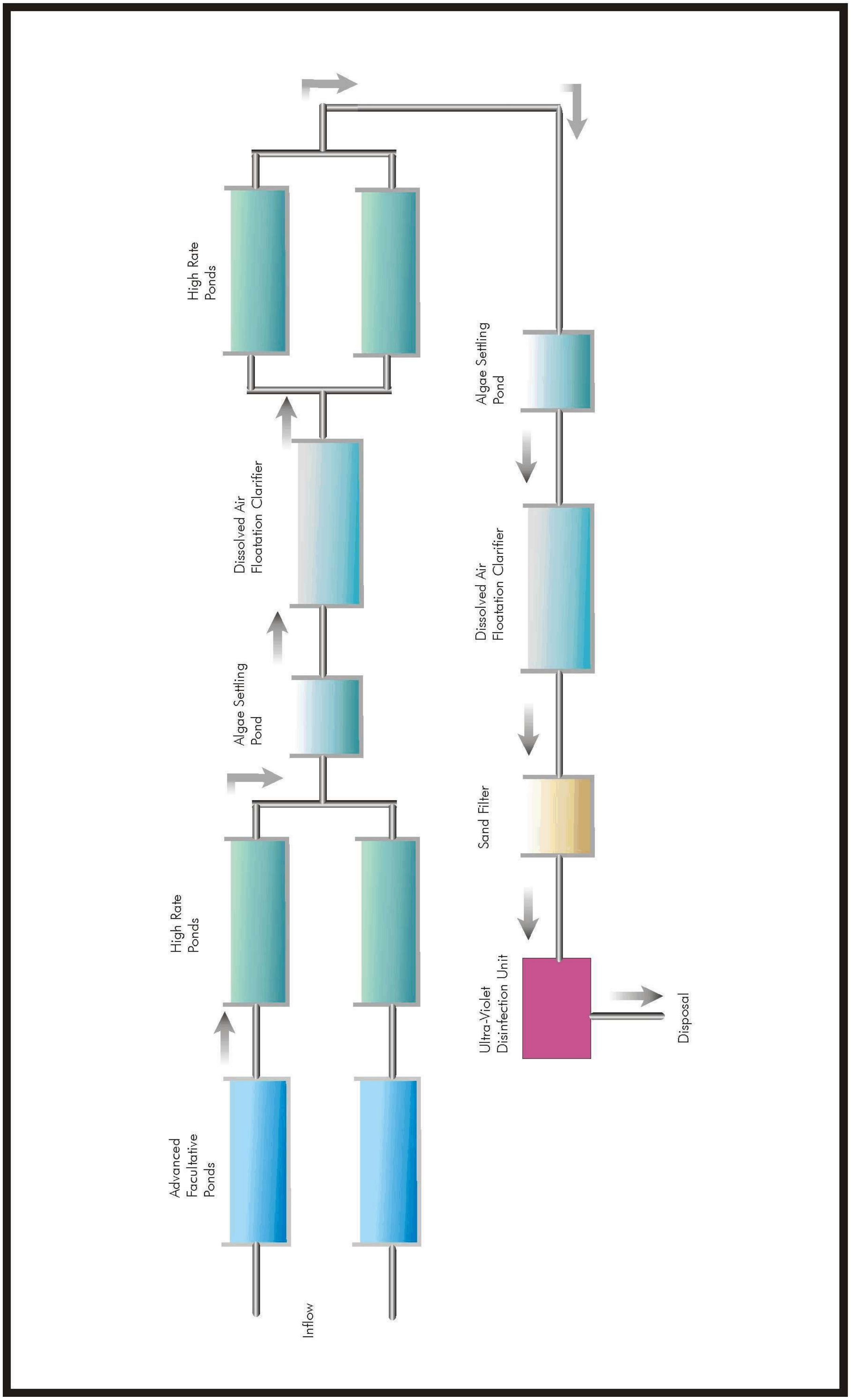


Figure 5-2
Activated Ponds Schematic Flow Diagram

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WASTEWATER FACILITIES PROJECT

Alternative Wastewater Treatment Locations

CEQA requires the consideration of alternative locations for a project when they provide an opportunity to avoid or lessen one or more significant environmental impact. The other factors relating to feasibility must also be weighed for these sites (whether it meets overall project objectives, economically feasible, etc.). In addition, the ownership or control of the alternative site is another factor in determining feasibility.

In order to meet the project objectives, the entire RWQCB Prohibition Area must be served. Therefore, the collection system location will be the same for all alternatives and alternative sites are available. The discussion of alternative locations will necessarily focus on sites for the treatment plant and for disposal.

Alternative treatment plant sites are shown on Figure 5-3.

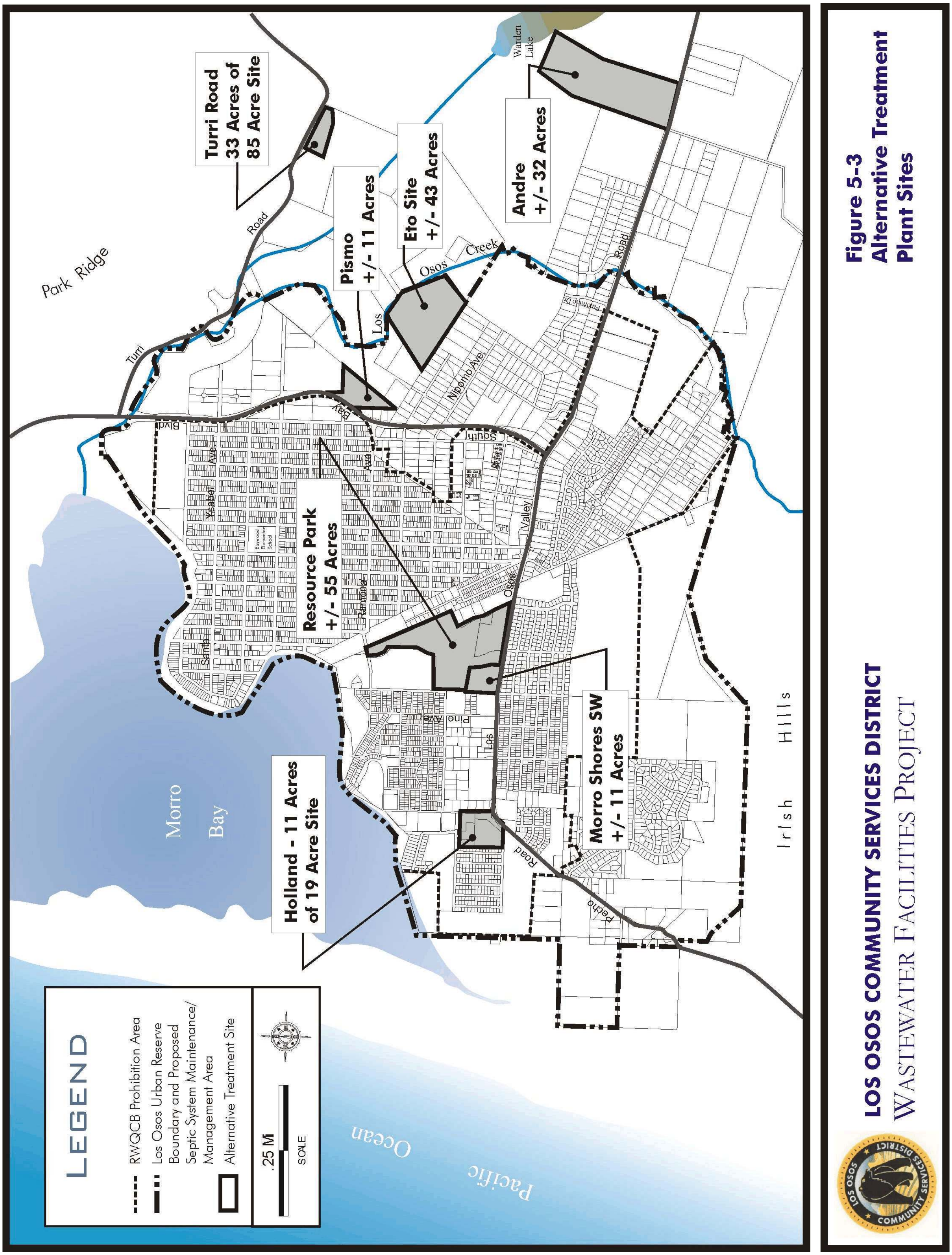


Figure 5-3
Alternative Treatment
Plant Sites

Alternative Treatment Site I – Holland

The Holland site consists of 19.4 acres located north of Los Osos Valley Road, south of the Sea Pines Golf Course and west of Pecho Road. The site is vacant and currently used as a driving range for the nearby Sea Pines golf course. No significant stands of vegetation or other physical characteristics are present. The site slopes gently north to south and is rectangular in shape. Surrounding land uses include single family residences to the west and north, the golf course to the south and vacant land designated for residential development to the east. Monarch Grove Elementary school is 0.1 miles to the east along Los Osos Valley Road.

The site is designated *Single Family Residential* by the Estero Area Plan/Local Coastal Program, which allows for up to 7 dwelling units per gross acre.

This site is not large enough to support development of an activated pond system but could accommodate an SBR or EA system.

Looking north at the Holland site from Monarch Lane

Alternative Treatment Site II – Morro Shores Southwest

The Morro Shores Southwest site consists of an 11 acre portion of the 55 acre Morro Shores property located east of Broderson Avenue and south of the Morro Shores mobile home park. The site is vacant and consists of gently sloping terrain with coastal scrub vegetation and several large eucalyptus trees. Surrounding land uses include vacant land to the east (the Tri-W site) along with the County library and community center, single family residential to the south and west.

The site is designated *Single Family Residential* by the Estero Area Plan/Local Coastal Program, which allows for up to 7 dwelling units per gross acre.

This site is not large enough to accommodate development of an Activated Pond system but could accommodate an SBR or EA system.

A view of the Morro Shores Southwest site looking north along Los Osos Valley Road.

Alternative Treatment Site III – Pismo

The Pismo site consists of an 11 acre parcel located east of South Bay Boulevard and immediately south and east of the Los Osos Middle School. The site is relatively flat and contains chaparral, oak woodland and coastal scrub vegetation communities. This was the preferred location for a conventional treatment system discussed in the 1997 Final Supplemental Environmental Impact Report (Fugro West, Inc.).

This site is not large enough to support development of an activated pond system but could accommodate an SBR or EA system. It may not meet other more specific project objectives such as the provision of open space within the urban core.

The site is designated *Residential Suburban* by the Estero Area Plan/Local Coastal Program, which allows lot sizes that range between 1 acre and 5 acres.

The Pismo site looking southeast toward the nearby greenhouses and the Irish Hills.

Alternative Treatment Site IV – Andre

The Andre property consists of two contiguous properties totaling 32 acres located at the north east corner of Los Osos Valley Road and Clark Valley Road, immediately east of the Los Osos Memorial Park cemetery. The site is currently largely vacant; a single family residence is located about one-half mile from Los Osos Valley Road.

The Andre site is uncultivated agricultural land considered Locally Productive by the State Important Farmlands Mapping Program. The site slopes gently downward to the north away from Los Osos Valley Road; the northerly property boundary adjoins Warden Lake, a locally significant wetland. High voltage transmission lines cross the west side of the site from south to north emanating from Diablo Canyon Nuclear Power Plant.

Looking north at the Andre site; the PG&E power lines are clearly evident along the western boundary of the site.

The site is designated *Agriculture* by the Estero Area Plan/Local Coastal Program.

Alternative Treatment Site V – Resource Park

Resource Park is the name given to about 66 vacant acres bounded by Los Osos Valley Road on the south, Broderson Avenue to the west, Palisades Drive on the east and Ramona Avenue to the north, and west of the County Park, the Community Center, and the County library. Resource Park consists of two contiguous properties: the 55 acre Morro Shores property and the 11 acre Tri-W site.

The Resource Park site was chosen as the only feasible site within the community of sufficient size to accommodate development of an activated pond wastewater treatment system. The type of system originally considered for the site was an activated pond system. However, it is large enough to support development of an SBR or an EA plant.

The Resource Park site contains the following land use designations:

Land Use Category	Acres (approx)	Density/Minimum Parcel Size
Residential Single Family	22	1-7 du/acre
Residential Multi-Family	28	8-38 du/acre
Commercial Retail	6	6,000 sq.ft. - 2.5 acres
Office and Professional	5	6,000 sq.ft. - 1 acre
Recreation	5	6,000 sq.ft. - 20 acres
Total:	66	

Alternative Treatment Site VI – Turri Road

The Turri Road site is located on the south side of Turri Road about one mile east of South Bay Boulevard and consists of a ten acre portion of a 84 acre site formerly used as a landfill and gravel pit. The level area most capable of supporting a wastewater treatment plant is composed of prime agricultural soils; the entire 84 acres is encumbered by a Land Conservation Act contract. The upper (southerly) portion of the site contains an abandoned landfill formerly operated by San Luis Obispo County. The RWQCB has determined that petrochemicals leaching from the landfill are polluting surface and subsurface water bodies. As a result, remediation efforts have been undertaken to correct the problem.

This site was also considered in previous environmental documents. The site is currently undeveloped and vegetated with annual grasses. Two unnamed drainage courses tributary to Los Osos Creek run adjacent to the site; one such drainage divides the site nearly in two in a north-south direction. Surrounding land uses consist primarily of grazing and open space.

The southerly 55 acres of the site consists of hilly terrain rising sharply from the unnamed creek. As such, the Turri site does not provide a large enough contiguous area of relatively flat land to accommodate an activated pond system unless contiguous parcels to the west are included. The site is large enough to support any one of several conventional treatment systems, including SBR, and EA.

The Turri Road site is designated *Agriculture* and *Public Facilities* by the Local Coastal Program.

The Turri Road site looking southeast

Alternative Treatment Site VII – Eto

The Eto site consists of 43.3 acres located east of South Bay Boulevard and south of Los Osos Middle School. The site is relatively flat and contains chaparral, oak woodland and coastal scrub vegetation communities. Surrounding land uses include open space and grazing to the east, single family residences on large lots to the south and west, and Los Osos Creek to the east.

This site is large enough to accommodate an activated pond system and would accommodate any number of conventional treatment facilities, including SBR, EA, MLE and others.

The Eto site is designated *Residential Rural* which would allow parcel size of between 5 and 20 acres.

The Eto site looking north toward Hollister Peak

Wastewater Disposal System Alternatives

As described in the project description, the wastewater disposal system will be designed to handle a peak wet weather flow of 1.7mgd. The preferred method of wastewater disposal is to construct sub-surface leach fields on either side of the inferred trace of the Los Osos fault and to re-introduce groundwater into each sub-basin of the shallow Paso Robles formation. During dry weather, a portion of the treated wastewater (200,000 gallons per day) will be recycled by spraying on ball fields, the Sea Pines golf Course and other large open areas throughout the community.

Several sites were investigated by the District's hydrological consultant (Cleath & Associates) for the disposal of treated wastewater. The analysis and conclusions are incorporated herein by reference and available for review at the District offices. The sites that were rejected from further consideration were those that did not offer sufficient depth to groundwater, were too close to existing water supply wells, or were too close to other disposal sites.

Surface Disposal

One alternative to the preferred disposal strategy is surface disposal to Los Osos Creek or Morro Bay. Surface disposal is problematic in the Los Osos area for a number of reasons. First, Morro Bay is a National Estuary which is being managed for the long-term protection of its fragile natural resources. Introducing treated wastewater into this estuary would seem counter to these long-term environmental protection goals.

Another surface disposal option is Los Osos Creek, which discharges directly into the Bay and provides habitat for special status animal species such as steelhead and the tidewater gobi. The discharge requirements established by the Regional water Quality Control Board for surface discharge into these water bodies reflect these constraints and are correspondingly onerous.

Of greater concern with regard to surface disposal is the loss of groundwater replenishment that would result from the direct discharge of treated wastewater into the ocean. The most recent data from URS (see Chapter 6.2: Hydrology and Water Resources) suggests that replenishment and withdrawals are roughly in balance and that the greatest contribution to groundwater replenishment comes from septic systems. If this source of replenishment is diverted to the ocean, withdrawals would quickly exceed the capacity of the groundwater basin to recharge, and a supplemental source of water would be needed. Thus, disposing of treated wastewater through surface disposal would fail to meet a fundamental objective of the project which is to provide a sustainable water supply for the community. The depletion of groundwater resources would constitute a significant adverse impact far greater than those associated with the project itself. For these reasons, surface disposal is considered infeasible and will not be evaluated by this DEIR as a disposal alternative.

Use of Existing Leach Fields

Another potential disposal option is to pump the treated wastewater back to existing individual septic system leach fields. Under this approach, a separate system of sub-surface leach fields would be substituted with the continued use of existing septic leach fields at individual properties. This approach offers an important environmental advantage over the separate leach field system in that, if feasible from a hydrogeological standpoint, it could avoid the removal of habitat for special status plants and animals at the Broderson disposal site in favor of existing leach fields.

The use of existing septic leach fields, however, is not without environmental disadvantages, including:

- *Uncertainty regarding the capacity of existing leach fields.*

  Under buildout conditions, up to 950,000 gallons of wastewater will need to be disposed of on the west side of the fault. Moreover, existing leach fields near existing production wells could not be used because a minimum separation of 500 feet must be maintained between production wells and the disposal of treated wastewater. This leaves the properties south of Los Osos Valley Road west of Ninth Street. A preliminary estimate suggests that existing septic leach fields are currently handling about 260,000 gallons per day, which is far less than the 950,000 that will need to be disposed of on the west side of the fault.

  The above estimate assumes that every leach field is currently operating at peak performance. Realistically, the age and maintenance of leach fields varies considerably, which in turn limits their capacity. Before undertaking a program to utilize existing leach fields, assuming enough fields could be found to accommodate all of the wastewater, each leach field would need to be inspected and renovated as necessary.

- *Using individual leach fields would limit the use of properties.*

  Septic leach fields used for disposal would need to remain accessible for periodic renovation and maintenance, meaning that the portion of a yard overlying the field would need to remain free of structures. This would greatly limit the useability of lots, especially narrow lots.

- *Replacement and periodic maintenance of existing septic leach fields.*

  The feasibility of using the existing septic leach fields depends in part on each leach field meeting certain minimum standards for system operation. Given the diversity of septic system age and condition, it is likely that a large number of these fields would require replacement at the outset. Existing leach fields are located either in residential yards or, in some instances, in areas now supporting habitat for special status plants and animals (such as the Morro Shores Mobile Home Park). Thus, leach field replacement could over time result in significant impacts, as well as a considerable up-front cost to inspect each system and to replace sub-standard systems.

- *Impacts associated with connecting to individual existing leach fields.*

  The individual connections to septic leach fields would result in similar impacts as those associated with the collection system connection.

- *Impacts associated with installation of the distribution system.*

  As presently envisioned, the disposal system will involve the installation of a series of underground pipes to eight disposal sites located on either side of the Los Osos fault. Distributing up to 1.2 million gallons per day of treated wastewater would involve the installation of distribution pipes in nearly every street in the community, similar to the collection system.

- *Other issues.*

Although not direct environmental impacts, the uncertainty and high cost of ongoing maintenance and the replacement of substandard leach fields would mean higher costs to the ratepayers. Higher costs may not be consistent with one of the main objectives of the project which is to maintain affordability. Another issue relates to the use of individual private properties by a public agency for the disposal of community wastewater.

All of these factors must be weighed against the potential loss of up to eight acres of habitat for the endangered Morro Shoulderband Dune Snail that would occur through the use of sub-surface leach fields on the Broderson site.

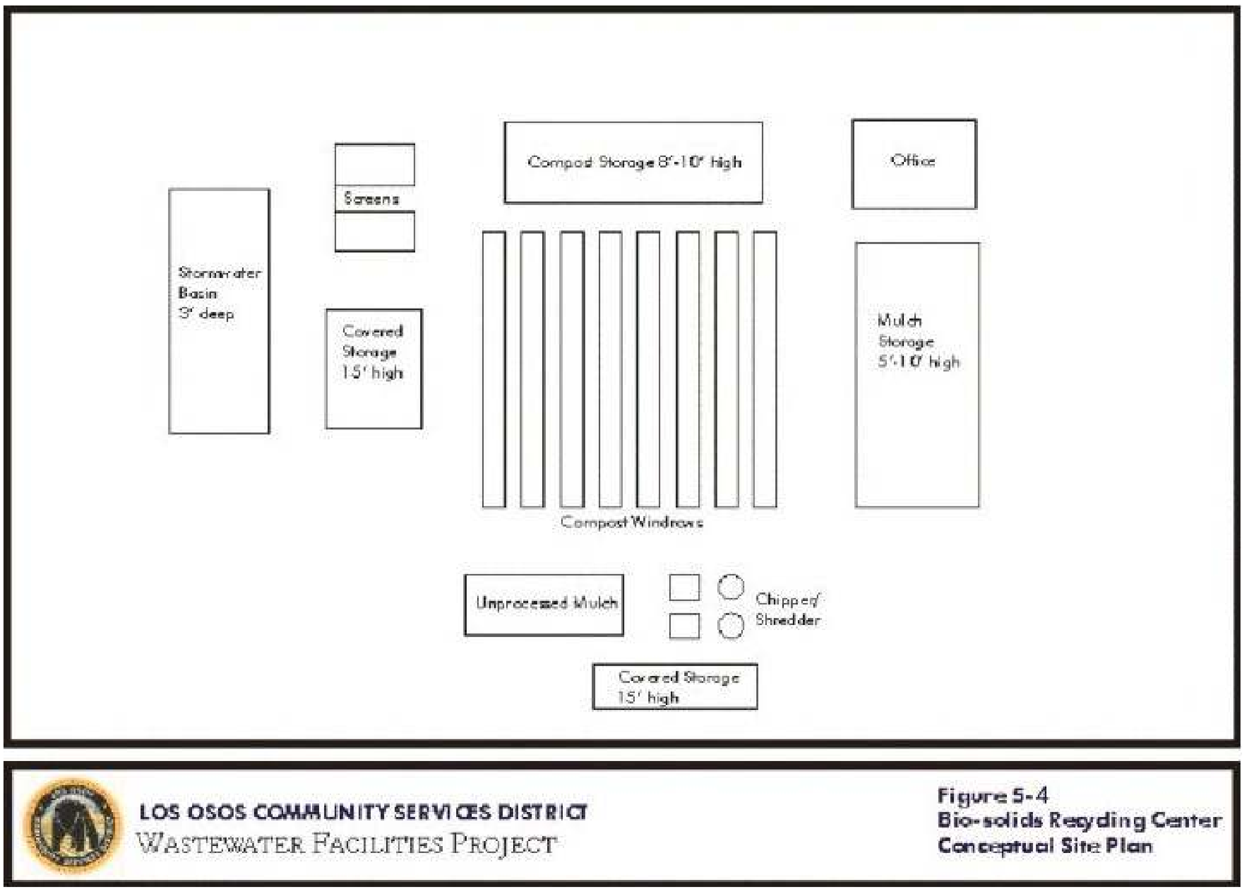
Other Disposal Options

Other disposal options investigated by the LOCSD include infiltration basins, injection wells and aquifer storage and harvesting wells. (see Hydrologic Investigation of the Broderson Site, Cleath, June, 2000, attached) Infiltration basins hold treated wastewater until it percolates into the groundwater basin. Infiltration basins were considered as a disposal option by San Luis Obispo County in the previous wastewater project, but were rejected in favor of injection wells because of concerns expressed by neighbors regarding potential effluent surface flows, odors, vector propagation and the loss of valuable biological habitat. With injection wells, groundwater is pumped back into the groundwater basin through a series of wells. After considering the experience of others in using this technology, the consultants concluded that this approach was infeasible because of the high potential for plugging of the wells with suspended solids, necessitating costly and frequent renovation. Aquifer storage and harvesting (ASR) wells were considered and rejected for similar reasons as injection wells and because of regulatory constraints.

Bio-Solids Disposal System Alternatives – Recycling

The preferred method for the disposal of treated wastewater bio-solids (sludge) is surface disposal in a landfill. An alternative is to recycle treated bio-solids for re-use as a soil amendment. Under this alternative, treated sludge will be removed from the Wastewater Treatment facility about three times per week and hauled to bio-solids recycling center where it will be combined with green-waste (organic mulch) and allowed to decompose. A bio-solids recycling facility will consist of about four acres and would contain a two-acre covered concrete pad and support facilities as illustrated by Figure 5-4. Alternative sites for bio-solids recycling are shown on Figure 5-5.

Figure 5-4: Bio-solids Recycling Facility



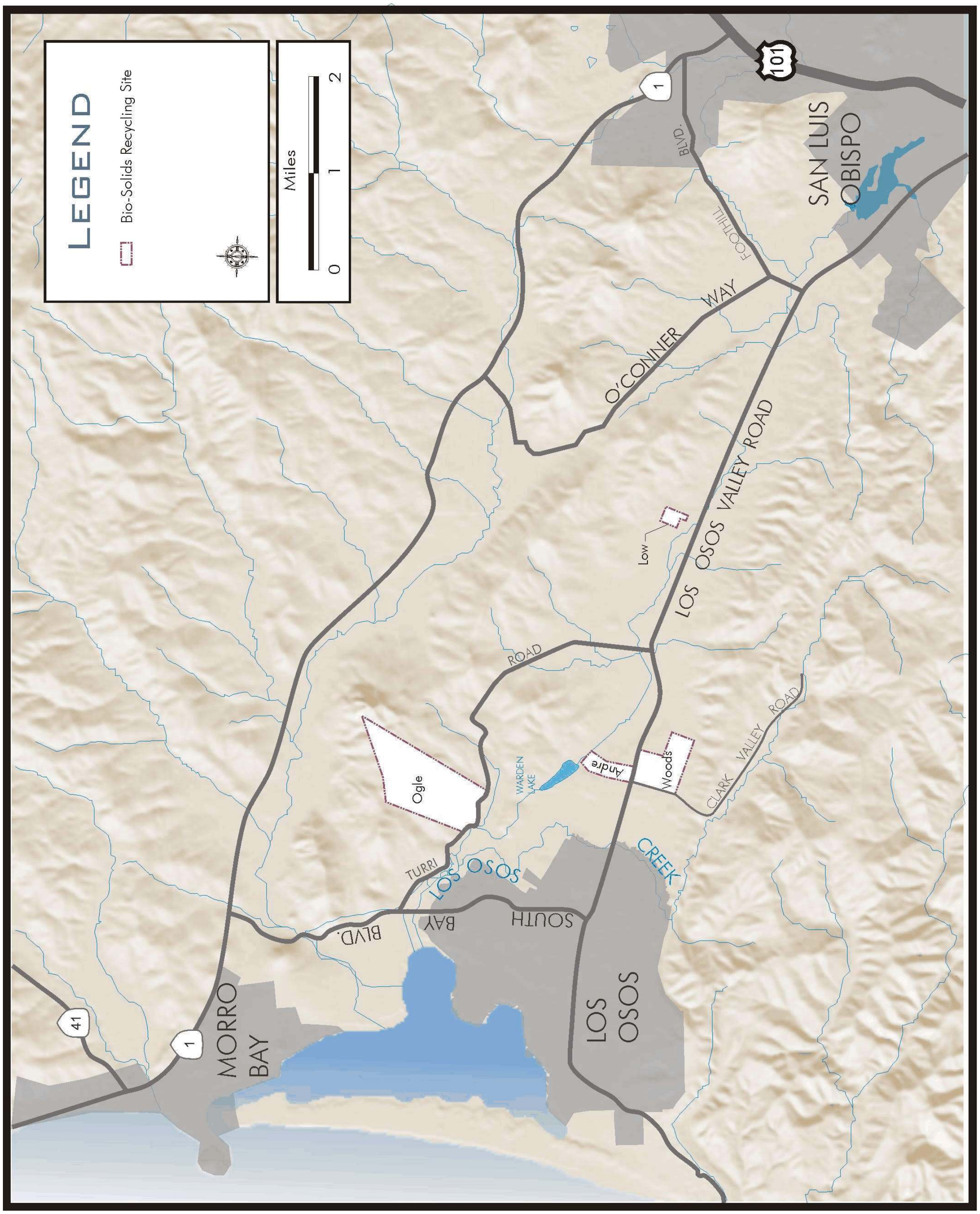


Figure 5-5
Alternative Bio-Solids Recycling Sites

LOS OSOS COMMUNITY SERVICES DISTRICT
WASTEWATER FACILITIES PROJECT

Alternative Bio-Solids Recycling Site I – Ogle

The Ogle property consists of 443 acres located on the north side of Turri Road about one mile east of South Bay Boulevard. The property is used primarily for cattle grazing, however productive farmland is located on the more level portions of the site adjacent to Turri Road. The Ogle property consists of gently rolling hills rising from Turri Road to Hollister Peak (elev. 1,409), one of the seven volcanic mountains, or *morros,* that stretch from Morro Bay inland to San Luis Obispo. Although the lower elevations of the site could be used for irrigated farming, it is not currently and the property is not encumbered by a Land Conservation Contract.

In the drainages there are stands of coast live oak and other coastal vegetative species. Most of the site, however, is covered in annual grasses.

Alternative Bio-Solids Recycling Site II – Andre

The Andre property is described earlier under alternative treatment plant sites. Because of its size (32 acres), the Andre property offers sufficient land area to accommodate a bio-solids recycling facility.

Alternative Bio-Solids Recycling Site III – Low

The Low property consists of about twenty acres located on the north side of Los Osos Valley Road about three-quarters of a mile east of Turri Road. The site consists of level agricultural land with a single family residence. Adjacent properties are small, ranging in size from 4 to 7 acres and each contains a single family residence. The Low property is considered *Agricultural Land of Local Potential* by the State Important Farmland Mapping Program. Such land could be considered 'prime' if irrigated and joined with other parcels to form a viable farming unit.

Alternatives Screening Analysis

The purpose of the screening analysis was to identify alternatives that appear to offer environmental advantages while achieving most of the objectives of the project.

A set of screening criteria were developed for the following components: treatment technologies, treatment sites, and bio-solids recycling sites. The criteria address environmental, economic, social, and technological factors as appropriate. Tables 5-2 and 5-3 provide a description of the screening criteria and the concerns that each criteria addresses.

For each alternative a simple marking system was used to indicate whether or not the alternative meets the particular criterion. A "Y" symbol was used if the alternative met the criterion and "N" if it did not. Tables 5-4, 5-5, and 5-6 present the results. Only those alternatives which would feasibly attain the most basic objectives of the project but would avoid or substantially lessen any of the significant effects of the preferred project were considered for detailed environmental review.

Table 5-2
Screening Criteria for Alternative Treatment Technologies

Criteria Code	Screening Criteria	Screening Criteria Description
Regulatory Compliance		
RC-1	Alternative has a demonstrated ability to meet and sustain water quality requirements of RWQCB without importing water from outside of basin.	Treatment systems with a proven track record for achieving 7 milligrams per liter of nitrates would be favored.
RC-2	Alternative system can be designed to accommodate emergency spills.	Systems that provide sufficient capacity to ensure a margin of safety in the event of plant failure or disruption of operation would be favored.
RC-3	System can maintain treatment level capability at peak capacities.	Systems capable of handling peak wet-weather flows (1.7 mgd) while maintaining treatment levels specified by RWQCB would be favored.
RC-4	System incorporates flexibility for expansion to achieve Department of Health Services drinking water standards and/or future changes in regulatory standards.	To enable groundwater replenishment in the future, treatment systems capable of being modified to provide additional level of treatment to meet DHS standards would be favored.
Biological Resources		
B-1	Alternative system has a small footprint that minimizes potential loss of habitat for special status plants and animals.	Least land intensive systems would be favored.
Cultural Resources		
C-1	Alternative system has a small footprint that minimizes potential disturbance of significant cultural and/or archaeological resources that may be present.	Least land intensive systems would be favored.
Socioeconomic Considerations		
SE-1	Alternative system is affordable to ratepayers.	System costs that do not create economic hardship to ratepayers would be favored.
SE-1	Alternative system can be designed to incorporate usable open space/parkland.	Systems that can be buried or otherwise configured to incorporate open space/parkland on treatment site would be favored.
SE-2	Alternative system can be designed to look aesthetically pleasing.	Systems that can be designed compatible with urban setting (if so located) and not degrade important viewsheds would be preferred.
SE-3	Alternative system is not complex to construct and has the potential to minimize the length of construction time.	Treatment systems with relatively simple construction that minimize disruption of the community would be favored.
Sustainability and Energy Consumption		
S-1	Alternative system minimizes difficulty and frequency of bio-solids handling and minimizes bio-solids generation.	Systems designed to efficiently accommodate the handling and transport of sludge to a point of disposal/recycling, and that minimize sludge generation are preferred.
S-2	Alternative system has a low rate of energy consumption.	Systems with lower energy consumption and correspondingly lower costs to ratepayers are preferred.

Table 5-2
Screening Criteria for Alternative Treatment Technologies

Criteria Code	Screening Criteria	Screening Criteria Description
S-3	Alternative system minimizes or avoids hazardous materials/chemical use.	Hazardous materials pose a potential health and safety hazard to the public and the environment. Treatment systems that minimize use and storage of hazardous materials are preferred.
Air Quality/Odors		
AQ-1	Alternative system alternative design minimizes the generation of adverse odors to nearby sensitive receptors.	Less odor-intensive treatment systems are preferred.
AQ-2	Alternative system minimizes construction-related emissions associated with grading and gas/diesel powered machinery use.	Treatment systems with a smaller footprint and therefore less grading and construction activities are preferred.
AQ-3	Alternative system minimizes the potential emission of hazardous materials.	Systems that minimize or eliminate the emission of hazardous materials are preferred.

Table 5-3
Screening of Alternative Treatment Technologies

Criteria Code	Screening Criteria	Alternative Treatment Technologies				
		Preferred Project	No Project	Extended Aeration (standard)	Sequencing Batch Reactor	Activated Ponds
Regulatory Compliance						
RC-1	Alternative has a demonstrated ability to meet and sustain water quality requirements of RWQCB without importing water from outside of basin.	Y	N	Y	Y	N
RC-2	Alternative system can be designed to accommodate emergency spills.	Y	N/A	Y	Y	Y
RC-3	Alternative system can maintain treatment level capability at peak capacities.	Y	N/A	Y	Y	Y
RC-4	Alternative system incorporates flexibility for expansion to achieve Department of Health Services drinking water standards and/or future changes in regulatory standards.	Y	N/A	Y	Y	Y
Biological Resources						
B-1	Alternative system has a small footprint that minimizes potential loss of habitat for special status plants and animals.	Y	N/A	Y	Y	N
Cultural Resources						
C-1	Alternative system has a small footprint that minimizes potential disturbance of significant cultural and/or archaeological resources that may be present.	Y	N/A	Y	Y	N
Socioeconomic Considerations						
SE-1	Alternative system is affordable to ratepayers.	Y	N	Y	Y	N
SE-2	Alternative system can be designed to incorporate usable open space/parkland.	Y	N	Y	Y	Y

Table 5-3
Screening of Alternative Treatment Technologies

Criteria Code	Screening Criteria	Alternative Treatment Technologies				
		Preferred Project	No Project	Extended Aeration (standard)	Sequencing Batch Reactor	Activated Ponds
SE-3	Alternative system can be designed to look aesthetically pleasing.	Y	Y	Y	Y	Y
SE-4	Alternative system is not complex to construct and has the potential to minimize the length of construction time.	Y	Y	Y	Y	Y
Sustainability and Energy Consumption						
S-1	Alternative system minimizes difficulty and frequency of bio-solids handling and minimizes bio-solids generation.	Y	Y	Y	Y	Y
S-2	Alternative system has a low rate of energy consumption.	Y	Y	Y	Y	Y
S-3	Alternative system minimizes or avoids hazardous materials/chemical use.	Y	Y	Y	Y	N
Air Quality/Odors						
AQ-1	Alternative system design minimizes the generation of adverse odors to nearby sensitive receptors.	Y	Y	N	Y	Y
AQ-2	Alternative system minimizes construction-related emissions associated with grading and gas/diesel powered machinery use.	Y	Y	Y	Y	N
AQ-3	Alternative system minimizes the potential emission of hazardous materials.	Y	Y	Y	Y	Y

Table 5-4
Screening Criteria for Alternative Treatment Sites and Bio-Solids Recycling Sites

Criteria Code	Screening Criteria	Screening Criteria Description
Regulatory Compliance		
RC-5	Development of site with project component (treatment, disposal, bio-solids recycling) has a higher likelihood of acceptance by regulatory agencies, including SLO County; USF&WS; California Department of Fish and Game; EPA; US Army Corps of Engineers; Coastal Commission.	Project sites that would have a greater likelihood of meeting the requirements of the applicable regulatory agencies would be favored.
RC-6	Alternative site is consistent with goals, policies and programs of applicable plans and regulations (Local Coastal Program, Coastal Act, etc.).	Project sites with greater consistency with the goals and policies of applicable regulatory agencies would be favored.
Land Use		
LU-1	Use is consistent with applicable land use designation for site.	Sites with an LCP land use designation that allows a wastewater treatment or disposal facility would be favored.
LU-2	Site minimizes potential land use compatibility impacts with surrounding land uses resulting from construction and operation.	Sites removed from adjacent or surrounding sensitive receptors to nuisance impacts associated with the wastewater treatment and/or disposal processes would be favored.
LU-3	Site affords the opportunity to provide usable open space/park and recreation amenities for the community.	Sites that provide easy access to open space/park and recreation amenities associated with treatment site are favored.
LU-4	Site avoids prime or productive agricultural land.	Sites located on less than prime agricultural land would be favored over sites located on prime lands.
LU-5	Alternative site is not subject to an active Land Conservation Act contract.	Sites not encumbered by a Land Conservation Act contract are favored.
Biological Resources		
B-2	Alternative site avoids or minimizes habitat for special status plants or animals.	Sites without habitat (or that have lower quality habitat) for special status plant or animal species are preferred.
Cultural Resources		
C-2	Project site avoids known sites of cultural and/or archaeological resources.	Sites with no known resources or a low likelihood of such resources are preferred.
Visual Resources/Aesthetics		
V-1	Alternative site avoids or minimizes adverse affects to important viewsheds.	Project sites located in less than prominent viewshed locations or afford opportunities for screening and mitigation of visual impacts are preferred.
Socioeconomic Issues		
SE-2	Site would be cost-effective to develop with given wastewater facility component.	System can be buried or otherwise configured to incorporate open space/parkland on treatment site.
SE-2	Site is centrally located so that collection and disposal systems are cost effective to construct.	Centrally located treatment facility would reduce collection costs.

Table 5-4
Screening Criteria for Alternative Treatment Sites and Bio-Solids Recycling Sites

Criteria Code	Screening Criteria	Screening Criteria Description
Air Quality/Odors		
AQ-1	Alternative site minimizes the impact of adverse odors to nearby sensitive receptors.	Locations distant from sensitive receptors would be preferred.
AQ-2	Alternative site minimizes construction-related emissions associated with grading and gas/diesel powered machinery use.	Level building sites require less grading and construction activities.
AQ-3	Alternative site minimizes the potential impact of hazardous materials emissions on nearby sensitive receptors.	Sites removed from sensitive receptors (school, hospitals, etc.) are preferred.
Traffic and Circulation		
T-1	Alternative site minimizes traffic impacts associated with construction.	Sites for wastewater facilities that provide opportunities to minimize construction traffic impacts are preferred.
T-2	Alternative site minimizes traffic hazards associated with construction.	Sites for wastewater facilities that provide opportunities to minimize construction traffic hazards are preferred.
T-3	Alternative site minimizes traffic impacts associated with operation of wastewater facility.	Sites for wastewater facilities that provide opportunities to minimize operational traffic impacts to surrounding streets and intersections are preferred.
T-4	Alternative site minimizes potential traffic hazards associated with facility operation.	Sites for wastewater facilities that provide opportunities to minimize operational traffic hazards on surrounding streets and intersections are preferred.
Flooding/Drainage		
F-1	Alternative site is not located within a floodplain or subject to flooding, periodic inundation or ponding.	Sites located outside floodplains or areas of periodic ponding are preferred.
F-2	Runoff from construction and/or operation of a wastewater facility on a site minimizes potential degradation of water quality of Morro Bay or other surface water body.	Sites without creeks and or direct drainage courses to Morro Bay are preferred.
Groundwater		
GW-1	Disposal site affords sufficient percolation and depth to groundwater to avoid periodic saturation of surface soils and/or surface ponding.	Sites with greater than 30 feet separation to groundwater are preferred, accounting for mounding that may occur from disposal operations.
Geology		
G-1	Alternative voids significant geologic hazards associated with unstable slopes, liquefaction.	Sites not constrained by steep slopes, rock outcroppings or unstable soils are preferred.
G-2	Alternative site avoids an active or potentially active earthquake fault.	Sites without active or potentially active fault are preferred.
G-3	Disposal location minimizes the potential for liquefaction.	Disposal locations that minimize liquefaction impacts are preferred.

Table 5-5
Screening of Alternative Wastewater Treatment Plant Sites

Criteria Code	Screening Criteria	Alternative Sites								
		Preferred Treatment Location	No Project	Holland	Morro Shores South West	Pismo	Andre	Turri Road	Resource Park	Eto
Regulatory Compliance										
RC-5	Development of site with project component (treatment, disposal, bio-solids recycling) has a higher likelihood of acceptance by regulatory agencies, including SLO County; USF&WS; California Department of Fish and Game; EPA; US Army Corps of Engineers; Coastal Commission.	Y	N	Y	Y	Y	Y	N	N	N
Land Use										
LU-1	Use is consistent with applicable land use designation for site.	N	Y	N	N	N	N	Y	N	N
LU-2	Site minimizes potential land use compatibility impacts with surrounding land uses resulting from construction and operation.	Y	Y	N	Y	Y	Y	Y	Y	Y
LU-3	Site is centrally located to provide usable open space/park and recreation amenities for the community.	Y	N	Y	Y	N	N	N	Y	N
LU-4	Site avoids prime or productive agricultural land.	Y	Y	Y	Y	Y	N	N	Y	N
LU-5	Alternative site is not subject to an active Land Conservation Act contract.	Y	Y	Y	Y	Y	Y	N	Y	Y
Biological Resources										

Table 5-5
Screening of Alternative Wastewater Treatment Plant Sites

Criteria Code	Screening Criteria	Alternative Sites								
		Preferred Treatment Location	No Project	Holland	Morro Shores South West	Pismo	Andre	Turri Road	Resource Park	Eto
B-2	Alternative site avoids habitat for special status plants or animals.	N	Y	N	N	N	Y	N	N	N
Cultural Resources										
C-2	Project site avoids known sites of cultural and/or archaeological resources.	Y	Y	Y	Y	N	Y	Y	N	Y
Visual Resources/Aesthetics										
V-1	Alternative site avoids or minimizes adverse affects to important viewsheds.	N	Y	N	N	Y	Y	N	N	Y
Socioeconomic Issues										
SE-2	Site would be cost-effective to develop with given wastewater facility component.	Y	Y	Y	Y	Y	Y	N	Y	Y
SE-2	Site is centrally located so that collection and disposal systems are cost effective to construct.	Y	Y	N	Y	N	N	N	Y	N
Air Quality/Odors										
AQ-1	Alternative site avoids or minimizes the impact of adverse odors to nearby sensitive receptors.	Y	Y	N	Y	Y	Y	Y	Y	Y
AQ-3	Alternative site avoids or minimizes the potential impact of hazardous materials emissions on nearby sensitive receptors.	Y	Y	N	Y	Y	Y	Y	Y	Y
Traffic and Circulation										

Table 5-5
Screening of Alternative Wastewater Treatment Plant Sites

Criteria Code	Screening Criteria	Alternative Sites								
		Preferred Treatment Location	No Project	Holland	Morro Shores South West	Pismo	Andre	Turri Road	Resource Park	Eto
T-1	Alternative site minimizes traffic impacts associated with construction.	Y	Y	N	Y	Y	Y	Y	Y	Y
T-2	Alternative site minimizes traffic hazards associated with construction.	Y	Y	N	Y	N	Y	Y	Y	Y
T-3	Alternative site minimizes traffic impacts associated with operation of wastewater facility.	Y	Y	Y	Y	Y	Y	Y	Y	N
T-4	Alternative site minimizes potential traffic hazards associated with facility operation.	Y	Y	Y	Y	Y	Y	Y	Y	N
Flooding/Drainage										
F-1	Alternative site is not located in a floodplain or subject to flooding, period inundation or ponding.	Y	Y	Y	Y	Y	Y	N	Y	Y
Groundwater										
GW-1	Treatment facility site affords sufficient percolation and depth to groundwater to allow for sub-surface construction.	Y	Y	Y	Y	Y	Y	N	Y	Y
Geology										
G-2	Alternative site avoids an active or potentially active earthquake fault or other geologic hazards.	N	Y	Y	Y	Y	Y	Y	N	Y

Table 5-6
Screening of Alternative Bio-Solids Recycling Sites

Criteria Code	Screening Criteria	Alternative Bio-Solids Recycling Locations				
		Preferred Disposal Method (Hauling)	No Project	Ogle	Andre	Low
Regulatory Compliance						
RC-5	Development of site with project component (treatment, disposal, bio-solids recycling) has a higher likelihood of acceptance by regulatory agencies, including SLO County; USF&WS; California Department of Fish and Game; EPA; US Army Corps of Engineers; Coastal Commission.	Y	N	Y	Y	N
Land Use						
LU-1	Use is consistent with applicable land use designation for site.	Y	Y	N	N	N
LU-2	Site minimizes potential land use compatibility impacts with surrounding land uses resulting from construction and operation.	Y	Y	Y	Y	N
LU-4	Site avoids prime or productive agricultural land.	Y	Y	Y	N	N
LU-5	Alternative site avoids affecting an active Land Conservation Act contract.	Y	Y	Y	Y	Y
Biological Resources						
B-2	Alternative site avoids habitat for special status plants or animals.	Y	Y	Y	Y	Y
Cultural Resources						
C-2	Project site avoids known sites of cultural and/or archaeological resources.	Y	Y	Y	Y	Y
Visual Resources/Aesthetics						
V-1	Alternative site avoids or minimizes adverse affects to important viewsheds.	Y	Y	Y	N	N
Socioeconomic Issues						
SE-2	Site would be cost-effective to develop with given wastewater facility component.	Y	Y	Y	Y	N

Table 5-6
Screening of Alternative Bio-Solids Recycling Sites

Criteria Code	Screening Criteria	Alternative Bio-Solids Recycling Locations				
		Preferred Disposal Method (Hauling)	No Project	Ogle	Andre	Low
Air Quality/Odors						
AQ-1	Alternative site minimizes the impact of adverse odors to nearby sensitive receptors.	Y	Y	Y	Y	N
AQ-2	Alternative site minimizes construction-related emissions associated with grading and gas/diesel powered machinery use.	Y	Y	Y	Y	Y
AQ-3	Alternative site minimizes the potential impact of hazardous materials emissions on nearby sensitive receptors.	Y	Y	Y	N	N
Traffic and Circulation						
T-1	Alternative site minimizes traffic impacts associated with construction.	Y	Y	Y	Y	Y
T-2	Alternative site minimizes traffic hazards associated with construction.	Y	Y	Y	N	N
T-3	Alternative site minimizes traffic impacts associated with operation of wastewater facility.	Y	Y	Y	Y	Y
T-4	Alternative site minimizes potential traffic hazards associated with facility operation.	Y	Y	Y	Y	Y
Flooding/Drainage						
F-1	Alternative site is not located in a floodplain and minimizes impacts associated with flooding, periodic inundation or ponding.	Y	Y	Y	Y	N
F-2	Runoff from construction and/or operation of a wastewater facility can be managed to minimize degradation of water quality of Morro Bay or other surface water body.	Y	Y	Y	Y	Y
Geology						
G-1	Alternative site avoids significant geologic hazards such as unstable slopes and liquefaction.	Y	Y	Y	Y	Y
G-2	Alternative site avoids an active or potentially active earthquake fault.	Y	Y	Y	Y	Y

Conclusions

No Project

The No Project alternative would not achieve the fundamental objective of the wastewater treatment project which is to remove excess nitrogen in the groundwater and to provide a sustainable water supply for the community. This is considered an unavoidable adverse impact associated with the No Project alternative. For this reason, the No Project alternative is not considered a feasible alternative worthy of further analysis.

Alternative Wastewater Treatment Technologies

The fundamental criteria used to screen alternative treatment technologies was its ability to achieve the water quality standards established by the RWQCB for Los Osos. Three of the alternative treatment technologies analyzed, including the preferred project, satisfied the screening criteria for further consideration. The Activated Ponds treatment technology was eliminated from further consideration because:

- A lack of sufficient data which demonstrates their ability to remove nitrogen to achieve the standards established by the RWQCB.

- Pond systems are land intensive when compared with conventional systems. For this reason, pond systems would not reduce potential impacts associated with the loss of habitat for special status plant and animal species, when compared with the preferred project, or the loss of productive agricultural lands. Likewise, the land intensive nature of pond systems would have a greater likelihood to disturb archaeological resources and would result in greater air quality impacts from construction grading.

- Pond systems are more expensive to construct, primarily because of land costs.

Alternative Wastewater Treatment Sites

A total of twenty-one criteria were applied to the alternative treatment plant sites for screening purposes. Alternatives were considered for future environmental analysis that offered one or more clear environmental advantages over the preferred project, or offered a clear choice among competing environmental resources. For example, the Andre property offers a clear environmental advantage over the preferred project site because it lacks habitat for special status plants or animals. On the other hand, the Andre property is composed of agricultural soils of Local Importance, as determined by the State Important Farmland Mapping Program. Including the Andre property offers the decision-makers a choice between two competing resource values: preservation of endangered species habitat versus preservation of productive agricultural land.

The Resource Park site (Morro Shores, plus Tri-W) has been eliminated from further consideration because the treatment technology that required this site (activated ponds) was eliminated from further consideration because of insufficient data to demonstrate nitrogen removal to the levels required by the RWQCB.

The Turri Road site was eliminated from further consideration because:

- It is encumbered by an active Land Conservation Act contract;
- It lies within a flood plain for an unnamed creek;
- Potential liability and cost issues associated with the existing landfill on the site;
- Shallow groundwater would make sub-surface construction difficult and expensive;

The Eto property was eliminated from further consideration because:

- It offers no environmental advantages when compared to the preferred project site with regard to environmental resources such as habitat for sensitive plant and animal species;
- Construction and operation traffic would be conveyed through an existing residential neighborhood;
- The site is not centrally located resulting in higher costs for collection and disposal systems;
- The site contains productive agricultural land;
- The site would not provide an opportunity to provide park/open space amenities centrally located to serve the community.

Disposal Alternatives

The regulatory and environmental constraints associated with surface disposal and the use of existing septic leach fields make them infeasible alternatives for purposes of this Draft EIR.

Alternative Bio-Solids Recycling Site Alternatives

A key consideration in the location of bio-solids recycling is the separation of the facility from nearby sensitive receptors to odors. For this reason the Woods Humane Society property was eliminated from further consideration because of its proximity to sensitive receptors to the east and west.

Alternatives to the Project Considered for Further Analysis

Project Component	Alternatives
Collection	STEP/STEG and combination STEP/STEG gravity system
Wastewater Treatment Technologies	Extended Aeration (conventional) Sequencing Batch Reactor
Wastewater Treatment Sites	Holland Morro Shores Southwest Pismo Andre
Disposal Systems	None
Bio-Solids	Recycling Ogle Low Andre

6. Impact Analysis

Predicting the environmental effects of a multi-faceted undertaking such the Wastewater Facilities Project necessarily involves some degree of speculation. This is due in part to the programmatic nature of the project description at the time of preparation of this DEIR. Although detailed engineering design plans for the project are currently being formulated, environmental review is being conducted at this time so that potential environmental impacts may be identified as early as possible and mitigation measures can be incorporated into the design of the project as required by Section 15004 (b) of the CEQA Guidelines, which states:

b. *Choosing the precise time for CEQA compliance involves a balancing of competing factors. EIRs and Negative Declarations should be prepared as early as feasible in the planning process to enable environmental considerations to influence project program and design and yet late enough to provide meaningful information for environmental assessment.*

    1. *With public projects, at the earliest feasible time, project sponsors shall incorporate environmental considerations into project conceptualization, design, and planning. CEQA compliance should be completed prior to acquisition of a site for a public project.*

Moreover, Section 15146 of the State CEQA Guidelines states:

> a. *"The degree of specificity required in an EIR will correspond to the degree of specificity involved in the underlying activity which is described in the EIR.*
>
> b. *An EIR on a construction project will necessarily be more detailed in the specific effects of the project than will be an EIR on the adoption of a local general plan or comprehensive zoning ordinance because the effects of the construction can be predicted with greater accuracy.*
>
> c. *An EIR on a project such as the adoption of a comprehensive zoning ordinance or a local general plan should focus on the secondary effects that can be expected to follow from the adoption or amendment, but the EIR need not be as detailed as an EIR on the specific construction projects that might follow."*

And lastly, Section 15151 of the CEQA Guidelines states:

> *"An EIR should be prepared with a sufficient degree of analysis to provide decision-makers with information which enables them to make a decision which intelligently takes account of environmental consequences. An evaluation of the environmental effects of a proposed project need not be exhaustive, but the sufficiency of an EIR is to be reviewed in the light of what is reasonably feasible. Disagreement among experts does not make an EIR inadequate, but the EIR should summarize the main points of disagreement among the experts. The courts have looked not for perfection but for adequacy, completeness, and a good faith effort at full disclosure."*

The following topical sections provide analyses of the potential environmental consequences of the Wastewater Facilities Project based on the level of detail currently available regarding the description of the program for design and construction. Given that a precise description of the various project components is currently being formulated, the analysis of potential impacts will necessarily focus on the potential range of primary and secondary environmental effects. The topical analyses are divided into five subsections:

> Setting. This subsection describes the existing environmental and regulatory structure affecting the project.
>
> Significance Thresholds. Thresholds set quantitative or qualitative standards or criteria for the significance of a particular impact on a given resource. These standards are then used to compare

the environmental setting of the resource with and without the project impact to determine whether the impact is significant. The thresholds used in this DEIR are generally a combination of guidance provided by the State CEQA Guidelines; expert opinion; and significance criteria previously established by San Luis Obispo County (e.g., the Noise Element).

Impact Analysis. This section evaluates the impacts of the project on the existing physical and regulatory environment. Impacts are categorized according to their level of significance after mitigation has been applied. Four categories of impacts are identified:

Class I. Class I impacts are significant and unavoidable. To approve a project resulting in Class I impacts, the CEQA Guidelines require decision makers to make findings of overriding consideration that "… *specific legal, technological, economic, social, or other considerations make infeasible the mitigation measures or alternatives identified in the EIR*…".

Class II. Class II impacts are significant but can be mitigated to a level of insignificance by measures identified in this EIR and the project description. When approving a project with Class II impacts, the decision-makers must make findings that changes or alternatives to the project have been incorporated that reduce the impacts to a less than significant level.

Class III. Class III impacts are adverse but not significant.

Class IV. Beneficial impacts.

Mitigation Measures. Mitigation measures are changes or modifications recommended to be incorporated into the project design which lessen or eliminate significant impacts.

Residual Impacts. This section describes the level of impacts after implementation of the recommended mitigation measures.

6.1 Geology

This section provides general and site-specific information about geology, soils, and seismic and other geologic hazards, including slope stability and erosion.

Setting

Regional Geology

Regional geology is illustrated in Figure 6.1-1. San Luis Obispo County is located within the southern Coast Ranges Province of California, one of the most complex geologic provinces in the state. This province is characterized by several subparallel structural blocks bounded by a number of onshore and offshore faults.

The northern coastal area of San Luis Obispo County, including the Los Osos area, is underlain primarily by Jurassic- to Cretaceous-age (approximately 120 to 180 million years old) rocks of the Franciscan complex. The Franciscan complex is a mixture of igneous, metamorphic and sedimentary rocks. Cretaceous-age (65 to 140 million years old) and Tertiary-age (2 to 65 million years old) sedimentary rocks, including an unnamed Cretaceous sandstone, and the Lospe, Vaqueros, Rincon, Monterey and Pismo formations overlie the Franciscan Formation basement rocks in some parts of the region.

The majority of the project area is overlain by a late-Pleistocene and Holocene Dune Complex and Lower Pleistocene sediments of the Paso Robles formation. Distinguishing locally between these units can be difficult as sands from upper Paso Robles beds may be found in close proximity to dune sands. The Paso Robles formation is distinguished by additional clays and clayey silts.

Groundwater associated with the Paso Robles Formation varies in depth from the ground surface. Sub-surface mapping of groundwater levels prepared by The Morro Group show areas of shallow groundwater which has been a consistent source of problems for property owners during periods of greater than normal rainfall, such as 1997. During these periods surface saturation of soils and ponding may occur. Groundwater and hydrogeology are discussed in greater detail in Chapter 6.2: Hydrology and Groundwater.

Seismicity. The Los Osos area is located in a seismically active region that includes several active earthquake faults of both local and regional significance, most notably the Los Osos fault zone, which cuts through the Los Osos Valley area in an east-west fashion. Other significant faults in the region include the San Simeon-Hosgri, San Andreas, Nacimiento and Rinconada faults (Figure 6.1-2). An active fault is defined as a fault that has a historic seismic record or displaces Holocene (11,000 years and younger) deposits. A brief description of major active faults in the region follows.

Los Osos Fault. The Los Osos fault runs northwest/southeast along the Los Osos Valley at the base of the Irish Hills; a portion of the fault is considered active. The *Final Report of the Diablo Canyon Long Term Seismic Program (PG&E, 1988),* first identified fault strand locations within the Los Osos area. This report also identified the Los Osos fault as being potentially active.

Both the Pacific Gas and Electric Company (PG&E) and the California Division of Mines and Geology conducted field evaluations of the Los Osos fault east of Los Osos near the intersection of Los Osos Valley Road and Foothill Boulevard. Results of these analyses indicated that faulting activity has taken place within the last 11,000 years. This evidence of recent activity resulted in the establishment of a Special

Studies Zone by the California Division of Mines and Geology (CDMG) in 1989.[1] The limit of the established Special Studies Zone corresponds to the limits of the available information provided in studies performed by Hall et. al. (1979, 1985, 1989), PG&E (1988), and Treiman (1989) and does not include any portions of the CSD service area. The Special Studies Zone is located several miles eastward toward San Luis Obispo, roughly paralleling Los Osos Valley Road. The Los Osos fault is believed to have the potential for seismic events at a maximum magnitude (Mmax) as high as 6.8.[2]

[1] Under the Alquist-Priolo Special Studies Zone Act (Public Resources Code Sections 2621-2630), the State Geologist has the authority to designate Special Studies Zones for faults that exhibit evidence of displacement within the last 10,000 years (Holocene). Development within these established zones is required to include a geologic investigation.

[2] Moment magnitude (Mw) is used to more accurately depict the potential for earthquake magnitude associated with a fault. According to the California Division of Mines and Geology, the "'Richter" or Local Magnitude scale, is known to saturate, and become unreliable at higher magnitudes.

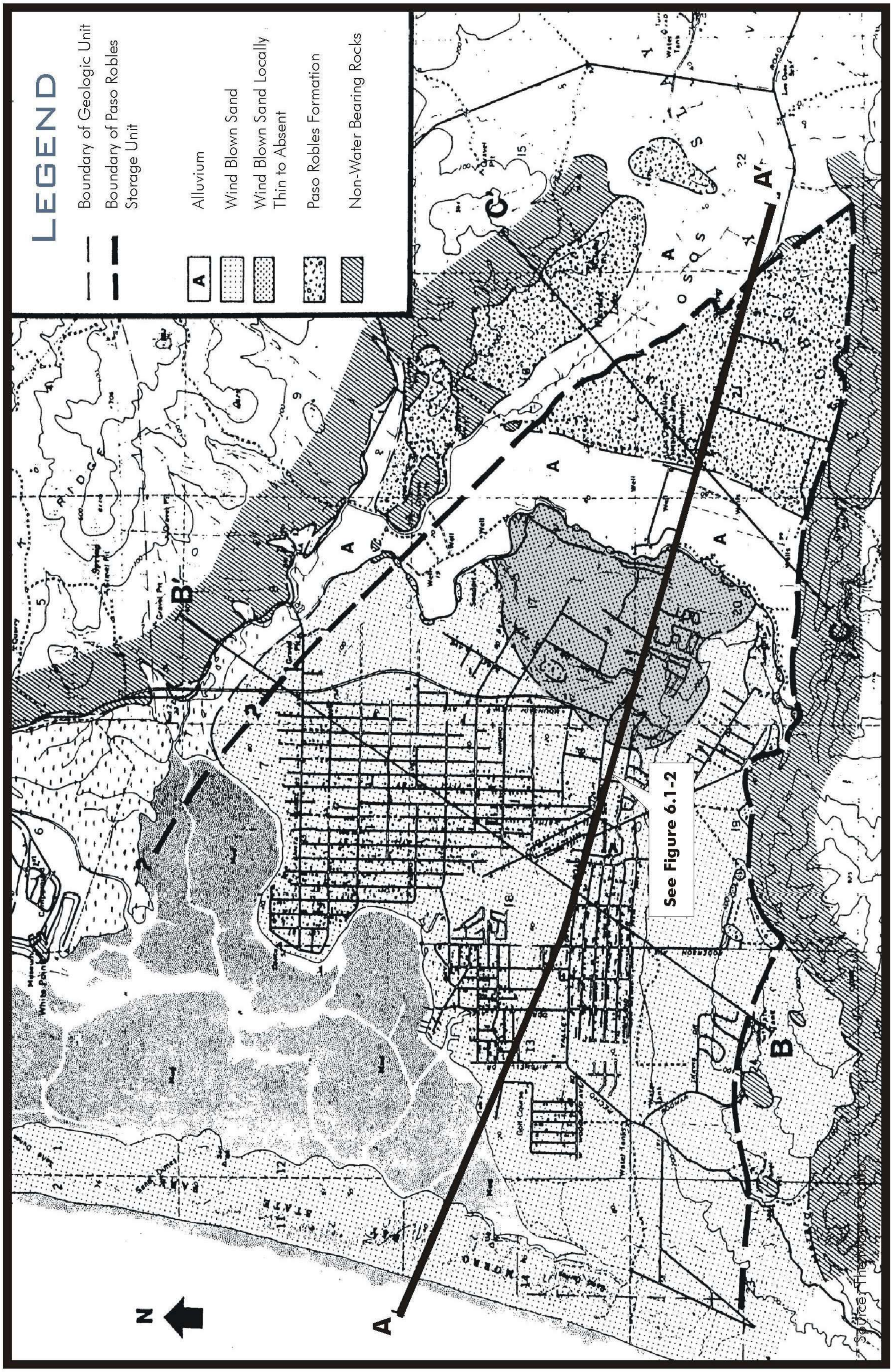


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Figure 6.1-1
Regional Geology

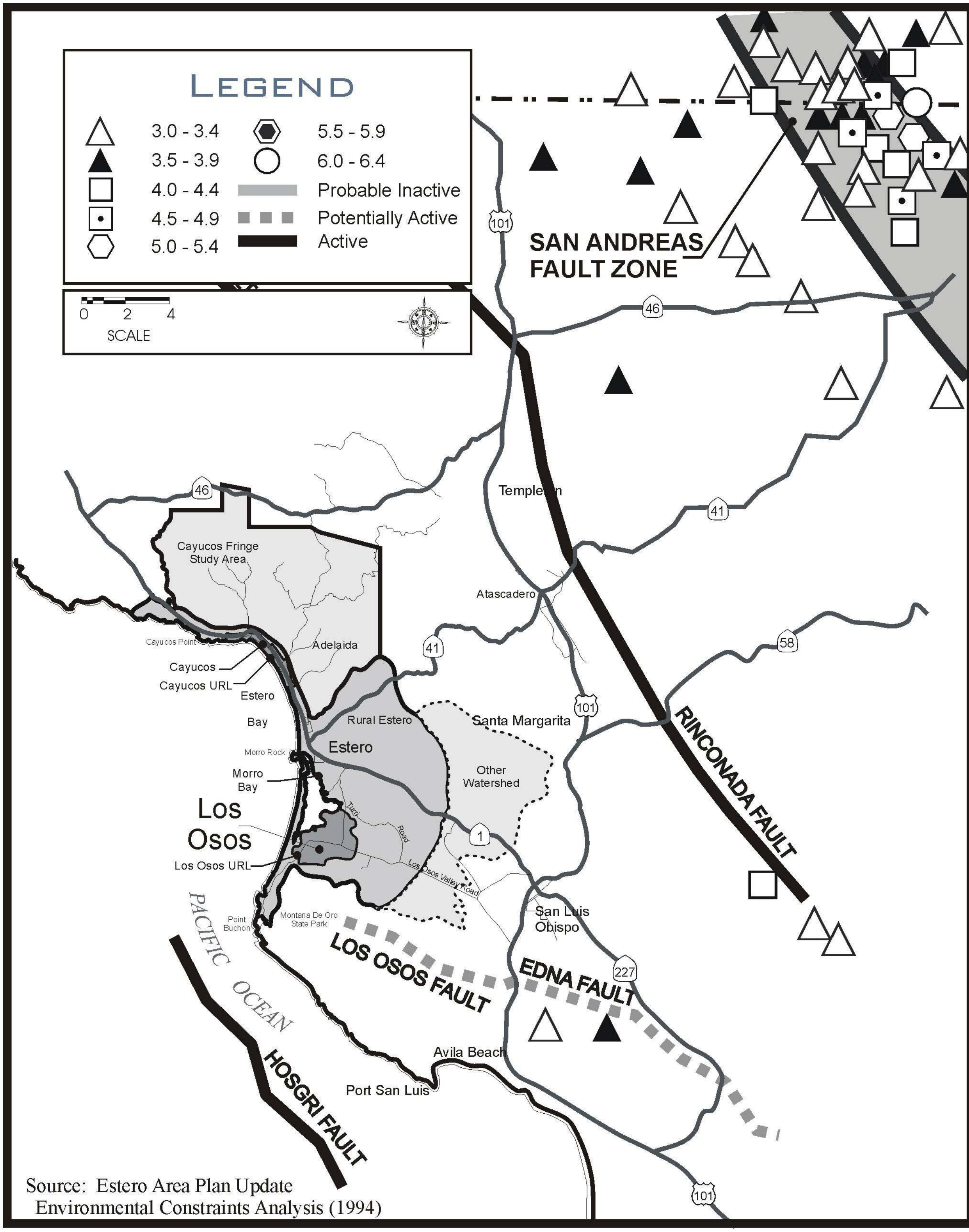

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Figure 6.1-2
Regional Fault Systems

Mapped locations of Los Osos fault strands A and B within the CSD service area are shown in Figure 6.1-3. These locations are based upon mapping included in the 1988 PG&E Study and were further refined in the *1989 Supplemental EIR* to reflect local geologic relationships. Strand A is mapped as trending westerly along the base of the steep slopes south of Los Osos Valley Road, along a small tributary of Los Osos Creek, and through the southerly part of Cabrillo Estates. Strand B is projected as trending northwesterly through the center of Los Osos. Potential impacts associated with each of these strands in relation to proposed facilities is discussed below under "Impact Analysis."

San Simeon - Hosgri Fault. The San Simeon - Hosgri fault zone is located offshore of the planning area. The San Simeon fault, located onshore north of the planning area, has been identified as a Holocene-age fault and is designated as an Alquist-Priolo Special Studies Zone. The San Simeon fault may be a part of the offshore Hosgri fault. The San Simeon - Hosgri fault is believed to have the potential for seismic events of 7.3 Mmax.

San Andreas Fault. The San Andreas fault, located approximately 40 miles east of the planning area, is considered to be the most likely source of a future major earthquake in California, with potential seismic events of a magnitude as high as 8.5 on the Richter Scale. This fault is also designated as an Alquist-Priolo Special Studies Zone.

Nacimiento Fault. Trending northwest to southeast, the Nacimiento Fault is located just east of the planning area, in the Santa Lucia Range. Several recent moderate seismic events (including a 6.0 earthquake in 1952) have centered on this fault. The County Seismic Safety Element (1975) identifies a 6.5 magnitude event as the design earthquake for this fault.

Rinconada Fault. The Rinconada fault, which trends northwest to southeast between the Nacimiento and San Andreas faults approximately 12 miles east of the planning area, has been associated with several historic seismic events measuring less than 5.0 on the Richter Scale. Although the fault is a probable source for small to moderate earthquakes, it is considered to pose less of a hazard than the San Simeon - Hosgri, San Andreas or Nacimiento faults.

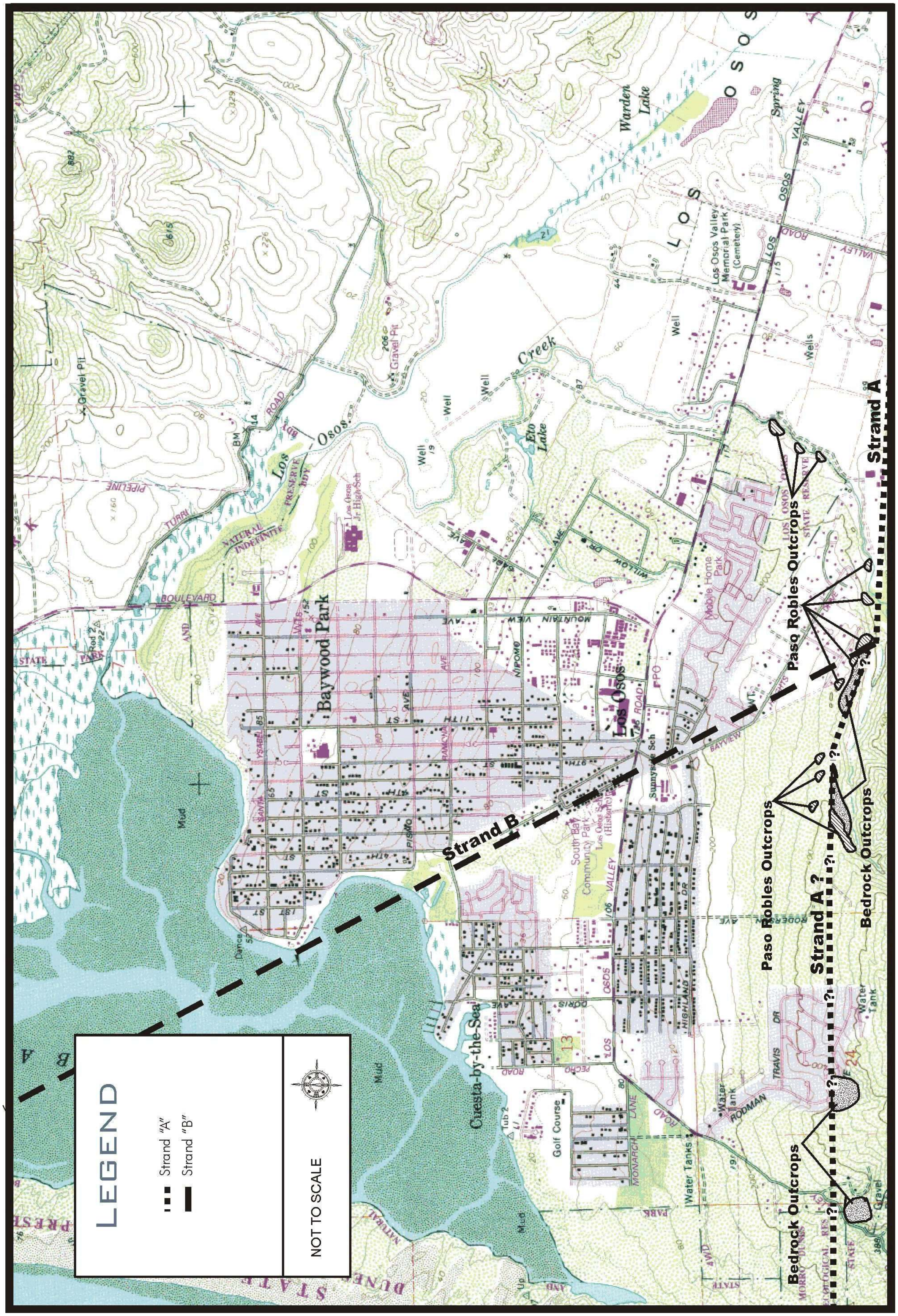

Figure 6.1-3
Mapped Strands of the Los Osos Fault

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Geologic and Seismic Hazards

The project area is subject to several types of related but distinct geologic and seismic hazards, including earthquakes, liquefaction, seismic settlement, soil lurching, and landslides. These hazards are described briefly below.

Ground Shaking. Small to moderate earthquakes (magnitudes less than 5.0 on the Richter Scale) are common in San Luis Obispo County. The most significant quakes affecting the County during the last century have generally been centered outside the County itself, and have included events in excess of 7.0 (Lompoc in 1927 and Tehachapi in 1952). The most recent major quake within 100 miles of the area was the 6.5 Coalinga temblor of 1983. Though the July 1992 Landers earthquake (7.5) and January 1994 Northridge earthquake (6.6) were felt in the area, no damage was known to occur in the County.

Ground Rupture. Seismically induced ground rupture is defined as the physical displacement of surface deposits in response to an earthquake's seismic waves. Ground rupture is most likely to occur in areas overlying active faults; however, the potential for ground rupture also exists in areas overlying potentially active faults. Development should generally be avoided in these areas, however, any development that does take place within should be required to perform a fault hazard study to assess the potential for damage associated with fault rupture and to establish setbacks to mitigate the potential for such damage.

Liquefaction. Liquefaction is a phenomenon where unconsolidated and/or near-saturated soils lose cohesion and are converted to a fluid state as a result of severe vibration. Unconsolidated, granular soils in saturated conditions are most susceptible to these effects, while more stable silty-clay and clay materials are generally somewhat less affected. Areas underlain by bedrock have the lowest potential for liquefaction due to stability. In general, liquefaction potential varies according to soil type, with recent, unconsolidated alluvial soils having the highest potential. Within the Los Osos area, these types of soils are associated with stream channels, sand dune areas, and estuaries. Due to the generally unconsolidated nature of soils in the area and the generally shallow depth to groundwater, much of the Los Osos area is at a high risk for seismically-induced liquefaction.

Seismic Settlement. Seismic settlement occurs when loose-to-medium dense granular soils become denser during ground shaking. Seismically-induced settlement or collapse can occur in soils that are loose, soft, or that are moderately dense but weakly cemented. Additionally, settlement can occur in relatively dry, partially saturated, and saturated granular soils.

Ground Lurching. Lurching occurs as the ground is accelerated during a seismic event. Ground lurching can occur from detachment of underlying stratigraphic units, allowing surface soils to move differentially from underlying soils.

Erosion and Sedimentation. Erosion is a natural process that occurs over time and can be caused by either wind or water moving over soils. The natural erosion process is an important factor in building up fertile valley soils and beach sand along the coastline. However, soil erosion can become a problem when human activities accelerate the rate at which soils are being displaced. Non-point sources including impervious surfaces, unsound farming practices, over-grazing, construction activities, and road construction (particularly unpaved roads) can all accelerate the rate at which soils are removed from hillsides. Point sources such as industrial wastewater discharges, mining activities, wastewater treatment plants, commercial and residential land uses, and agricultural operations can affect erosion rates through increased storm water velocity, disturbance of natural drainage patterns, and water discharges. Soil erosion can leave silt-choked streams, gullied hillsides, and damaged farmland.

Slope stability and Landsliding. The occurrence of landslides is generally influenced by slope angle, soil moisture content, vegetative cover and the physical nature of the underlying strata. Landsliding can be triggered by one or more specific events including construction, seismic activity, and soil saturation.

Differential Settlement. Differential settlement occurs when a foundation of a particular building spans two materials having different settlement characteristics, such as soil and rock. The soil-supported portion of the building will settle more than the rock-supported portion; a situation that can stress and possibly damage foundations, often resulting in severe cracks and displacement. To reduce this potential, it is necessary for all foundations of an individual building to bear in sufficiently uniform material.

Expansive Soils. Expansive soils are generally characterized as those with a potential to shrink and swell depending on moisture content. The degree of expansiveness can relate to a range of adverse effects on structures, including differential settlement, foundation damage, and damage to supporting utilities. Soils in the area generally do not exhibit expansive characteristics.

Regulatory Setting

The following state and local regulations apply to projects in the planning area and are designed for the protection of health and safety from geologic hazards:

Public Resources Code, Section 2621, et seq. The Alquist-Priolo Special Studies Zone Act of 1972 establishes criteria and policies to assist cities, counties, and state agencies in the exercise of their responsibility to prohibit the location of developments and structures for human occupancy across the trace of active faults as defined by the State Mining and Geology Board. As previously discussed in Section 5.1.2, no Alquist-Priolo zones have been established within the Los Osos area.

Title 23 of the San Luis Obispo County Code. The Coastal Zone Land Use Ordinance (CZLUO) (at 23.07.080) sets forth the Combining Designation Standards for Geologic Study Areas (GSAs). These are areas where "geologic and soil conditions could present new developments and their users with potential hazards to life and property." The standards require preparation of a report on geologic hazards and appropriate mitigation measures. Structures must be designed to overcome these hazards. No GSAs are currently designated within the LOCSD service area; however, the proposed Estero Area Plan (1999) identifies a GSA for areas within 1,000 feet of the inferred trace of the Los Osos Fault. Sedimentation and erosion control plans are also required under the CZLUO (sec. 23.05.036) for land disturbing activities that occur under certain conditions.

Estero Area Plan (1988). The San Luis Obispo County General Plan contains specific Area Plans for unincorporated portions of the County. The Los Osos community is currently governed by the 1988 Estero Area Plan, which contains standards and policies applicable to development and management of the community. An updated Area Plan is currently in progress, but due to major ongoing revisions, the date of its release is uncertain.

State Revolving Fund. In its *Policy for Implementing the State Revolving Fund for Construction of Wastewater Treatment Facilities*, the State Water Resources Control Board (SWRCB) requires compliance with all applicable federal environmental laws, including “consistency with area wide planning.”

Other Regulatory Requirements. Section 17922, 179511-17958.7 of the California Government Code requires cities and counties to adopt and enforce the Uniform Building Code (UBC), including a grading section (Chapter 70), providing minimum protection against some geologic hazards. The UBC also provides design standards for projects in seismically active zones. The County of San Luis Obispo implements these provisions.

Site-Specific Setting

Collection System. The collection system will be installed primarily within street rights-of-way in trenches varying in depth between 4 feet and 11 feet. As described above, the soils underlying Los Osos are comprised of dune sands deposited in the area during the late Pleistocene early Holocene eras (11,000 years ago); dune sands reach a depth of 200 feet in some areas and exhibit occasional bands of silty clay. Soil conditions within the street rights-of-way are typical of these conditions.

Treatment Plant Site (Tri-W). The topography of the treatment plant site slopes gently to the north toward Morro Bay. Soils and sub-surface geologic conditions are typical of the Los Osos area as described above under Setting.

Disposal. Geologic stratigraphy for the various locations identified for sub-surface leach fields are typical of the Los Osos area, with dune sands overlaying deposits of the Paso Robles Formation which include fine grained sands and silty sands interspersed with layers of clay. Geologic stratigraphy of the Broderson disposal site is characterized in Figure 6.2-3, taken from Cleath and Associates *Hydrogeologic Investigation of the Broderson Site*, June, 2000 which is incorporated herein by reference and available for review at the LOCSD offices. The cross section shows that a major confining layer of clay (the AT2 clay horizon) occurs between 190 - 235 feet below the surface. This clay horizon is considered by some to represent the primary confining layer that separates the shallow aquifer from the lower aquifers (Brown and Caldwell, 1983; The Morro Group, 1987, 1989).

Sub-surface geologic characteristics of the other disposal sites have been characterized by Cleath and Associates in Technical Memorandum titled Wastewater Disposal Sites Interim Report, September 21, 2000 which is incorporated herein by reference and available for review at the LOCSD offices. Conditions at each site are similar with respect to the combination of dune sands overlying bands of clay at varying depth.

Significance Thresholds

The *State CEQA Guidelines* state that a project will normally have a significant impact if it would "expose people or structures to major geologic hazards." Impacts would, therefore, be considered significant if any component of the project is located in an area subject to "high" risks associated with seismic activity, liquefaction, subsidence, or slope instability. Impacts are also considered significant if the project would create a new geologic hazard or entail major landform alterations that would cause effects such as slope instability or erosion.

Impact Analysis

Collection System

The collection system design consists of pipes placed in trenches dug within road rights-of-way and easements throughout the Prohibition Area exclusive of the Martin Tract and Bayview Heights. Since the collection system would serve almost the entire community, the general geologic setting described above also describes the setting for both collection system alternatives.

Construction Related Impacts

Impact GEO-1: Construction of the collection system (including the collection pipes and up to 11 pump stations) will involve trenching within road rights-of-way and easements at 200-foot increments. Such disturbance will temporarily increase the potential for erosion and reduce the stability of the soil. These impacts are considered significant unless mitigated (Class II).

The excavation of trenches for the installation of collection system piping will temporarily expose approximately 200 feet of trench at a time to the eroding effects of wind and water. Excavated areas will be resurfaced at the end of the day and no trenches will be left exposed overnight.

Additionally, trenches dug for the collection system will vary in depth from 4 feet to about 11 feet. The sandy, unconsolidated nature of the soil is potentially unstable and will require stabilization to enable construction.

Impact GEO-2: The collection system will require the installation of up to 11 pump stations in sub-surface vaults. Excavation and construction of the pump/lift stations will increase the potential for erosion and soil instability. These impacts are considered significant unless mitigated (Class II).

As many as eleven pump stations will be required. Each station will be constructed in a concrete vault approximately 6 feet wide by 8 feet long. The remainder of the stations will require pumps between 30 and 85 horsepower in concrete vaults approximately 8 feet wide by 12 feet long. The depth of all the pump stations will generally be less than approximately fifteen feet. The concrete vaults will be sited within lightly traveled public right of ways and fitted with traffic rated access hatches which will allow maintenance of the pumps and station structure. Soils associated with excavation sites are poorly consolidated and potentially unstable.

Operational Impacts

Impact GEO-3: The collection system infrastructure (pipes, pump stations, etc.) could be damaged or ruptured as a result of a seismic event due to ground shaking or liquefaction. These impacts are considered significant unless mitigated (Class II).

Portions of the collection system may be isolated due to fault rupture, where the system crosses potentially active strands of the Los Osos Fault. Liquefiable soils in the area may also have similar effects. Mitigation specified below, including design for isolation and quick repair of damaged portions, and compliance with relevant sections of the Uniform Building Code, will reduce these potential impacts to a less than significant level.

Impact GEO-4: Periodic maintenance of the collection system could result in a temporary increase in the potential for erosion. These impacts are considered potentially adverse but less than significant (Class III).

Maintenance of the collection system will generally take place through access holes within the street right-of-way. Periodic maintenance is not expected to be of a duration or magnitude which would necessitate mitigation. Major facility maintenance associated with seismic events are addressed above, and would likely be the source of major upset conditions. Impacts are less than significant (Class III).

ALTERNATIVE COLLECTION SYSTEM – STEP/STEG

A Septic Tank Effluent Pump/Septic Tank Effluent Gravity (STEP/STEG) system would involve leaving a portion of the septic tanks in place within the collection area and collecting the liquid waste through a system of small diameter pipes under pressure of pumps (ie, STEP) or gravity (STEG) which would convey the waste to the treatment plant. Solids remaining in the septic tanks would be periodically pumped and trucked to the treatment plant.

A STEP/STEG system has some advantages to a conventional collection with regard to geologic impacts. First and foremost, a STEP/STEG system consists of smaller diameter pipes (mostly 3 inches) which convey wastewater under pressure to the treatment plant. These factors enable the system to be installed in shallower trenches that require less excavation. Another potential advantage to STEP/STEG from a geologic impacts perspective is the ability to install the system using trenchless technology where the system is installed in holes bored in the right-of-way. Trenchless installation would still have potentially significant impacts associated with erosion but to a lesser degree than open trenches. In addition, impacts related to unstable trenches would be avoided.

Treatment Plant Construction and Operation

Construction Related Impacts

Impact GEO-5: The construction of the Hybrid Extended Aeration system will require the excavation of about 193,600 cubic yards of soil material. Sandy soils associated with the treatment plant site are potentially unstable and will require stabilization to enable construction. Impacts associated with soil instability are considered significant unless mitigated (Class II).

The treatment plant will be constructed underground on about five acres of the Tri-W site. The area to be excavated is about 4 acres and about 30 feet deep. The walls of the excavated area will require grading and stabilization to enable construction of the treatment plant. The excess dirt excavated from the site will be exported to a point of disposal.

Impact GEO-6: Grading of the treatment plant site to accommodate the treatment plant, water feature(s) and landscaping will result in soil disturbance and a temporary increase in erosion potential. This impact is considered significant unless mitigated (Class II).

Grading of the project will be significant and involve the removal and/or re-contouring of 193,600 cubic yards of dirt to allow for play fields and the water feature to be incorporated into the site (see Figure 3-8).

Treatment Plant Operational Impacts

Impact GEO-7: The treatment plant site is located in proximity to the inferred trace of Strand B of the Los Osos Fault. The exact location of the fault is unknown, and therefore a precise determination of its potential to produce surface rupture is likewise unknown. However, should the trace of the fault coincide with the treatment plant, a seismic event associated with the fault could damage facilities associated with the treatment plant. These impacts are considered significant unless mitigated (Class II).

As described in “Setting”, above, the treatment plant site parallels the inferred trace of Strand B of the Los Osos Fault, which was discussed in detail in the 1989 Final Supplemental EIR for the CSA 9 Wastewater Treatment Facilities, SCH 89030816 and incorporated by reference. This portion of the fault, if it does exist, is not considered active, and due to the nature of the local soils, previous environmental analysis cited a low potential for ground rupture. All facilities associated with the plant will be designed and installed in accordance with the UBC standards for Seismic Zone 4, and will include mechanisms for isolation of damaged areas and rapid recovery as described in the mitigation measures listed below. The plant is also designed with 6 hours of emergency storage capacity and potential for onsite emergency retention in the event it is isolated.

Impact GEO-8: A seismic event associated with any of the potentially active faults described in "Setting", above, could adversely impact the treatment plant and its function. These impacts are considered significant unless mitigated (Class II).

The treatment plant will be designed to satisfy federal, state and local standards for construction in Seismic Zone 4 as required by the UBC, and will incorporate emergency treatment capacity in the event the treatment process is interrupted. Seismic impacts associated with a substantial earthquake event cannot be completely mitigated;. however, all feasible measures are being incorporated into the design and operation of the project.

Impact GEO-9: Soils associated with the treatment plant site consist of unconsolidated sands which may pose a significant risk of liquefaction. This impact is considered significant unless mitigated (Class II).

The occurrence of liquefaction of soils at the project site could result in failure of the structural integrity of the Treatment Plant, which in turn could result in the release of large quantities of treated effluent. A recent geophysical survey and geological analysis of a groundwater anomaly just east of the treatment facility site concludes that liquefaction susceptibility is increased due to the presence of a buried fluvial channel (Mann 1998). Mitigation suggested by the California Division of Mines and Geology in their publication "Mitigating the Impacts of Liquefaction" will be incorporated into the treatment plant project design and all components of the system will be designed to comply with UBC standards.

Impact GEO-10: Manufactured slopes proposed for the project site are less than 2:1 and are unlikely to slide. Impacts are less than significant (Class III).

Manufactured slopes associated with the landscaping and recreation amenities will be less than 2:1 to enable active recreation.

ALTERNATIVE TREATMENT SITES

The geologic characteristics of the alternative treatment plant sites are summarized below. The Holland, Morro Shores Southwest and Pismo sites exhibit similar geologic and soils characteristics of dune sands overlying the finer sands of the Paso Robles Formation. The Andre property located east of the Los Osos urban area about 2 miles is composed of more consolidated alluvial soils that are considered significant agricultural resources.

Morro Shores Southwest. The Morro Shores Southwest is located immediately west of the project site and is therefore most comparable among the alternative sites with regard to geologic setting and constraints. Erosional features offsite associated with upslope drainage have carved a sizeable drainage course between this site and the project site. However, the Morro Shores Southwest site offers comparable constraints to those of the project site, except that this site is not affected by an inferred fault.

Holland. The Holland site consists of about 19 acres that slope to the north toward Sea Pines Golf Course from Monarch Grove at about 5 percent. There are no significant drainage courses or other distinguishing geologic features and soils are consistent with other sites within the community. The Holland site offers comparable geologic constraints to those associated with the project site; however, there are no known faults associated with the site. Grading and excavation would result in comparable erosion and slope stability impacts.

Pismo. The Pismo site is located east of South Bay Boulevard within an area of gently sloping dune sands with slopes that range between 1 to 15 percent. Los Osos Creek is located to the east about 0.1 miles. Sub-surface conditions are similar to those associated with the project site and offer few environmental advantages. Comparable impacts associated with erosion and excavated slope stability would be anticipated.

Andre. The Andre site is a rectangular parcel of about 32 acres located on the north side of Los Osos Valley Road adjacent to the Los Osos Valley Memorial Park. The site slopes gently to the north toward Warden Lake from atop a rise east of Los Osos Creek. The Andre site is located east of the wind-blown sandy soils that characterize the Los Osos community proper. As a result, the soils are more consolidated and better suited for agriculture. However, being at the top of a rise east of the creek, these soils are more closely associated with erosion of the Irish Hills than to the rich alluvial soils nearer the creek. As a result, soils on the Andre property are not considered "prime" as defined by the State Department of Conservation, but are considered Locally Important.

The geologic conditions associated with the Andre site offer comparable constraints to construction of the treatment plant as the project site. However, the more densely consolidated soils are more stable and would require less support during excavation of the underground treatment plant site. In addition, this site is not affected by an inferred fault trace.

Disposal

Construction Related Impacts

Impact GEO-11: Construction of the disposal leach fields will result in the temporary disturbance of soils and potential erosion at the Broderson site and various street rights-of-way within the community. These impacts will be temporary but are considered significant unless mitigated (Class II).

Construction of the disposal leach fields on the Broderson site will take place over a period of approximately 6 months and will entail removal of vegetation over an 8-acre portion of the site for equipment access and leach field placement. Impacts associated with the construction of permanent accessways are discussed under "Operation," below. The Broderson site exhibits slopes of over 10 percent at the upper (southerly) elevations where the leach field would be constructed, and sandy soils which may be subject to erosion or landsliding once disturbed. The leach fields will be installed in shallow (3 feet or less) trenches arranged parallel to the slope and dug using conventional trenching machinery.

Disposal leach fields in street rights-of-way will experience similar impacts associated with erosion and soil disturbance.

Operational Impacts

Impact GEO-12: The Los Osos area is within Seismic Zone 4 as defined by the UBC. A seismic event associated with one or more of the active faults affecting the region could result in ground shaking that could damage the leach fields. These impacts are considered significant unless mitigated (Class II).

Similar potential impacts to the disposal system could occur as those described above for the collection system. Again, adherence to the requirements of the Uniform Building Code and the inclusion of storage in the system will reduce these impacts to a less than significant level.

Impact GEO-13: The disposal leach fields and surface disposal during dry weather would release treated wastewater into potentially liquefiable zones which may increase the potential for liquefaction over existing conditions. These impacts are considered significant unless mitigated (Class II).

As described in Geologic Hazards, above, liquefaction can occur where poorly consolidated surface material overlies shallow groundwater. When energy is introduced into this system, such as during a seismic event, the soils temporarily lose cohesion as the soils become saturated. The introduction of additional water into the sub-surface environment associated with the disposal system has the potential to increase the potential for liquefaction.

A preliminary liquefaction analysis of the treatment plant site and the various disposal sites prepared by CFS Geotechnical Consultants, Inc. (Appendix B) concludes that liquefaction potential on the various sites would generally be no different than present conditions once the septic systems cease operation and the disposal leach fields are installed. Table 6.1-1 provides a summary of the liquefaction potential for each disposal site.

Table 6.1-1: Liquefaction Analysis

Disposal Site	Liquefaction Hazard	Discussion
Broderson	Moderate to Low	Mounding of effluent below the disposal area will likely saturate a 1-4 foot thick layer of potentially liquefiable soil strata below the site and south of Highland Avenue. The potentially liquefiable strata appears relatively continuous, but has a variable liquefaction potential due to the presence of denser soils and clayey interbeds that are not susceptible to liquefaction. 25 feet or more of unsaturated or dense soil that is not susceptible to liquefaction overlies the liquefiable strata. The liquefiable strata are generally medium density, and are not likely to experience a significant loss of strength if liquefaction were to occur in response to an earthquake. Slope stability analyses were performed to evaluate the potential for lateral spreading and slope instability in response to liquefaction of this layer that extends from the Broderson site into Morro Bay. Slope stability analyses indicate that the slope is stable when considering liquefaction of the medium dense strata, and a psudostatic coefficient of 0.25 that corresponds to the mean acceleration resulting from an magnitude 6.8 earthquake on the nearby Los Osos fault. South of and along Skyline Drive, the potentially liquefiable strata were encountered below the natural groundwater table. Disposal of effluent is not expected to result in significant mounding above the natural groundwater level in this area. Additional strata were encountered at shallower depths in this area that are below the natural groundwater level, have a moderate potential for liquefaction, but are not affected by mounding.
Monarch Grove School	Moderate to Low	The Monarch Grove area was evaluated in association with the liquefaction assessment performed for the Broderson site. If Monarch Grove is used for disposal of effluent, it would not raise groundwater levels above those estimated for Broderson. The evaluation of the Broderson site is therefore considered applicable to this site.
Vista de Oro	N/A	Although we would expect that the liquefaction potential at Vista de Oro is similar to the Broderson site, no explorations have been performed to help assess the potential for liquefaction at this site. Additional explorations would therefore be needed before a reliable estimate of liquefaction potential at this site could be evaluated.
Los Osos Valley Road/Pine Ave.	Low	The Los Osos Valley Road/Pine Avenue area was evaluated in association with the liquefaction assessment performed for the Broderson site. Because mounding would not elevate groundwater levels closer than 50 feet below the existing ground surface, the potentially liquefiable strata discussed for the Broderson site would not likely be saturated by the mounding at Los Osos Valley Road. The evaluation of the Broderson site is therefore considered applicable to this site as well.
Pismo Street and Santa Maria Street sites	Low to High (no net change)	The net effect of the wastewater project is not likely to result in groundwater levels that are higher than those that currently exist. The soils encountered in the dune area are generally characterized as relatively dense sands that form the dunes, and interbedded loose and dense sands that are deposited in the depressions between the dunes. The higher elevation dune sands are predominantly dense and generally have low potential for liquefaction. The lower elevation soils within the interdunal depressions and low-lying areas are potentially liquefiable. Saturated near-surface soils currently exist in interdunal areas that are relatively loose, and have a high potential for liquefaction. Manifestations of liquefaction could consist of sand boils, strength loss, and areal and differential settlement. The lowering of the groundwater table that may result in some area in association with the wastewater project will likely not significantly reduce the potential for liquefaction in these areas. Overall, collection of sewage and the elimination of on-site disposal systems should result in a lowering of the groundwater table in the interdunal areas by de-watering soils that are potentially liquefiable. Mounding associated with disposal of effluent at the Pismo and Santa Maria sites will then raise groundwater levels, and may re-inundate potentially liquefiable soils, but will not create new potentially liquefiable soil conditions. Its is therefore expected that the groundwater level and the potential for liquefaction in these areas will be similar to what existed before the project is constructed.

Disposal Site	Liquefaction Hazard	Discussion
Santa Paula Ave.	N/A	Although we would expect that liquefaction at Santa Paula Ave. is similar to the Pismo and Santa Maria sites, no explorations have been performed to help assess the potential for liquefaction at this site. The site has an advantage in that there is no existing development to the north and therefore impacts associated with liquefaction are less likely to affect existing development. The site is also further from the lowest lying areas where the existing potential for liquefaction is most severe. Additional exploration would, however, be needed before a reliable estimate of liquefaction potential at this site could be evaluated.
Los Osos Middle School	N/A	Surface information for the school site and vicinity consists of a 1975 geotechnical investigation by Central Coast Laboratories. The subsurface information from this report is generally outdated and lacks geotechnical properties (ie, standard penetration test blow counts or cone penetrations test tip resistances) that are needed to evaluate liquefaction potential. The existing groundwater table at the school site is expected to be relatively deep, 50 feet or more below the existing ground surface, and could be raised to within 30 feet of ground surface based on disposal site models. Soils encountered below 30 feet in the site vicinity are relatively dense below, and likely to have a low potential for liquefaction. A school is a special occupancy structure according to building codes, and requires special consideration for liquefaction and other geologic hazards. If mounding groundwater could inundate potentially liquefiable soils below the school, the impact to the school buildings would likely need to be assessed. Because the expected depth to groundwater is relatively deep, it is unlikely that significant fissuring, sand boils, or ground surface failure would result from liquefaction of soils 30 feet or more below the ground surface. Liquefaction could, however, result in seismic settlement that could structurally impact the school building if it were to occur. The potential for differential settlements that could occur in association with liquefaction should be assessed relative to the impact to the building. However, it is also noted that seismic settlement of the sand dune deposits may be similar whether the deposits experience liquefaction or not.

Impact GEO-14: Excavation of the leach field trenches on the Broderson site could increase the potential for slope instability. These impacts are considered adverse but not significant (Class III).

Slopes on the upper (southerly) Broderson disposal site range from 10 - 12 percent and are more gently sloping to the north near Highland Drive. Excavation of the shallow trenches for leach fields could increase slope instability somewhat.

Impact GEO-15: The disposal system will consist of a series of sub-surface leach fields which will periodically (about every 10 years) require maintenance and rehabilitation. Impacts associated with these activities will be temporary and comparable to those associated with leach field construction. These impacts are considered significant unless mitigated (Class II).

Sub-surface leach fields require periodic maintenance and about once every ten years require complete excavation and rehabilitation. Impacts associated with rehabilitation are comparable to those associated with construction since a comparable effort is required. It should be noted that a schedule that rotates the timing of rehabilitation will be employed to minimize potential impacts.

Mitigation Measures

Mitigation GEO-1: An NPDES Construction Activity Storm Water Permit shall be obtained prior to the onset of construction activities. Appropriate BMPs, as established in the project NPDES Construction Storm Water Permit, shall be employed during project construction, which may include, but are not limited to, temporary sand bagging; construction of berms; installation of geofabric, and revegetation of areas by hydroseeding and mulching; and the use of trench stabilizing and de-watering. The NPDES permit shall apply to all proposed facilities, and shall address 50 to 100-year precipitation events to the extent feasible. The Pollution Prevention Plan portion of the NPDES permit shall be reviewed and approved by the County Engineering Department and the RWQCB. (Impacts GEO-1, GEO-2,GEO-4, GEO-5, GEO-6, GEO-11)

Mitigation GEO-2: Project implementation shall include a long-term Erosion Control Plan. The plan shall include the treatment plant site, the collection system, and the disposal sites. The Erosion Control Plan shall identify erosion control practices to be implemented throughout the construction and operation of these facilities. These measures may include, but are not limited to, recompaction of soils; revegetation of disturbed areas; utilization of soil binding; or other methods for reducing short-term and long-term erosion. The Plan shall be reviewed by the County Office of Planning and Building, and shall be included in contractor bid and contract documents. (Impacts GEO-1, GEO-2,GEO-4, GEO-5, GEO-6, GEO-11)

Mitigation GEO-3: All proposed facilities shall be designed and constructed in accordance with UBC Seismic Zone 4 regulations. (GEO-8, GEO-12)

Mitigation GEO-4: Prior to finalization of project design, the LOCSD shall consult with the California Division of Mines and Geology CDMG to determine the Design Basis Earthquake for system components. (GEO-8, GEO-12)

Mitigation GEO-5: Prior to construction, a geotechnical investigation shall be carried out as part of final facility design. This geotechnical investigation shall include analysis of the proposed treatment plant site, the disposal system, and the collection system, where determined necessary by the LOCSD and governing regulatory agencies. The geotechnical investigation shall address the following issues:

- Design of facility foundations and walls such that potential impact associated with fault rupture onsite would be reduced to the extent feasible. Design measures for rapid repair of facilities shall be identified as necessary.
- The investigation shall determine onsite ground water levels, and identify soil layers that could be subject to liquefaction during a seismic event. Specific measures, such as excavation/recompaction of foundation areas, long-term dewatering, or utilization of foundation piles, should be identified as necessary to reduce potential impacts to a less than significant level.
- The investigation shall identify the potential for settlement or lurching associated with seismic events. Specific measures, such as excavation/recompaction, shall be identified as necessary to reduce potential impacts to a less than significant level.

- The investigation shall identify the potential for disruption of collection associated with fault rupture. Design measures for isolation and rapid repair of facilities shall be identified, where necessary.

- The County Engineering Department shall review and approve the scope and findings of the geotechnical investigation, and shall review final project design to ensure incorporation of recommended measures.

(Impacts GEO-7, GEO-8, GEO-12)

Mitigation GEO-6: Implementation of CDMG Liquefaction Mitigation. Where determined necessary by geotechnical investigations, design of system components shall incorporate recommendations contained in the CDMG publication "Guidelines for Evaluating and Mitigating Seismic Hazards in California." Mitigation cited in this publication include recompaction of liquefiable soils and use of reinforced shallow foundations. (Impacts GEO-3, GEO-9)

Mitigation GEO-7: Prior to construction, a complete grading and drainage plan shall be submitted to the LOCSD and County Department of Planning and Building for review and approval. Such grading and drainage plan shall address the requirements of the geotechnical investigation described in Measure GEO-5, above. (Impact GEO-6,GEO-9, GEO-5)

Mitigation GEO-8: Rehabilitation of disposal leach fields shall be rotated so that no more than one field is under re-construction at a time. (Impact GEO-13)

Mitigation GEO-9: In addition to the long-term erosion control plan cited in Measure GEO-2, above, plans for the Broderson disposal site shall designate access routes for review and approval by the LOCSD which intrude minimally into the landscape. Plans shall include prompt re-vegetation of disturbed areas. (Impact GEO-13)

Residual Impacts

Project construction would require implementation of specific mitigation measures to reduce potential impacts associated with geologic hazards. Implementation would require site specific analysis to address design issues related to ground shaking, fault rupture, liquefaction, seismic settlement/lurching, and landsliding/erosion. Implementation of measures recommended above would reduce potential impacts to the extent feasible. Therefore, potential impacts would be reduced to a less than significant level. It should be noted, however, that the proposed project is located in a seismically active zone, and that a substantial earthquake could still have adverse impacts.

Geology – Comparison of Project Impacts to Alternatives

Project Impacts		Alternatives: Collection	Alternatives: Treatment			
		STEP/STEG	Holland	Andre	Pismo	Morro Shores SW
Impact GEO-1:	Construction of the collection system (including the collection pipes and up to 11 pump stations) will involve trenching within road rights-of-way and easements at 200-foot increments. Such disturbance will temporarily increase the potential for erosion and reduce the stability of the soil. These impacts are considered significant unless mitigated (Class II).	Comparable	N/A	N/A	N/A	N/A
Impact GEO-2:	The collection system will require the installation of up to 11 pump stations in sub-surface vaults. Excavation and construction of the pump/lift stations will increase the potential for erosion and soil instability. These impacts are considered significant unless mitigated (Class II).	Comparable	N/A	N/A	N/A	N/A
Impact GEO-3:	The collection system infrastructure (pipes, pump stations, etc.) could be damaged or ruptured as a result of a seismic event due to ground shaking or liquefaction. These impacts are considered significant unless mitigated (Class II).	Comparable	N/A	N/A	N/A	N/A
Impact GEO-4:	Periodic maintenance of the collection system could result in a temporary increase in the potential for erosion. These impacts are considered potentially adverse but less than significant (Class III).	Comparable	N/A	N/A	N/A	N/A
Impact GEO-5:	The construction of the Hybrid Extended Aeration system will require the excavation of about 193,600 cubic yards of soil material. Sandy soils associated with the treatment plant site are potentially unstable and will require stabilization to enable construction. Impacts associated with soil instability are considered significant unless mitigated (Class II).	N/A	Comparable	Comparable	Comparable	Comparable
Impact GEO-6:	Grading of the treatment plant site to accommodate the treatment plant, water feature(s) and landscaping will result in soil disturbance and a temporary increase in erosion potential. This impact is considered significant unless mitigated (Class II).	N/A	Comparable	Comparable	Comparable	Comparable
Impact GEO-7:	The treatment plant site is located in proximity to the inferred trace of Strand B of the Los Osos Fault. The exact location of the fault is unknown, and therefore a precise determination of its potential to produce surface rupture is likewise unknown. However, should the trace of the fault coincide with the treatment plant, a seismic event associated with the fault could damage facilities associated with the treatment plant. These impacts are considered significant unless mitigated (Class II).	N/A	Lower	Lower	Lower	Lower
Impact GEO-8:	A seismic event associated with any of the potentially faults described in "Setting", above, could adversely impact the treatment plant and its function. These impacts are considered significant unless mitigated (Class II).	N/A	Comparable	Comparable	Comparable	Comparable
Impact GEO-9:	Soils associated with the treatment plant site consist of unconsolidated sands which may pose a significant risk of liquefaction. This impact is considered significant unless mitigated (Class II).	N/A	Comparable	Lower	Comparable	Comparable
Impact GEO-10:	Manufactured slopes proposed for the project site are less than 2:1 and are unlikely to slide. Impacts are less than significant (Class III).	N/A	Comparable	Comparable	Comparable	Comparable

Impact GEO-11:	Construction of the disposal leach fields will result in the temporary disturbance of soils and potential erosion at the Broderson site and various street rights-of-way within the community. These impacts will be temporary but are considered significant unless mitigated (Class II).	N/A	N/A	N/A	N/A	N/A
Impact GEO-12:	The Los Osos area is within Seismic Zone 4 as defined by the UBC. A seismic event associated with one or more of the active faults affecting the region could result in ground shaking that could damage the leach fields. These impacts are considered significant unless mitigated (Class II).	N/A	N/A	N/A	N/A	N/A
Impact GEO-13:	The disposal leach fields would release treated wastewater into potentially liquefiable zones which may increase the potential for liquefaction over existing conditions. These impacts are considered significant unless mitigated.	N/A	N/A	N/A	N/A	N/A
Impact GEO-14:	Excavation of the leach field trenches on the Broderson site could increase the potential for slope instability. These impacts are considered adverse bu not significant (Class III).	N/A	N/A	N/A	N/A	N/A
Impact GEO-15:	The disposal system will consist of a series of sub-surface leach fields which will periodically (about every 10 years) require maintenance and rehabilitation. Impacts associated with these activities will be temporary and comparable to those associated with leach field construction. These impacts are considered significant unless mitigated (Class II).	N/A	N/A	N/A	N/A	N/A
Overall		Slightly Less Impact	Slightly Less Impact	Less Impact	Slightly Less Impact	Slightly Less Impact

6.2 Hydrogeology and Water Resources

Los Osos derives all of its domestic water supply from groundwater resources. Accordingly, achieving and maintaining a sustainable supply of water is one of the primary objectives of the Wastewater Facilities Project. Over the years, the structure, volume and quality of the groundwater basin underlying the community has been the subject of much investigation (and controversy), as the water purveyors, regulatory agencies and members of the community struggled to determine the safe yield of the basin and the source(s) of groundwater contamination.

The Regional Water Quality Control Board (RWQCB) has concluded that the contamination of the shallow groundwater basin can be directly attributed to the continued use of septic tanks. Increased salinity is also a problem as more water is extracted from wells and seawater intrudes into the groundwater basin. The purpose of the Wastewater Facilities Project is to alleviate the groundwater contamination and provide a sustainable water supply for the community.

This Chapter of the DEIR, utilizing the best available information, analyzes the potential impacts to water quality, supply and surface drainage associated with the various components of the Wastewater Facilities Project.

Setting

The Los Osos Groundwater Basin

Composition

The Los Osos Valley ground water basin is a relatively small, shallow basin, about 9 square miles in area, occupying the central and western parts of the Los Osos Valley. The estimated usable storage capacity is approximately 14,500 acre-feet; current consumption is estimated to be 2,200 acre-feet based on use of existing septic systems.

The current understanding of the basin depicts a shallow upper aquifer with water that, in some areas, is of low quality due primarily to septic system effluent, and a larger lower aquifer with higher quality water. The latter is the primary source of groundwater withdrawals for the community. The basin itself is composed of unconsolidated sediments which are underlain by the relatively impermeable basement rocks of the Franciscan Complex and the Pliocene Miguelito Member of the Pismo Formation. In general, ground water within the basin moves downward from sources of replenishment at the surface and then flows horizontally to wells and to the ocean and Morro Bay. Additional amounts of water enter the basin as underflow from surrounding areas and leave the basin as seepage to streams or phreatophyte transpiration (USGS, 1988). Ground water flows primarily in the Paso Robles and Carega Formations, although the basement rocks of the Franciscan Complex and Miguelito Member of the Pismo Formation are fractured and may allow inflow of some ground water from areas south of the basin (see Figure 6.2-1). The windblown sand deposits are permeable, but largely unsaturated. They play an important role in the replenishment process, but are not a major source of ground water supplies within the basin.

In addition to the vertical stratification of the groundwater basins resulting from clay aquitards, a branch of the Los Osos fault (Strand “B”) is inferred to extend roughly parallel to Palisades Drive between Sweet Springs and the primary east-west trace of the fault along the base of the Irish Hills (Strand “A”). The fault appears to divide the shallow portion of the Paso Robles formation into two groundwater sub-basins, a conclusion supported in part by the generally greater depth to groundwater west of the inferred fault trace. (It should be noted that other theories have been put forth to explain the groundwater anomaly.)

The groundwater moves generally from south to north towards Morro Bay. Pumping from the various municipal wells in the area causes local cones of depression and alters the natural movement by drawing water towards the wells. This is of particular concern for wells closest to the ocean where there is a higher potential for pumping to draw seawater inland and contaminate the wells. Based on the data compiled by URS, there does not appear to be a severe or long term seawater intrusion problem at present. However, for this condition to continue it is essential for the disposal of wastewater to maintain the balance of replenishment on the east and west sides of the fault once septic systems are no longer in use. Groundwater elevations are depicted in Figure 6.2-2.

Previous Investigations of the Los Osos Basin

The Los Osos groundwater basin has been the subject of numerous studies over the past twenty years, some of which have spawned considerable controversy. Although each study has increased our understanding of certain aspects of the basin, gaps remain that are the subject of continuing investigation.

For purposes of satisfying the disclosure requirements of CEQA, however, it is not necessary for an EIR to resolve disagreements among experts regarding the nature of a given resource and the potential impacts to the resource that may result from a given activity. In such instances, an EIR is sufficient if it characterizes the areas of disagreement as a means of qualifying any conclusions based on this information. What follows is a brief summary of the groundwater investigations that have been conducted to date.

Brown and Caldwell (1983)

In 1983, Brown and Caldwell conducted an investigation of groundwater quality in the Los Osos basin. One of the conclusions of that study was that the Los Osos basin appeared to be divided into upper and lower basins.

CSA 9 Wastewater Treatment Facilities Draft and Final EIR (The Morro Group, 1987)

The 1987 EIR on the CSA 9 project contained a water balance analysis prepared by the Morro Group which took into consideration the Brown and Caldwell findings regarding the division of the basin into upper and lower sub-basins. This report was criticized for having assumed the basin was so divided.

Hydrogeology and Water Resources of the Los Osos Valley Ground Water Basin (U.S. Geological Survey, 1988).

The USGS study included creation of a groundwater model to simulate the effects of various combinations of water supply and wastewater disposal options on the groundwater basin. The study concluded that:

> *"…continued use of groundwater and septic systems would result in a small increase in seawater intrusion, but, in general, increases in municipal pumpage would be offset by increases in return flow from septic systems and urban landscape irrigation. Centralized treatment and recharge of wastewater would result in lower heads in most urban areas but higher heads near the wastewater percolation ponds."* (USGS, page 72)

The report warns that exportation of treated wastewater from the Los Osos area would likely incur seawater intrusion in coastal wells because of withdrawal of groundwater below sea level. More importantly, however, is the fact that the groundwater model prepared by the USGS assumed the basin was composed of a single basin and not divided into upper and lower components.

Geohydrology and Management of the Los Osos Valley Ground Water Basin (State Department of Water Resources, 1989)

Based on the results of the USGS report, the Department of Water Resources report further studied long-term sustainable yield of the groundwater basin and alternative management scenarios. The DWR study also assumed a single basin and concludes that the "long-term sustainable yield" of the basin when groundwater is the only source and wastewater is disposed of through septic systems, is about 2,200 acre-feet per year. The report goes on to state that groundwater extractions in 1986 were about 3,400 acre-feet, and therefore, the basin was in overdraft. This conclusion, based on the "single basin" theory, generated considerable controversy.

Based in part on the USGS and DWR studies, San Luis Obispo County Planning Department recommended that a Level of Severity III be adopted for groundwater in the Los Osos basin. The Board of Supervisors subsequently adopted a Level II severity because there was insufficient supporting data for Level III.

In 1994 the San Luis Obispo County Board of Supervisors created the Groundwater Basin Analysis and Management Agreement to try to resolve some of the controversies regarding the nature of the Los Osos basin. From this, a Technical Advisory Committee (TAC) was formed. The TAC consists of representatives of the three water purveyors in the area.

Baseline Report of the Los Osos Valley Groundwater Basin (URS Corporation, 2000)

The TAC contracted with Woodward-Clyde (now URS Corporation) in 1995 to update the 1988 USGS groundwater model of the Los Osos Groundwater Basin to meet the following objectives:

- To evaluate the operation of wells that are owned by one purveyor, or jointly owned or shared by more than one purveyor;
- To evaluate the effects of a general program of well modifications and improvements;
- To evaluate existing well locations and assist in the selection of new well locations;
- To simulate the effects of changing the amount of pumping in each groundwater layer;
- To evaluate the effects of various water projects (imported water, replenishment of treated wastewater, barrier wells)
- To evaluate the potential impacts of management actions on sensitive riparian, wetland and estuarine habitats.

In August, 2000 URS published the *Baseline Report of the Los Osos Valley Groundwater Basin* which is incorporated by reference and available for review at the LOCSD offices.

Among the findings of the URS study are:

- Replenishment of the basin occurs from two primary sources: rainwater and septic system discharges;
- Septic system replenishment of the aquifer also helps keep seawater from intruding into the water basin and no severe or long-term seawater intrusion appears to be occurring at present; however, removal of the septic system replenishment could significantly alter this situation, especially east of the inferred trace of the Los Osos fault;
- Based on the updated model, total inflows into and out of the groundwater basin appear to be roughly in balance.

One of the issues addressed by the URS study relates to water balance, which refers to the inflow and outflow characteristics of the groundwater system. According to URS, in the Los Osos area, inflow components include septic system replenishment, recharge from rainfall, boundary inflows, inflow from Morro Bay and the Pacific Ocean, and replenishment from Los Osos Creek. Outflow components include evapotranspiration from shallow groundwater areas, groundwater pumping, discharge to Morro Bay and the Pacific Ocean, and discharge to Los Osos Creek. As stated above, the highest source of groundwater replenishment is septic system recharge. Accordingly, most of the water pumped by municipal wells is returned to the groundwater basin by septic systems.

Water balances for the Los Osos area as derived by URS from the updated USGS model are provided in Tables 6.2-2 and 6.2-3 for areas west and east of the inferred trace of the Los Osos fault. Note that septic recharge is the highest inflow component on both sides of the fault. Because the fault tends to divide the groundwater basin into east and west sub-basins, a disruption of inflow that may occur as a result of septic system removal would have a greater impact on inflow on the east side of the fault where septic recharge is higher.

Also according to the URS study, discharge to Morro Bay and the Pacific Ocean is a relatively large component of outflow. This represents the water that flows through the groundwater system and into the bay or ocean.

Water Quality

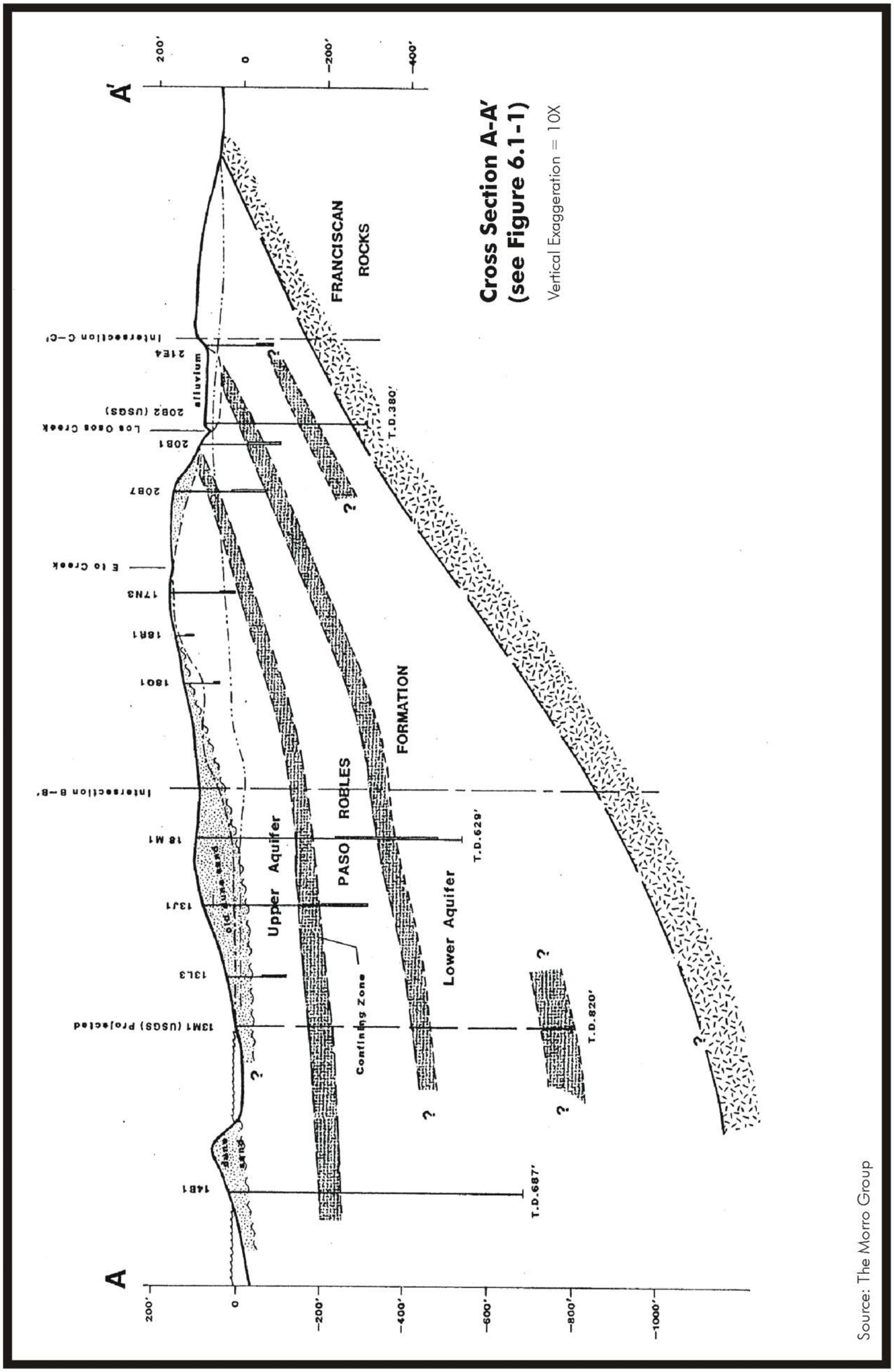
The quality of water in the upper and lower aquifers of the Paso Robles storage unit have been investigated by Brown and Caldwell (1983) in their Phase I Water Quality Management Study. The principal conclusion of that report is that, while the lower aquifer contains water of good quality, the upper aquifer contains relatively high quantities of nitrate that exceed the State standard for domestic use of 45 mg/l within much of the urbanized area of Los Osos and Baywood Park. This study attributes the nitrate contamination of the shallow aquifer primarily to septic tank effluent and the use of chemical fertilizers in landscape irrigation.

Nitrate concentrations in groundwater have exceeded the maximum containment level since 1979, a trend which the RWQCB has attributed to inputs from septic-tank effluent. In the past, most of the domestic water was pumped from the shallow aquifer. However, as nitrate concentrations in the shallow wells increased, it became necessary to drill to the deeper, uncontaminated aquifer to reach water of acceptable quality (EDA 1998).

Since the 1988 USGS report, there has been increasing evidence of seasonal (summer) saltwater intrusion into the lower aquifer. Domestic water supply wells in some areas towards the bay have been abandoned due to this condition. According to the project geohydrologist (Cleath and Associates), the cause of seawater intrusion appears to be pumping from the deep aquifer by water purveyors. This situation may be partly or completely alleviated by the project (see discussion of Impact H-4 on page 80, 141).

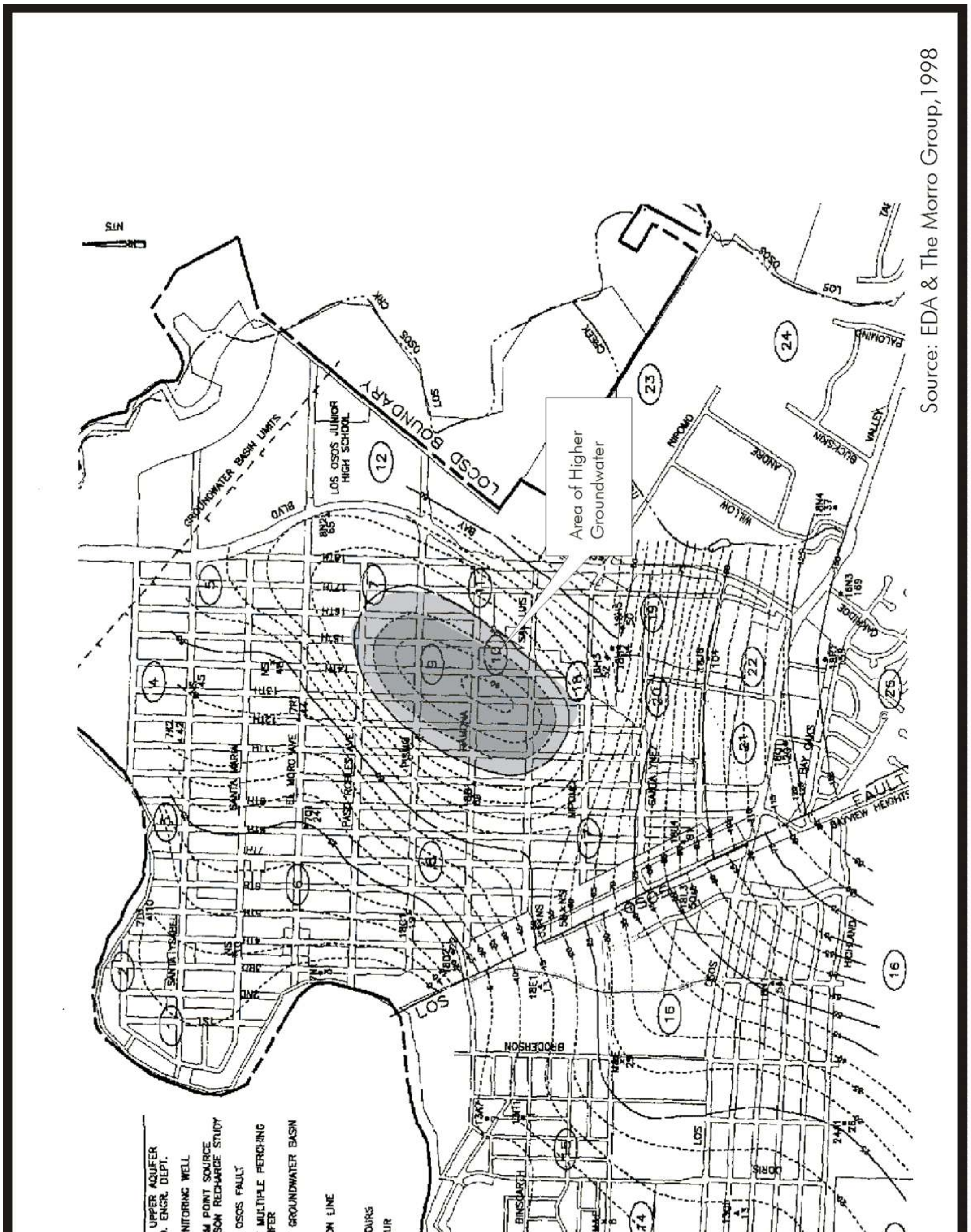
Table 6.2-2: Summary Annual Groundwater Budget
(in acre-feet/year)
Source: URS, 2000

Inflows	Entire Model	West of Fault	East of Fault
Inflow Across Fault	N/A	962.44	42.32
Storage Loss	1198.44	306.22	892.20
Septic System Recharge	1836.56	560.07	1276.49
Rainfall Recharge	1341.83	484.95	856.97
Boundary Inflows	10.12	4.61	5.52
Bay and Ocean Recharge	138.92	133.05	5.85
Los Osos Creek Recharge	125.17	0.00	125.17
Total Inflow	4651.05	2451.34	3204.52
Outflows	**Entire Model**	**West of Fault**	**East of Fault**
Inflow Across Fault	N/A	42.32	962.44
Storage Gain	1057.18	294.16	763.01
Evapotranspiration	288.19	152.98	135.21
Groundwater Pumping	2736.90	1595.69	1141.21
Bay and Ocean Discharge	549.21	358.51	190.69
Los Osos Creek Recharge	4.38	0.00	4.38
Total Outflow	4635.86	2443.66	3196.94
Error (in-out)	15.19	7.69	7.58
Error (% of inflow)	0.33%	0.31%	0.24%



LOS OSOS COMMUNITY SERVICES DISTRICT
WASTEWATER FACILITIES PROJECT

Figure 6.2-1
Geologic Cross Section



LOS OSOS COMMUNITY SERVICES DISTRICT
WASTEWATER FACILITIES PROJECT

Figure 6.2-2
Groundwater Elevations

Broderson Disposal Site

The hydrogeologic conditions of the Broderson property have been studied most recently by Cleath and Associates (Hydrogeologic Investigation of the Broderson Site, June, 2000), which is incorporated herein by reference and available for review at the LOCSD offices. Based on drill tests conducted at the site, Cleath has determined that a layer of clay exists at a depth of between 190 - 235 feet which separates the upper and lower aquifers. Groundwater measured at the north end of the site was found at a depth of 150 feet below the surface, and 210 feet below surface in the center of the site.

Figure 6.2-3 shows a geologic cross section of the Broderson site running roughly northwest to southeast. The clay band (the AT2 Clay) is clearly visible on the section.

Regulatory Setting

San Luis Obispo County General Plan, Local Coastal Program and Coastal Zone Land Use Ordinance (CZLUO)

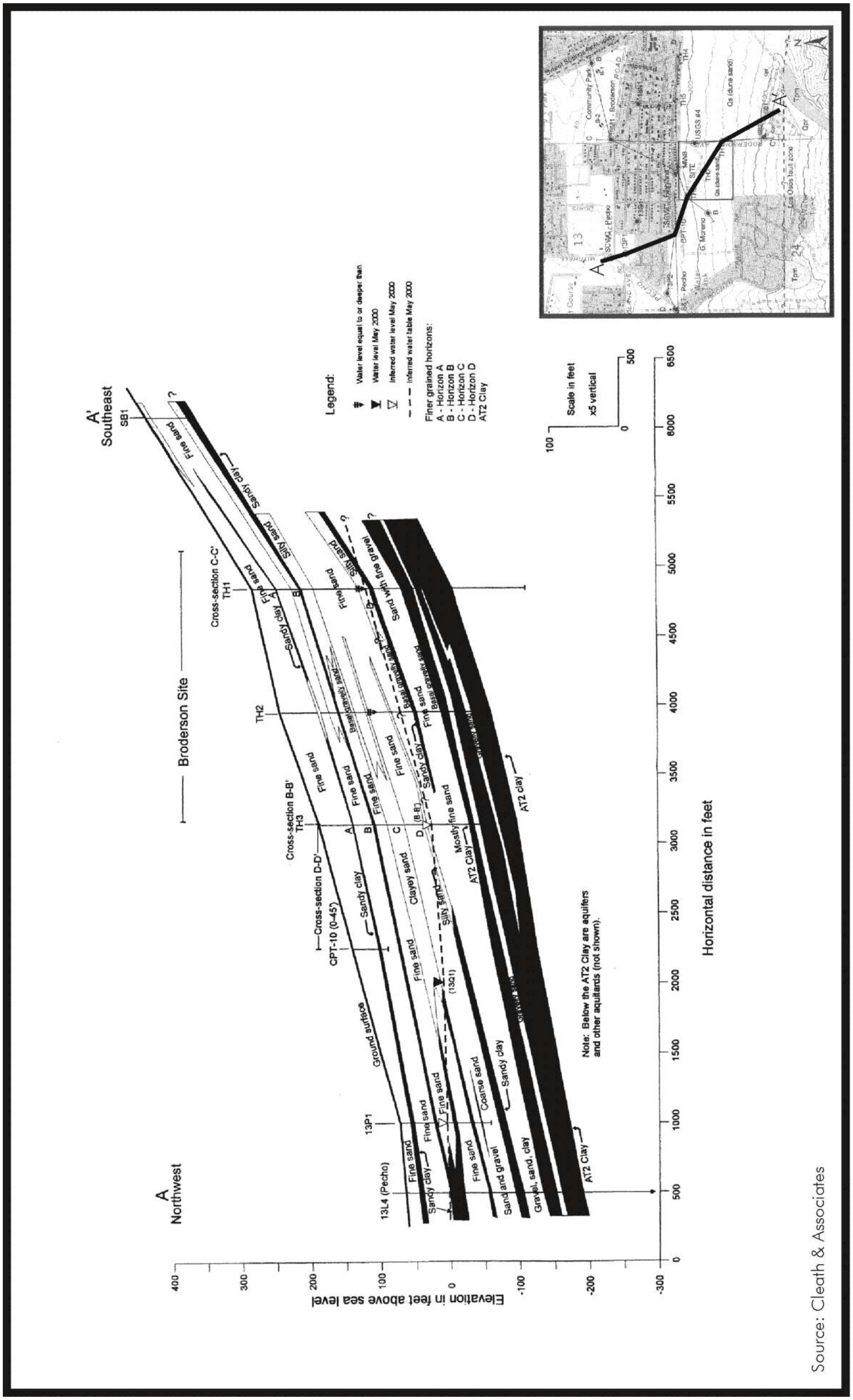
With regard to water quality, Section 22.06.100 of the CZLUO requires that the Central Coast RWQCB review any project that may affect water quality. In addition, any construction activity disturbing an area of greater than 5 acres is required to obtain a General Construction Activity Storm Water Permit from the RWQCB. To comply with the permit, a "storm water pollution prevention" plan using best management practices is required.

State Revolving Fund Requirements

In its *Policy for Implementing the State Revolving Fund for Construction of Wastewater Treatment Facilities*, the State Water Resources Control Board (SWRCB) requires compliance with all applicable federal environmental laws, including consistency with areawide planning.

Water Quality Control Plan

The most recent update of the Water Quality Control Plan for the Central Coast Region (Basin 3) was adopted by the RWQCB in September 1994. The Basin Plan establishes beneficial uses and water quality objectives for surface and ground water sources within the basin. To be consistent with this plan, the wastewater Facilities Project must comply with the water quality objectives described in RWQCB Order No. 97-8, *Waste Discharge Requirements for San Luis Obispo County Services Area 9.*



LOS OSOS COMMUNITY SERVICES DISTRICT
WASTEWATER FACILITIES PROJECT

Figure 6.2-3
Geologic Cross Section of The Broderson Disposal Site

Significance Thresholds

A project will normally have a significant adverse impact on water supply or quality if it will:

- Substantially deplete groundwater supplies or interfere substantially with groundwater replenishment such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level; or,
- Substantially alter the existing drainage pattern of the site or area, through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site; or,
- Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or,
- Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map or place within such a zone structures which would impede or redirect flows; or,
- Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam;
- Violate any water quality standards or waste discharge requirements; or,
- Substantially degrade water quality (e.g., through runoff).

Impact Analysis

Overview of the Wastewater Facilities Project

A gravity wastewater collection system will be constructed to collect wastewater from properties less than one acre in size within the RWQCB Prohibition Zone (see Figure 3-1). Wastewater will be conveyed to the Tri-W site which will contain a hybrid Extended Aeration treatment plant that will be underground and fully odor scrubbed. The treatment plant will be designed to process an average dry weather flow of 1.2 mgd and a peak wet weather flow of 1.7 mgd.

The preferred disposal strategy addresses these factors through a combination of recycling and sub-surface disposal. During dry weather up to 200,000 gallons per day of treated wastewater will be recycled by irrigating play fields and landscaping within the community. Among the sites being considered are the four public schools (Bayview Elementary, Monarch Grove Elementary, Sunnyside Elementary and Los Osos Middle School) and the Sea Pines Golf Course. The balance of the highly treated and disinfected wastewater (about 1.2 million gallons per day) will be pumped to sub-surface leach fields where it will percolate into the upper aquifer. Also during the dry season, leach field use will be rotated to maximize the long-term life of the system and to ensure that the sub-surface soils do not become saturated.

During the rainy season, treated wastewater passing through the treatment process could reach as high as 1.7 mgd for short periods (60 days or less) and require disposal. During wet weather when surface irrigation is unnecessary, all of the treated wastewater will be disposed of exclusively through the sub-surface leach fields. Over time, the reintroduction of treated wastewater, together with the elimination of individual septic leach fields within the collection area, is expected to flush the shallow aquifer of excess nitrates.

Leach fields will be located in portions of the community where sufficient depth to groundwater (30 feet or more) exists to accept the treated wastewater without resulting in the saturation of surface soils. Percolation rates are expected to be between 0.001" - 0.002" per minute. The leach fields would be composed of perforated pipe installed about 5-6 feet deep and 4 feet on center running parallel with the street right-of-way. The areas tentatively chosen are located primarily within street rights-of-way and on other lands the District may consider acquiring in fee or by easement (see Figure 3-7). Every five to ten years the disposal leach fields will require maintenance in which the field would be completely exposed and rehabilitated.

Groundwater modeling indicates that the area west of the fault has the capacity to accept about 950,000 gallons per day of treated effluent, once individual septic leach fields are no longer in use. The primary disposal site is a 40 acre portion of an 80 acre parcel located south of Broderson Avenue (the Broderson site) adjacent to a developed residential neighborhood. Leach fields would be constructed in linear arrays parallel with Highland Drive on an eight-acre portion of the property located toward the southerly property boundary (up-slope). Preliminary sub-surface geotechnical investigations suggest that the Broderson site can accommodate up to 800,000 gallons per day of treated effluent. Other locations proposed for disposal on the west side of the fault are:

- Vista de Oro property on the east side of Pecho Valley Road south of Monarch.
- The Los Osos Valley Road right-of-way between Broderson Avenue and Doris Avenue, and the Pine Avenue right-of-way from LOVR north.
- A portion of Monarch Grove Elementary School (alternate only)

To prevent the mounded groundwater from surfacing downslope of the Broderson site near the Bay, a series of four harvesting wells (and one alternate) will be employed, as follows:

Harvesting Well Location	Ownership of Well Site	New or Existing
Skyline Drive	Cal Cities Water Company	Existing well, retrofitted to extract water from shallow aquifer.
Rosina Right-of-Way	Cal Cities Water Company	New
Broderson Right-of-Way	LOCSD	New
County Library	LOCSD	New
S&T Well No. 1	S&T Mutual water Company	(Alternate)

Each well will be designed with a capacity of 200 gallons per minute (ave. 100 gpm). Each well would be perforated only in the upper ground water layer to harvest the surplus sub-surface flow. It is estimated that 400,000 gallons per day will need to be harvested. A series of up to 30 monitoring wells will also be required to monitor the sub-surface groundwater mounding and to monitor groundwater quality.

The preferred option for the disposal of recovered water is to undergo additional nitrogen reduction through either blending with water from the deep aquifer, or through additional treatment which may include ion exchange or some other denitrification process to meet drinking water standards. The denitrified and disinfected water will then be used to augment the water supplies of Cal Cities Water Company and the Los Osos CSD.

The area east of the inferred fault trace is more limited in its capacity to accept treated wastewater for disposal. This is due to the generally shallower depth to groundwater and the prevalence of perched clays which restrict percolation. Areas on the east side of the fault considered for disposal include:

- A portion of the Pismo Avenue right-of-way between 7th and 14th Streets
- A portion of the Santa Maria Avenue right-of-way between 13th Street and 17th Street.
- Los Osos Middle School (stand-by only)
- A portion of the Santa Paula Avenue right-of-way between South Bay Boulevard and 15th Street
- A four acre portion of the 30 acre Powell property located east of the Middle School at the end of El Moro.

Collection System

The collection system will consist of a series of sub-surface collection pipes within the Prohibition Area which will replace the septic leach fields on lots of one acre and smaller.

Construction Related Impacts

Impact H-1: Construction of the collection system may require dewatering of trenches. Impacts to water quality stemming from such activities are considered adverse but not significant (Class III) because of mitigation incorporated into the project description.

Installation of pipes in areas where groundwater is near the surface may require dewatering (or removal of water). Such water , which may be high in nitrogen, suspended solids and other pollutants, must be disposed of in accordance with the standards of the Regional Water Quality Control Board. Water removed from trenches during construction will be re-introduced in previously excavated trenches before the trench is closed back up. This process will be repeated as the trenching moves through the community so the water removed by de-water is re-introduced continuously. Impacts are less than significant (Class III).

Operational Impacts

Impact H-2: Operating a centralized wastewater collection system will allow elimination of the use of septic system leach fields over a large portion of the collection area. Eliminating this source of groundwater re-charge in favor of subsurface leach fields in specified locations will alter the replenishment characteristics of the groundwater basin and will alter groundwater levels over much of the community. This impact is considered significant and adverse unless mitigated (Class II).

The URS Baseline Study concludes that septic system effluent constitutes the largest single source of re-charge to the basin. Once the use of septic systems throughout the collection area are largely supplanted by the wastewater collection system, the re-introduction of groundwater will be accomplished by the disposal strategies outlined above. Specifically, under buildout conditions about 950,000 gallons per day will be returned to the west side of the fault through surface recycling (dry weather) and through sub-surface leach fields in various locations; about 450,000 gpd will be similarly disposed of on the east side of the fault. The primary replenishment site, however, is the Broderson property where up to 800,000 gallons per day will be re-introduced. This location was chosen because it offers the most favorable combination of depth to groundwater and depth to the clay aquitard to accommodate a large amount of treated wastewater.

Predicting with accuracy the net effect on groundwater levels of eliminating septic tanks and returning the treated wastewater at the disposal sites is difficult at best. However, current modeling results suggest that so long as at least 230,000 gpd of treated wastewater is disposed of east of the fault, groundwater levels and seawater intrusion are expected to remain stable.

A related issue is the effect of sub-surface disposal east of the fault on water levels in Los Osos Creek. At present, most of the wastewater returned to the basin from septic systems east of the fault flows toward Morro Bay. However, a sizeable portion flows east toward Los Osos Creek due primarily to the pronounced “mound” of groundwater that has been mapped in the vicinity of Pismo Avenue and 14th Street (see Figure 6.2-2: Groundwater Elevations). Generally, the higher groundwater causes areas east of 15th Street to flow toward the Creek where the freshwater helps support riparian and wetland vegetation in that area. The Wastewater Facilities Project proposes to eliminate septic system replenishment in favor of sub-surface leach fields in selected locations (see Figure 3-7). The disposal locations were chosen in part to help ensure that existing problems related to shallow groundwater and ponding are not worsened. The quantity of treated wastewater reintroduced to the basin is expected to maintain balance between the east and west sides of the fault.

Note that the Powell disposal site located at the east end of El Moro Avenue is estimated to have a disposal capacity of about 175,000 gallons per day. Assuming 300 gallons per day of wastewater per single family residence, this is roughly equivalent to 583 dwelling units which is slightly less than the number of units east of 15th Street and south of El Moro Avenue. This suggests that disposal in the vicinity of the Powell property will more or less maintain existing subsurface flows toward Los Osos Creek, albeit in a more concentrated area.

ALTERNATIVES

A STEP/STEG collection system offers some environmental advantages over a conventional gravity system with respect to groundwater in that STEP/STEG may be less susceptible to infiltration during storm events. Otherwise STEP/STEG would have similar impacts as a gravity system because it would allow the elimination of the use of individual septic leach fields.

Treatment Plant

Operational Impacts

Impact H-3: Operation of the wastewater system is designed to improve groundwater quality over time. These impacts are considered beneficial (Class IV).

The RWQCB has determined that the continued use of individual septic tanks throughout the community has contributed to the degredation of water quality in the shallow aquifer. The treatment plant is part of a larger system which aims to improve the quality of water entering the shallow aquifer. High nitrate levels in the shallow aquifer have been attributed to the continuing use of individual septic tanks. The collection and treatment system will collect most of the effluent contained in these tanks for later treatment and reintroduction. Reintroduced water will be of a much higher quality than is currently disposed of in the tanks. Over time, the reintroduction of the treated water will improve the overall quality of water in the shallow aquifer. Impacts are therefore beneficial (Class IV).

Impact H-4: Operation of the wastewater system is expected to have a beneficial impact on groundwater supplies and sea water intrusion due to an overall reduction in the amount of water pumped from the deep aquifer. This impact is considered a beneficial impact (Class IV).

At present, groundwater from the shallow aquifer does not meet safe drinking water standards and is thus unavailable for domestic use unless treated. As stated above, the Wastewater Facilities Project will collect and treat wastewater within the collection area and, over time, the shallow aquifer will be cleansed. To avoid mounding of treated wastewater re-introduced to the shallow aquifer at the Broderson site, the wastewater project will employ a series of wells downslope to harvest about 300,000 gallons per day. This water will be further treated and/or blended to meet drinking water standards and re-introduced into the drinking water supply.

Using this highly treated and disinfected water from the shallow aquifer allows a comparable reduction in the amount of groundwater extracted from the deep aquifer, which in turn has a number of beneficial effects. First and foremost, almost all of the domestic water consumed in Los Osos is derived from the deep aquifer. Treated water from the shallow aquifer can be considered a supplemental supply which allows a reduction in the exclusive reliance on the deep aquifer.

Another potential benefit relates to sea water intrusion. According to the project groundwater geologist (Cleath and Associates), deteriorating water quality due to sea water intrusion has been documented at S&T Mutual Water Company well No. 4 (790 milligrams per liter chloride in September, 1999) and at the nearby Southern California Water Company (SCWC) Pecho Road Well. The sea water is intruding into the middle zone of the deep aquifer, where static water levels in the vicinity of the S&T Mutual well field are below sea level during portions of the year. There appears to be no sea water intrusion in shallow aquifer wells S&T No. 1 and SCWC Skyline well.

The cause of sea water intrusion is pumping by water purveyors from the deep aquifer. However, although the wastewater project will result in additional recharge to the deep aquifer, that alone may not be enough to stem the intrusion. Some level of reduction in pumping from the deep aquifer would also likely be needed. If the reduction in pumping from the deep aquifer afforded by the wastewater facilities project is applied to deep aquifer wells in the vicinity of the areas currently impacted by sea water intrusion, the intrusion may be controlled.

Impact H-5: The cumulative long-term demand for water in the Los Osos area will increase as a result of the installation of a community-wide wastewater treatment system and the removal of the building moratorium enacted by the RWQCB. These impacts are considered significant unless mitigated (Class II).

One of the anticipated outcomes of the Wastewater Facilities Project is the eventual removal of the building moratorium which has been in effect in Los Osos since 1988. Once the moratorium is lifted, the community is expected to continue to develop in accordance with the Estero Area Plan portion of the San Luis Obispo County General Plan and Local Coastal Program.

Current land use designations are estimated to accommodate a population holding capacity of 20,590 at buildout, after adjustments are made for properties conserved and/or used by the project (see Table 3-5). Assuming the present (November, 2000) population is 14,606, buildout will accommodate an additional 5,984 persons. If per capita consumption is currently 0.15 acre-feet per person per year, the additional demand associated with this future population is estimated to be: 0.15 AF/P/Y X 5,984 = 901 AFY. Assuming the water conservation program saves 204 acre-feet per year at buildout, the net additional demand is about 697 acre feet per year.

As stated above, there appears to be no definitive understanding of the safe yield of the Los Osos basin so the effect of this additional development on groundwater supplies is unknown. However, the Los Osos CSD is currently preparing a comprehensive Water Management Plan which will address the long-term management of groundwater resources for the community, including appropriate strategies for the management of pumping from the upper and lower aquifers to provide for future demand. In addition, a water conservation program will be implemented, as required by the State Revolving Fund. This program is estimated to save as much as 180,000 gallons of water per day.

Lastly, the Estero Area Plan is currently undergoing a comprehensive revision. A draft Environmental Impact Report has been prepared on the preferred Plan alternative, but work on the draft plan and the EIR have been suspended to incorporate revisions recommended by the California Coastal Commission. Among the recommendations of the Coastal Commission is a requirement that land use in the Los Osos area be related to the service capacities for wastewater and water supply. Information regarding groundwater resources and wastewater capacity derived from the Wastewater Facilities Project will help shape the Area Plan update accordingly.

ALTERNATIVE TREATMENT SYSTEMS AND ALTERNATIVE TREATMENT SITES

All of the alternative treatment systems (sequencing batch reactor, and conventional extended aeration system) have a demonstrated ability to remove total nitrogen to achieve the water quality standards adopted by the RWQCB. Therefore, none of the alternative systems offer a clear environmental advantage over the proposed project.

Since the groundwater and subsurface geologic conditions are comparable on each of the alternative sites, and each site would accommodate any of the alternative treatment systems, none offers a clear environmental advantage over the proposed site. Impacts associated with removal of the building moratorium and the increased demand resulting for water from additional development would be the same.

Disposal System

Construction Related Impacts

Impacts to water supplies associated with construction operations are discussed in Chapters 6.1: Geology and 6.3: Drainage and Surface Water Quality.

Operational Impacts

Impact H-6: The introduction of 800,000 gallons per day of treated wastewater on the Broderson site could cause sub-surface "mounding" of the groundwater. Over time, this mounding is expected to migrate downslope toward the Bay where it may surface as the depth to groundwater diminishes. This impact adverse but mitigated by measures incorporated into the project description (Class III).

Modeling conducted by the project geohydrologists (Cleath & Associates, Appendix C) suggests that, to prevent the mounded groundwater from surfacing downslope of the Broderson site, a series of four harvesting wells will need to be employed between Sea Pines Golf Course and the Community Center on Palisades Drive. Each well will be designed with a capacity of 200 gallons per minute (ave. 100 gpm). Each well would be perforated only in the upper ground water layer to harvest the surplus sub-surface flow. It is estimated that 400,000 gallons per day will need to be harvested. A series of up to 30 monitoring wells will also be required to monitor the sub-surface groundwater mounding and to monitor groundwater quality.

The harvested water will be returned to the wastewater treatment plant where it will undergo additional filtration, disinfection and nitrate removal to meet the requirements of the State Department of Health Services. Following disinfection, the water will be blended with existing drinking water supplies for domestic consumption.

Mitigation Measures

Mitigation Included in the Project Description

As discussed above, the project incorporates components intended specifically to mitigate the effects of the wastewater collection, harvesting and disposal strategies. These include the use of recovery wells to mitigate the effects of groundwater mounding, which will allow a reduction in the amount of water extracted from the deep aquifer. In addition, a condition of the State Revolving Fund financing is that the LOCSD adopt a comprehensive water conservation program). A draft plan has been prepared and is incorporated herein by reference and available at the LOCSD offices. The Plan, entitled Urban Water Management Plan (JLW & Assoc., August, 2000) estimates a total savings of about 180,000 gallons of water per day. However, even with this program, future water demand will greatly exceed supplies.

Lastly, the project will incorporate a system of 30 monitoring wells throughout the community to provide a continuous source of current data relative to groundwater conditions (primarily water quality and depth). This data will be used, in part, to help fine tune the harvesting regime.

Additional Recommended Mitigation

Mitigation H-1: NPDES Permit. The LOCSD will obtain and comply with an NPDES permit from the RWQCB and will develop an SWPPP for the project, which will include, among other requirements, the identification of Best Management Practices (BMPs) to be used for erosion control, actions for control of potential fuel or drill tailing release, and requirements for disposal (i.e., location, quality) of water from dewatering activities. (Impact H-1, H-5)

Mitigation H-2: Revegetation Plan. A comprehensive revegetation plan will be developed for the Broderson site, which at a minimum, will include re-planting of exposed surfaces with native vegetation. (Impact H-5)

Mitigation H-3: The Los Osos Community Services District shall prepare and implement a comprehensive water management plan for the Los Osos groundwater basin. The purpose of the plan is to identify management strategies aimed at achieving a sustainable water supply to serve buildout of the community in accordance with the Estero Area Plan, as it may be amended from time to time (H-5).

Residual Impacts

Implementation of the above measures would reduce potential impacts associated with each of the proposed project sites to a less than significant level.

Hydrology – Comparison of Alternatives

Project Impacts	Alternatives				
	Collection	Treatment			
	STEP/STEG	Holland	Andre	Pismo	Morro Shores SW
Impact H-1: Construction of the collection system may require dewatering of trenches. Impacts to water quality stemming from such activities are considered adverse but not significant (Class III) because of mitigation incorporated into the project description.	Less impact	N/A	N/A	N/A	N/A
Impact H-2: Operating a centralized wastewater collection system will allow the use of septic system leach fields to be eliminated over a large portion of the collection area. Eliminating this source of groundwater re-charge in favor of subsurface leach fields in specified locations will alter the replenishment characteristics of the groundwater basin and will alter groundwater levels over much of the community. This impact is considered significant and adverse unless mitigated (Class II).	Comparable	Comparable	Comparable	Comparable	Comparable
Impact H-3: Operation of the wastewater system is designed to improve groundwater quality over time. These impacts are considered beneficial (Class IV).	N/A	Comparable	Comparable	Comparable	Comparable
Impact H-4: Operation of the wastewater system is expected to have a beneficial impact on groundwater supplies and sea water intrusion due to an overall reduction in the amount of water pumped from the deep aquifer. This impact is considered a beneficial impact (Class IV).	N/A	Comparable	Comparable	Comparable	Comparable
Impact H-5: The cumulative long-term demand for water in the Los Osos area will increase as a result of the installation of a community-wide wastewater treatment system and the removal of the building moratorium enacted by the RWQCB. These impacts are considered significant unless mitigated (Class II).	N/A	N/A	N/A	N/A	N/A
Overall	Slightly Less Impact	Comparable Impact	Comparable Impact	Comparable Impact	Comparable

6.3 Drainage and Surface Water Quality

Construction and operation of the Wastewater Facilities Project will involve trenching, grading and other construction activities, in addition to an increase in the impervious surfaces at the wastewater treatment plant site. All of these aspects of the project could potentially affect the quantity and quality of surface runoff.

Setting

Climate/Precipitation. Mean annual rainfall in the Los Osos area increases gradually from about 14.5 inches at the coast to about 15 inches at the inland end of the valley. Rainfall also increases towards the mountains. Mean annual rainfall is about 15 inches per year along Park Ridge north of the Los Osos Valley, and 30 inches per year at the upper end of the Los Osos Creek drainage basin in the Irish Hills (California Department of Water Resources, 1973).

Surface Water. The Los Osos Valley lies within a surface-water hydrologic unit that encloses a total drainage area of about 32 square miles (Yates and Wiese, 1988). The Los Osos Creek system includes two tributary areas and is located south of the Morros, a string of small peaks stretching inland from Morro Bay. The northern tributary drains flat agricultural areas of the Los Osos Valley including Warden Lake. The southern branch drains the Clark Valley, located on the southern flank of the Irish Hills. Flood plains for each of these tributaries are generally limited to areas immediately adjacent to the creek channels. However, the Warden Lake area and the upper reaches of the Los Osos estuary are subject to standing water during periods of heavy rainfall. Surface runoff in the western portion of the valley is minimal due to high infiltration rates associated with sandy soils of the Holocene dune complex.

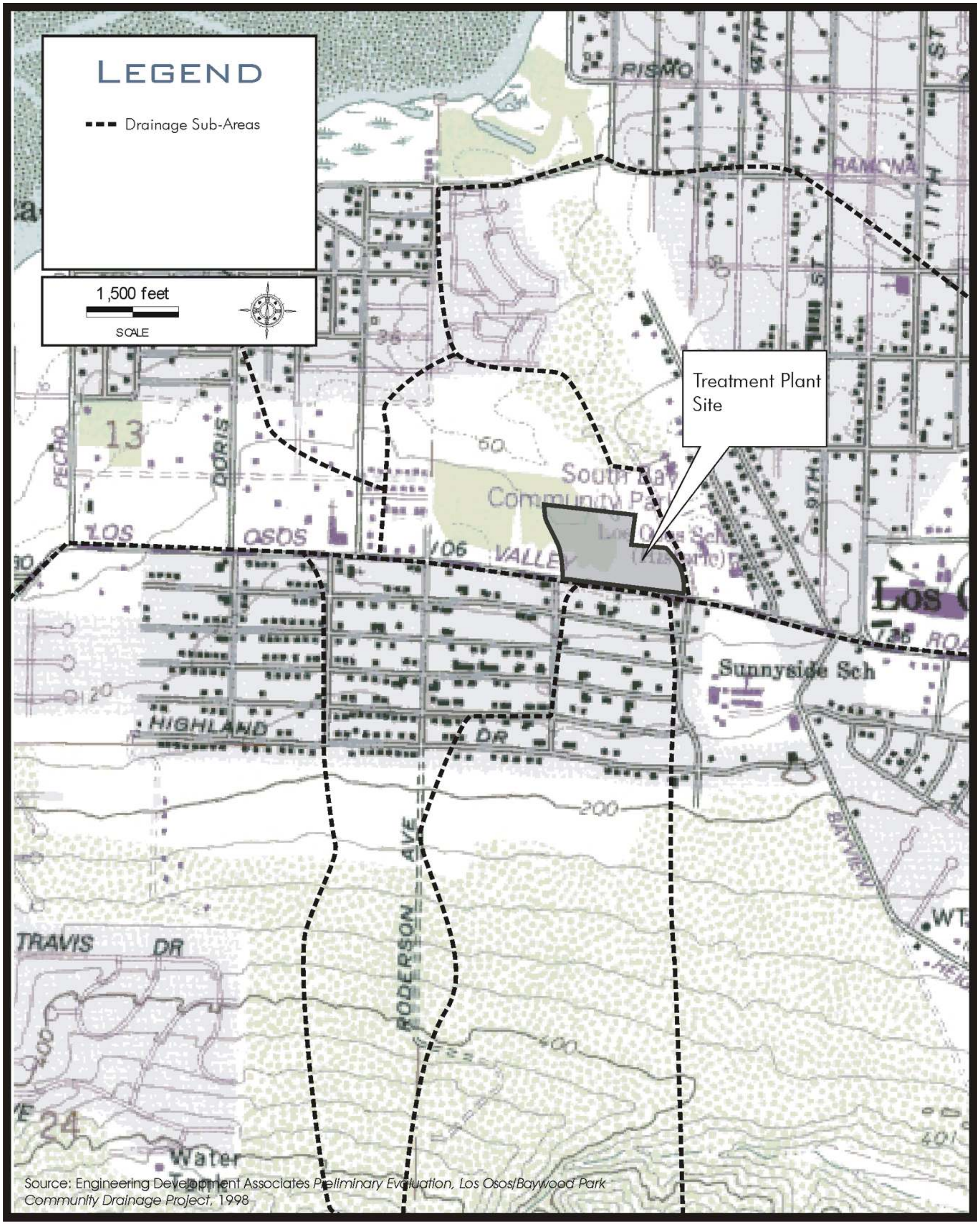
Flooding/Drainage. According to maps prepared by the Federal Emergency Management Agency (FEMA) there are currently no areas within the community of Los Osos subject to a 100-year flooding event (a flood with the statistical likelihood of recurring once every 100 years). Nonetheless, localized flooding occurs during and immediately after significant rain. For these reasons, San Luis Obispo County has studied the drainage situation in Los Osos to determine the most cost-effective means to address these localized problems.

In 1998, the County prepared the *Preliminary Engineering Evaluation, Los Osos/Baywood Park Community Drainage Project* (EDA, The Morro Group, 1998). That study concludes that the most significant residential flooding experienced in Los Osos is due to natural sumps, which are low-lying areas where runoff accumulates before percolating into the ground. Sumps are prevalent in Los Osos because of its location adjacent to the Morro Bay Estuary and the sandy soil. Historically, sumps drained fairly quickly without flooding because of the high permeability of the soil and the depth to groundwater. Over the past twenty years, however, urban development has decreased the permeability of the ground around these sump areas and groundwater levels have risen, thereby reducing the amount of subsurface storage available. The result has been numerous areas becoming prone to periodic flooding. To address these problems, the study recommends construction of a community drainage system consisting of surface improvements (curbs, gutters and pavement) as well as storm drains.

Site Specific Setting

The treatment plant site is located in the mid to lower portion of a north facing slope at the south end of Morro Bay. The area is generally characterized by wind blown sand deposits of Holocene age (11,000 years). These deposits are quite permeable, and the site is underlain by a complex shallow aquifer or group of shallow aquifers and a deep groundwater aquifer. The project site lies within a drainage sub-area consisting of about 570 acres stretching from the Bay to the hillsides south of Highland Avenue and following the southerly extension of Broderson Avenue (see Figure 6.3-1). The area includes the residential neighborhoods south of Los Osos Valley Road, as well as the mobile home park on Ramona Avenue. Surface runoff from the area tributary to this drainage flows north on the paved streets and through a culvert under Los Osos Valley Road and across the undeveloped portions of the Morro Shores property which adjoins to the west and north. Further north, as runoff percolates into the sandy soil, it flows underground toward the Bay.

With regard to drainage affecting the Project Site (Tri-W), the study identifies the main drainage problem as excessive concentration of surface runoff. In anticipation of development of the Morro Shores property with mixed-use development (offices, business park), the County drainage study recommends installation of a variety of surface and sub-surface storm drainage improvements.



Source: Engineering Development Associates *Preliminary Evaluation, Los Osos/Baywood Park Community Drainage Project*, 1998

LOS OSOS COMMUNITY SERVICES DISTRICT
WASTEWATER FACILITIES PROJECT

Figure 6.3-1
Drainage Sub-Areas

Regulatory Setting

San Luis Obispo County General Plan, Local Coastal Program and Coastal Zone Land Use Ordinance (CZLUO). Section 23.05.040 et. seq. of the CZLUO outlines the county's standards for the control of drainage to minimize the harmful effects of storm water runoff and to protect neighboring and downstream properties from drainage problems resulting from new development. These standards include: 1) requirements pertaining to the design and construction of drainage systems; 2) requirements pertaining to the maintenance of off-site natural drainage patterns; and 3) restrictions on development in areas subject to flood hazards. Restrictions on development in flood hazard areas must, at a minimum, enforce the current federal flood plain management regulations as defined in the National Flood Insurance Program. Projects that may be subject to or cause flood hazards are required to prepare a drainage plan which is subject to approval by the County Engineer.

With regard to water quality, Section 22.06.100 of the CZLUO requires that the Central Coast RWQCB review any land use that may affect water quality. In addition, any construction activity disturbing an area of greater than 5 acres is required to obtain a General Construction Activity Storm Water Permit from the RWQCB. To comply with the permit, a "storm water pollution prevention" plan using best management practices is required.

County drainage development standards for new projects require designing for a 10-year storm event with the capacity (but no freeboard) to carry the 25-year event. County standards also require that building pads be one foot above the 100-year storm flood elevation (EDA 98).

San Luis Obispo County Local Coastal Program. This document contains policies that relate to the issues of drainage and flooding. Policy 10 of the Coastal Watersheds section states that site design of new development shall not increase erosion. Policy 3 of the Hazards section states that detailed review of proposed development within the flood hazard combining designation areas shall be performed by a registered geologist or certified engineering geologist.

Estero Area Plan (1988). The Estero Area Plan contains standards and policies relating to drainage and water quality in the Los Osos area. These policies encourage the development of a community-wide storm drainage system to alleviate periodic localized flooding problems.

State Revolving Fund Requirements. In its *Policy for Implementing the State Revolving Fund for Construction of Wastewater Treatment Facilities*, the State Water Resources Control Board (SWRCB) requires compliance with all applicable federal environmental laws, including consistency with areawide planning.

Water Quality Control Plan. The most recent update of the Water Quality Control Plan for the Central Coast Region (Basin 3) was adopted by the RWQCB in September 1994. The Basin Plan establishes beneficial uses and water quality objectives for surface and ground water sources within the basin. To be consistent with this plan, the wastewater Facilities Project must comply with the water quality objectives described in RWQCB Order No. 97-8, *Waste Discharge Requirements for San Luis Obispo County Services Area 9.*

Significance Thresholds

A project will normally have a significant adverse impact on water supply or quality if it will:

- Substantially alter the existing drainage pattern of the site or area, through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site; or,

- Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or,
- Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map or place within such a zone structures which would impede or redirect flows; or,
- Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam;
- Violate any water quality standards or waste discharge requirements; or,
- Substantially degrade water quality (e.g., through runoff).

Impact Analysis

Collection System

The collection system will consist of a series of sub-surface collection pipes within the Prohibition Area which will replace the septic leach fields on lots of one acre and smaller.

Construction Related Impacts

Impact WR-1: Construction of the collection system may require dewatering of trenches. Impacts to water quality stemming from such activities are considered adverse but not significant (Class III).

Installation of pipes in areas where groundwater is near the surface usually requires dewatering (or removal of water). Such water, which may be high in suspended solids and other pollutants, must be disposed of in accordance with the standards of the Regional Water Quality Control Board. Water removed from trenches during construction will be re-introduced in previously excavated trenches before the trench is closed back up. This process will be repeated as the trenching moves through the community so the water removed by de-watering is re-introduced continuously.

In addition, discussions with staff of the Regional water Quality Control Board indicate that excess water from trenching operations may fall under the category of a Low Threat Discharge in which up to 100,000 gallons per day may be discharged directly to the ocean on temporary basis.

ALTERNATIVE COLLECTION SYSTEM: STEP/STEG

A Septic Tank Effluent Pump/Septic Tank Effluent Gravity (STEP/STEG) system would involve leaving a portion of the septic tanks in place within the collection area and collecting the liquid waste through a system of small diameter pipes under pressure of pumps (ie, STEP) or gravity (STEG). Solids remaining in the septic tanks would be periodically pumped and trucked to the treatment plant.

A STEP/STEG system has some advantages to a conventional collection with regard to drainage impacts. First and foremost, a STEP/STEG system consists of smaller diameter pipes (mostly 3 inches) which convey wastewater under pressure to the treatment plant. These factors enable the system to be installed in shallower trenches that require less excavation. Another potential advantage to STEP/STEG from a drainage standpoint is the ability to install the system using trenchless technology in which the collection pipes are installed in holes bored in the right-of-way. Trenchless installation would still have potentially significant impacts associated with erosion but to a lesser degree than open trenches. In addition, impacts related to unstable trenches would be avoided.

Treatment Plant

Construction Related Impacts

Impact WR-2: Construction activities at the treatment plant site will increase the potential for erosion, which could adversely affect the quality of stormwater entering the site as well as waters downstream. These impacts are considered significant unless mitigated (Class II).

Construction of the treatment plant will require excavation of a four acre area for the treatment plant and grading over much of the site. Disturbance of soils and vegetation associated with construction will increase the potential for erosion.

Impact WR-3: Construction of the treatment plant will most likely require dewatering of some excavated areas. Disposal of this water may adversely impact the quality of the receiving water. These impacts are considered adverse but not significant (Class III).

Due to the presence of shallow groundwater in portions of the site, dewatering may be required. Disposal of pumped water would be subject to approval by the RWQCB through discharge requirements, an individual permit or NPDES permit. Discussions with the Regional Water Quality Control Board Staff indicate that the disposal of water from de-watering activities would fall under the category of a Low Threat Discharge in which up to 100,000 gallons per day may be directly discharged to the ocean on a temporary basis.

Operational Impacts

Impact WR-4: Constructing a treatment plant and park on the Tri-W site will alter the volume and velocity of runoff leaving the site and will alter existing drainage patterns. The increase in surface runoff could adversely affect downstream drainage courses. This impact is considered significant unless mitigated (Class II).

Construction of the treatment plant will significantly alter the drainage onsite. Included in the design of the project is parking, buildings, concrete walkways and other impermeable surfaces which will increase runoff (see Figure 3-8). The increase in impermeable surfaces will increase the amount and velocity of runoff generated on the site and entering surrounding drainage systems, which in turn could accelerate erosion and could contribute to localized flooding.

Included in the project description is a retention basin located at the northerly boundary of the site where runoff would be collected and meted out to the existing downstream drainage consistent with historic flows from the site. The retention basin is being sized to accommodate runoff from the project site after development and is system is expected to fully mitigate potential drainage impacts.

Impact WR-5: Heavy metals and other hazardous materials washed from on-site parking could enter the surface flow during a rainstorm, adversely affecting water quality downstream. This impact is considered significant unless mitigated (Class II).

When a site is developed with facilities for automobiles, or lies downstream of an area in which the primary source of runoff is from streets, the potential exists for pollution of storm water runoff. The sources of pollution are the hydrocarbons used by automobiles and hydrocarbons in asphaltic pavement materials. The primary concern in this case is the potential to increase pollutants entering surface and sub-surface flows which eventually enter Morro Bay and the Sweet Springs Preserve. According to a publication by the Metropolitan Washington Council of Governments entitled “Controlling Urban Runoff”, storm water sampled in the study area contained between 2 and 10 milligrams of pollutants per liter. The pollutant load generated at the project site will likely be less than these samples because the test sites used in the study were from highly urbanized areas with a higher potential for hydrocarbon pollution.

ALTERNATIVE TREATMENT PLANT SITES

The drainage characteristics of the alternative treatment plant sites are summarized below. The Holland, Morro Shores Southwest and Pismo sites exhibit similar soils and topographic conditions with dune sands overlying the finer sands of the Paso Robles Formation. The Andre property located east of the Los Osos urban area about 2 miles is composed of more consolidated alluvial soils that are considered significant agricultural resources.

Morro Shores Southwest. The Morro Shores Southwest is located immediately west of the project site and is therefore most comparable among the alternative sites with regard to drainage. Erosional features offsite associated with upslope drainage have carved a sizeable drainage course between this site and the project site. However, the Morro Shores Southwest site offers comparable constraints to those of the project site.

Holland. The Holland site consists of about 19 acres that slope to the north toward Sea Pines Golf Course from Monarch Grove at about 5 percent. There are no significant drainage courses or other distinguishing geologic features associated with this site and soils are consistent with other sites within the community. The Holland site offers comparable drainage constraints to those associated with the project site. Grading and excavation would result in comparable erosion and slope stability impacts.

Pismo. The Pismo site is located east of South Bay Boulevard within an area of gently sloping dune sands with slopes that range between 1 to 10 percent. Los Osos Creek is located to the east about 0.5 miles. Sub-surface conditions are similar to those associated with the project site and offer few environmental advantages. Comparable impacts associated with erosion and excavated slope stability would be anticipated.

Andre. The Andre site is a rectangular parcel of about 32 acres located on the north side of Los Osos Valley Road adjacent to the Los Osos Valley Memorial Park. The site slopes gently to the north from atop a rise east of Los Osos Creek. Being at the top of a rise east of the creek, these soils are more closely associated with erosion of the Irish Hills than to the rich alluvial soils nearer the creek, or the ancient dune sands that characterize Los Osos proper. As a result, soils on the Andre property are not considered "prime" as defined by the State Department of Conservation, but are considered Locally Important. The more densely consolidated soils are more stable and would require less support during excavation of the underground treatment plant site.

The soils associated with the Andre site offer fewer constraints to development than the dune sands associated with the Tri-W site. However, drainage impacts would likely be comparable.

Disposal System

Construction Related Impacts

Impact WR-6: Construction of the disposal leach field on the Broderson property will involve soil and vegetative disturbance which will alter on-site drainage and may increase the potential for erosion. These impacts are considered significant unless mitigated (Class II).

The construction of the leach field will temporarily create site conditions which may adversely affect runoff. Mitigation identified below, including the acquisition of an NPDES permit, and development of a revegetation plan, would reduce impacts to a less than significant level (Class III).

Impact WR-7: Construction of the disposal leach fields in street rights-of-way will increase the potential for erosion and runoff into surface water bodies. This impact is considered significant unless mitigated (Class II).

Operational Impacts

Impact WR-8: Periodic renovation of the sub-surface leach fields will require excavation activities which have the potential to result in short-term runoff impacts similar to those associated with construction. This is considered a significant adverse impact unless mitigated (Class II).

The construction and periodic renovation of the disposal leach fields will temporarily create site conditions which may adversely affect surface water quality. Mitigation identified below, including the acquisition of an NPDES permit, and development of a revegetation plan (Broderson and Powell sites), would reduce impacts to a less than significant level (Class III).

Mitigation Measures

Mitigation Included in the Project Description

As discussed above, the project incorporates components intended specifically to mitigate the effects of the wastewater collection and disposal strategies. These components include the incorporation of a stormwater retention basin to retain the runoff associated with a 50 year storm.

Additional Recommended Mitigation

Mitigation WR-1: Grading, Drainage and Erosion Control Plan. Construction plans for the Tri-W site shall include a complete grading and drainage plan incorporating the recommendations of a geotechnical engineering evaluation (see Mitigation GEO-5). Measures to be considered for the mitigation of potential drainage, erosion, seepage and water quality impacts include, but are not limited to:

- The incorporation of an on-site runoff collection system which includes energy dissipation, berms, temporary settling basins, and/or a silt/hydrocarbon separator for the collection and removal of hazardous materials and sediments.
- The incorporation of an on-site drainage system to collect runoff from all impervious onsite services, including parking spaces, roads and buildings.
- Surface runoff should be collected by curbs, gutters and drainage swales and conveyed to an appropriate point of disposal. Discharges of greater than five feet per second should be released through an energy dissipater or outlet.
- The incorporation of sub-surface drains to intercept seepage and convey it to an acceptable point of disposal.
- Watering the site at least twice per day during construction, or more frequently if determined necessary by the LOCSD.
- Re-vegetating portions of the site exclusive of paved areas as soon as reasonable following grading.
- Incorporating rain gutters and downspouts for buildings.
- Grading surfaces adjacent to buildings so that runoff is conveyed away from foundations and onto paved surfaces or underground collection pipes.

(Impacts WR-2,WR-4, WR-5

Mitigation WR-2: NPDES Permit. The LOCSD will obtain and comply with an NPDES permit from the RWQCB and will develop an SWPP for the project, which will include, among other requirements, the identification of Best Management Practices (BMPs) to be used for erosion control, actions for control of potential fuel or drill tailing release, and requirements for disposal (i.e., location, quality) of water from dewatering activities. (Impacts WR-6, WR-7, WR-8, WR-3,WR-2, WR-1)

Mitigation WR-3: Revegetation Plan. A comprehensive revegetation plan will be developed for the Broderson and Powell sites, which at a minimum, will include re-planting of exposed surfaces with native vegetation.(Impact WR-6)

Residual Impacts

Implementation of the above measures would reduce potential impacts associated with each of the proposed project sites to a less than significant level.

6.3 Drainage

Drainage - Comparison of Alternatives

Project Impacts	Alternatives				
	Collection	Treatment			
	STEP/ STEG	Holland	Morro Shores SW	Pismo	Andre
Impact WR-1: Construction of the collection system may require dewatering of trenches. Impacts to water quality stemming from such activities are considered adverse but not significant (Class III).	Less Impact	N/A	N/A	N/A	N/A
Impact WR-2: Construction activities at the treatment plant site will increase the potential for erosion, which could adversely affect the quality of stormwater entering the site as well as waters downstream. These impacts are considered significant unless mitigated (Class II).	N/A	Comparable	Comparable	Comparable	Less impact
Impact WR-3: Construction of the treatment plant will most likely require dewatering of some excavated areas. Disposal of this water may adversely impact the quality of the receiving water. These impacts are considered adverse but not significant (Class III).	N/A	Comparable	Comparable	Comparable	Less impact
Impact WR-4: Constructing a treatment plant and park on the Tri-W site will alter the volume and velocity of runoff leaving the site and will alter existing drainage patterns. The increase in surface runoff could adversely affect downstream drainage courses. This impact is considered significant unless mitigated (Class II).	N/A	Comparable	Comparable	Comparable	Less impact
Impact WR-5: Heavy metals and other hazardous materials washed from on-site parking could enter the surface flow during a rainstorm, adversely affecting water quality downstream. This impact is considered significant unless mitigated (Class II).	N/A	Comparable	Comparable	Comparable	Comparable
Impact WR-6: Construction of the disposal leach field on the Broderson property will involve soil and vegetative disturbance which will alter on-site drainage and may increase the potential for erosion. These impacts are considered significant unless mitigated (Class II).	N/A	N/A	N/A	N/A	N/A
Impact WR-7: Construction of the disposal leach fields in street rights-of-way will increase the potential for erosion and runoff into surface water bodies. This impact is considered significant unless mitigated (Class II).	N/A	N/A	N/A	N/A	N/A
Impact WR-8: Periodic renovation of the sub-surface leach fields will require excavation activities which have the potential to result in short-term runoff impacts similar to those associated with construction. This is considered a significant adverse impact unless mitigated (Class II).	N/A	N/A	N/A	N/A	N/A
Overall	Less Impact	Comparable Impact	Comparable Impact	Comparable Impact	Less Impact

6.4 Cultural Resources

This section contains the results of the cultural resource inventory and impact assessment for the treatment location (Morro Shores including the Tri-W site), and the Broderson site. Because of the sensitive nature of cultural resources, the following information is edited to avoid the disclosure of resource locations. Such locations are confidential to ensure their protection.

Setting

Prehistoric Setting

The area surrounding the Resource Park site was occupied at the time of Spanish contact by speakers of the Obispeño dialect of the Chumash language. The Chumash were a group of hunter-gatherer-fishers who attained an extraordinary level of social complexity given their means of subsistence. Today, descendants of these groups continue to live in San Luis Obispo, Santa Barbara and Ventura Counties as well as elsewhere in California and the United States.

The Obispeño Chumash occupied the northern limits of the Chumash occupation sphere, beginning near the Nipomo area and extending northwards perhaps as far as San Simeon and beyond (Greenwood 1978; Gibson 1991). During prehistory, the area surrounding the estuary and inlet of the Morro Bay area was rich in natural resources. It is believed that this abundance of resources is the reason for the high number and large size of sites per mile relative to locations to the north and inland. This high frequency of prehistoric sites makes the Morro Bay area extremely important in regards to interpreting prehistoric cultures. The likelihood of encountering large substantial prehistoric sites increases as one nears the bay and estuary. Conversely, most of the sites located in the nearby foothills, away from the resources of the bay, are small ephemeral sites, often used for special purpose activities.

The Native American habitation in the general area has spanned at least 9,000 years and possibly longer (Fitzgerald 1998; Greenwood 1972; Gibson 1996). The coastal sites, because of the proximity to littoral and estuarine resources are often identifiable as containing remarkably dense concentrations of shellfish remains (i.e., shell middens). The indigenous inhabitants were quite accomplished at recovering not only shellfish but also other marine resources such as fish, marine mammals and seaweed. In addition, terrestrial resources provided a great part of their consumable goods (Erlandson 1994).

Settlement patterns remain poorly understood for this area, resulting primarily from a lack of investigative focus. Despite this, some general trends in settlement patterns appear in the Los Osos area. Most of the older sites are located away from the estuary edge in the Los Osos Area and focus on terrestrial, rather than marine, resources (Joslin and Bertrando 2000). Locations of permanent villages are determined primarily by access to freshwater, a rare item in the immediate Los Osos vicinity.

In contrast, the eastern end of Los Osos extending from the Elfin Forest in the north to the Little Oak Forest in the south and roughly bisected by South Bay Boulevard, shows indications of different types of occupation. In this area, the sites are spatially very large but are composed of relatively shallow cultural deposits. Temporally, most of these sites were occupied during the latter part of prehistory, after 500 A.D. and peak between 1300 and 1600 A.D. (E. Bertrando in prep.). This shift in settlement patterns obviously reflects a change in behavior of the indigenous populace but the factors contributing to this shift remain unclear and speculative. Finally, sites on the outskirts of the Los Osos area, especially on the lower slopes of the Irish Hills to the south and Cerro Cabrillo to the north contain prehistoric sites that were focused on short term occupation and specialized activities such as quarrying of chipped stone (Woodward *et al.* 1986; Parker 1994), chipped stone tool reduction and retooling associated with hunting (Gibson 1984) and spiritual sites associated with rock art (Bertrando *et al.* 1997). The data regarding settlement patterns remains intriguing but woefully incomplete.

Historical Setting

With the establishment of Mission San Luis Obispo de Tolosa in 1772 as well as occasional European visits to the area prior to that time, the Native American culture of the area changed dramatically. Indigenous technologies were lost or replaced by western ones, and religion and belief systems became transformed and incorporated into the Spanish culture. Most devastating to the local Chumash population was the introduction of Old World diseases for which they had little natural resistence (Heizer 1974). As a result, the Native American population in the area dropped dramatically between the end of the 18th to the end of the 19th century (Gibson 1991).

The land containing and surrounding the project parcel was first given for private ownership in the early 1840's. The parcel was located on the Rancho Cañada de los Osos, granted to Victor Linares in 1842 (Angel 1979). This rancho was combined with Rancho Pecho y Islay (to the south) in 1845 to form the Rancho Cañada de los Osos, y Pecho y Islay and was awarded to Captain John Wilson and James Scott (Miossi 1973).

At the time of Captain Wilson's death in 1861 the land defined as Rancho Cañada de los Osos was bequeathed to his son, John Wilson. Throughout these early historical periods the lands surrounding the project site remained relatively untouched. The area was described as "useless sagebrush land" that was not even fit for cattle grazing (Wheeler 1973). Areas to the east were cultivated but the sandy lower slopes of the Irish hills in this area made crop raising unfeasible. Historic maps and aerial photographs of the area show that the area immediately surrounding the project site saw little development until the middle of this century.

Original subdivision of the Baywood area was completed by the railroad in the 1800's. Walter Redfield saw an opportunity to make quick cash off of cheap, undesirable property. He began his run at development in 1919. Besides the low cost (some lots sold for as low as $10.00 a piece) Redfield brought in prospective clients to enjoy fishing, hunting and the beach (Wheeler 1973). Several years later several parcels were sold to a Mr. Otto, which heralded the next phase of development for Baywood Park.

The area to the north of the Resource Park site was originally named El Moro but was changed in 1924 due to confusion with Morro Bay. The innovator responsible for this was Richard Stuart Otto who renamed the development Baywood Park. He began purchasing lots around 1920 and had acquired the entire development the same year the name changed (Sullivan 1994). In the 1920's the first grocery store and gas station were constructed at Los Osos and from this point development in this area continued at an ever-increasing pace.

To the west, Cuesta-by-the-Sea was purchased from John and Maggie McGinnis, a Scots family of dairy farmers, by I. L. Mitchell, the brother-in-law of E.G. Lewis of Atascadero. Although the land was purchased and laid out prior to El Moro, actual development of the area did not take place until much later (Wheeler 1973). Initial use of the area in the 1940's was limited to vacation cabins designed primarily for those interested in hunting and fishing. To enhance the appeal of property in Cuesta-by-the-Sea, dredging was conducted in 1960. The intent was to provide 168 water front homes with private docks (Sullivan 1994). The success of the dredging was very limited and today little remains of the slips and docks originally conceived at this time.

The area between these two developments, including Sweet Springs, was proposed for subdivision in 1893. This subdivision, known as Sunshine Beach, never came into existence because the water produced by the artesian wells at Sweet Springs was insufficient to supply the needs of the proposed community. This subdivision ran from the bay shore at Sweet Springs southward to Los Osos Valley Road where the appropriately named Sweet Springs Saloon is located (Sullivan 1994). Developments in the area did occur later but much of the immediate area remains undeveloped, a testament to the failure of the early Sunshine Beach subdivision.

Regulatory Setting

The regulatory setting is founded in the California Environmental Quality Act (CEQA), Appendix K pertaining directly to cultural resources and, because of legislative changes that took effect in February 1999, the California State Public Resources Codes, in particular sections 5020.0, 5024.1, 15064.5, 15064.7, 21808.1 and 21083.2 among others. The purpose of this legislation is to preserve and protect California's cultural resources for the benefit of its people.

Because this project is to be funded in part by federal dollars, it is subject to Section 106 of the National Historic Preservation Act, which requires among other measures, consultation with federally-recognized Native American tribes and organizations. Such consultation has been an ongoing part of the project planning process (refer to Appendix D for documentation of required consultation).

Significance Thresholds

In 1999, changes to CEQA removed thresholds of significance from the main document and relied upon criteria set forth in the Public Resources Code, Section 5024.1, Title 14 CCR Section 4852. Under these revisions to qualifying criteria, a project would have a significant adverse impact on cultural resources if it;

1. Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage.

2. Is associated with the lives of persons important in our past.

3. Embodies the distinctive characteristics of a type, period, region or method of construction, or represents the work of an important creative individual, or possesses high artistic value.

4. Has yielded, or may be likely to yield, information important in prehistory or history.

Cultural resources displaying one or more of these qualities may be considered significant and thereby subject to special measures of avoidance or evaluation prior to any potential impacts. If impacts cannot be avoided then a mitigation plan is normally developed. CEQA directives regarding mitigation of cultural resources are also addressed in Section VI &VII, Appendix K of the State CEQA Guidelines.

Impact Analysis

Methodology

Two primary approaches were emphasized in determining the presence/absence of cultural resources and what affects the proposed project would have on these resources. First a review of the previous reports and research was conducted. Included in this background search was an assessment of all cultural resources located within or immediately adjacent to the project site. A records search from the Central Coast Information Center was conducted on February 22nd, 2000. Additional contacts were made to researchers familiar with the area and use of the archives of Bertrando & Bertrando Research Consultants (BBRC) contributed to the results of this study.

The second approach was a field investigation of the Morro Shores site. These areas included locations at or near previously recorded cultural resources. Surface reconnaissance in this area was conducted by walking parallel transects through the project area. If artifacts of particular scientific value, meaning or type were encountered they were tagged, recorded, bagged and their location flagged for later provenance recording.

Pertinent information for all newly discovered cultural resources was recorded for completion of the Department of Parks and Recreation Primary and Archaeological site forms (DPR 523A form). The completion of these forms is a requirement for assigning the resource an identification number through the State Historic Office of Preservation.

Previous Archaeological Surveys

Numerous surveys have been conducted throughout Los Osos, including areas within and immediately adjacent to the treatment site. Most consist of small house parcel surveys with limited coverage. Some larger scale reconnaissance projects have taken place that provide relevant information to this project. For clarification, each project site will be discussed separately. The two sites included for this assessment are: The Sunshine Beach Site (Morro Shores - Tri-W site), and the Broderson Disposal site.

Sunshine Beach Site (Morro Shores site - including Tri-W). This site has been subjected to the most archaeological research. The general conclusions of these earlier studies found that cultural material decreases in frequency as one leaves the shoreline and the fresh water source at Sweet Springs. Previous archaeological studies found sites on adjacent parcels, but none within the boundaries of the Tri-W site.

Broderson Disposal Site. This site has been subjected to a previous study for the CSA-9 Wastewater Treatment Facilities EIR (Singer 1986). In addition, several surveys have been conducted on property immediately adjacent to the project site (Dills 1989a, 1989b, 1990a, 1990b). The results of these studies found cultural resources on adjacent sites. This one site was identified next to the project site, but not within the boundaries of the proposed disposal area or any of its access points.

Phase 1 Surface Survey Results

This section includes the results of the field reconnaissance. Each section is discussed separately as in previous section.

Sunshine Beach Site (Morro Shores - Tri-W Site). The results of the field reconnaissance drew similar conclusions as earlier studies of the project site (Bertrando 1998; Dills 1978, 1980, 1994; Hoover 1991). Visibility was good to excellent over the project area providing optimal survey conditions. Cultural material was identified throughout the central and northern portions of the project area with densities tending to increase northward.

Southern areas, in closer proximity to Los Osos Valley Road, were devoid of surface or subsurface indicators of archaeological deposits. This was made most clear in large erosional gullies near Los Osos Valley Road that provided excellent subsurface profiles several meters in length and up to two meters in depth. The profiles displayed a natural stabilized dune stratigraphy. In general, the composition was homogenous and uncomplicated. Several layers of sterile sand (Baywood Fine Sand) overlay one another and contained practically no stones, cobbles or large pebbles that might signify human use or transport.

Broderson Disposal Site. Field reconnaissance of this area was hampered by dense vegetation. The survey could not be conducted in a systematic fashion across much of the upper slope. Subsequently, little can be stated with confidence regarding the presence/absence of cultural resources in this area. In the lower areas, vegetation growth had been partially abated to reduce fire risk. These areas allowed better visibility and more successful coverage.

Portions of the Broderson site may have been used as a historical homestead. Careful survey of the area produced no clear evidence of an earlier ranch residence. Historic material was identified but could have also been the result of the current residences to the north or from some other form of more recent discard.

Historical maps and documents provided no further evidence that this location contained a ranch house or homestead in the past.

Impacts

Collection System

Construction Related Impacts

Impact C-1: Construction of the collection system could result in disturbance of previously unknown archaeological resources. This impact is considered significant unless mitigated (Class II).

The Los Osos area has a relatively high concentration of archaeological resources. During construction, it is expected that previously undiscovered resources may be encountered. Mitigation incorporated into the project will reduce impacts to a less than significant level (Class III).

Operational Impacts

Once installed, the collection system will have no further impacts on archaeological or historical resources.

Treatment System (Tri-W)

Construction Related Impacts

Impact C-2: Construction of the treatment plant may disturb previously undiscovered resources. Impacts are significant, but mitigable (Class II).

Because of the relatively high density of archaeological sites in the Los Osos area, mitigation is included in the project to address the unforeseen discovery of resources.

Operational Impacts

Once installed, the treatment system will have no further impacts on archaeological or historical resources.

ALTERNATIVE TREATMENT SITES

Morro Shores Southwest. Morro Shores Southwest exhibits the same low potential for archaeological resources. This site was included in the Phase I surveys for the Sunshine Beach Tract site, and no evidence of resources was encountered. Impacts are similar to those for the proposed project.

Holland. Phase I surveys conducted at the Holland site for the Holland Development Plan and Tract Map FEIR (McClelland, 1984) revealed no evidence of archaeological resources. Impacts would be similar to those for the proposed project.

Pismo. Two recorded pre-historic archeological sites have been mapped on the Pismo site and additional resources could be uncovered as a result of grading and excavation. Development of a treatment plant on the Pismo site would result in the significant disturbance of these sites which is considered a significant but mitigable impact (Class II).

Andre. Based on recent surveys and personal communications with Ethan Bertrando, project archaeologist, no known resources occur on the Andre site. Continuous disturbance associated with agricultural operations further reduces the likelihood of encountering surface resources. Impacts are comparable to the proposed project.

Disposal System (Broderson)

Construction Related Impacts

The installation of disposal leach fields on the Broderson Site will not disrupt known archaeological or historical sites. The possible homestead location did not display clear evidence of an associated archaeological deposit. If one does exist, the likelihood of it being significant is low. It was not associated with individuals or events of great note according to the historical background search conducted for the project area. Similar demolished homesteads have been identified and evaluated on nearby Camp San Luis Obispo and were found, without exception, not to be eligible for the federal or state Register of Historic Places or significant in anyway as defined in the Public Resources Codes. Based on this evidence, the area containing the landscaped terrain associated with an earlier habitation in not considered to be a significant cultural resource.

Impact C-3: Portions of the Broderson site may contain previously undiscovered archaeological resources. Impacts are significant, but mitigable (Class II).

Because visibility was so poor in the upper regions of this parcel, future use of that area should be subjected to supplementary cultural resource surveys prior to any future development.

Operational Impacts

The site does not exhibit evidence of historical or archaeological resources. Once installed, the disposal system will have no further impact on cultural resources.

DISPOSAL SITE ALTERNATIVES

<u>Vista de Oro</u>. This site is currently used for stormwater retention and septic leaching. Due to disturbance on site, the presence of surface resources is unlikely. Previously undiscovered resources would be subject to the protocol described above.

<u>Monarch Grove</u>. Monarch Grove is currently developed with fields associated with school facilities. The presence of surface resources is unlikely.

<u>LOVR/Pine Avenue</u>. The potential for resources in this area is similar to the proposed project.

Pismo and Santa Maria Avenues

Because these locations are in existing road right-of-ways, resources are unlikely. Impacts are similar to the proposed project.

<u>Powell</u>. No archaeological sites are known to exist on the Powell property. Agricultural disturbance further reduces the likelihood of resource presence. Impacts are similar to the proposed project.

Mitigation

Mitigation C-1 Undiscovered Resources. All cultural resources discovered during construction must be avoided in order to eliminate any potential impacts. All work in the vicinity of the suspected resource will stop and the proper authorities will be notified. Prior to restart of work, a qualified archaeologist will determine the significance of the resource. Suggested measures for mitigation shall be adhered to. If the resource is suspected to contain human remains, the County Coroner and an approved Native American consultant shall be contacted to determine the nature and significance of the find.(Impacts C-1, C-2, C-3)

Mitigation C-2 Archeological Monitoring. If a resource is discovered and an area is deemed potentially sensitive, archaeological monitoring will be required. The monitoring shall be conducted by a qualified archaeologist recognized as such by the County of San Luis Obispo with sufficient experience with local archaeological resources to make accurate determinations if cultural resources are exposed.

In addition, in all areas determined to be sensitive because of prehistoric remains, a Native American monitor should be present as well. The presence of Native American monitoring will assist in identification of archaeological resources, should they be encountered. More importantly, the Native American monitor will act as a representative of the local tribe (Obispeño or Northern Chumash) in the event that human remains or traditional cultural properties are encountered. If such remains are found, they would assist in the decision making process and would act as a consultant on issues related to state and local applications of the Native American Graves Protection and Repatriation Act (NAGPRA) and the American Indian Religious Freedom Act (AIRFA).

Finally, if significant resources are discovered, efforts will be made by local law enforcement as well as designated monitors to prevent looting of the sites by non-professionals.
(Impacts C-1, C-2, C-3)

Cumulative Impacts

Because the project avoids known resource sites and impacts are limited to previously undiscovered resources, cumulative impacts are unknown.

Residual Impacts

No residual impacts are anticipated if the above recommendations are implemented and followed.

Cultural Resources - Comparison of Alternatives

Project Impacts		STEP/STEG	Alternative Treatment Site			
			Holland	Morro Shores SW	Pismo	Andre
Impact C-1:	Construction of the collection system could result in disturbance of previously unknown archaeological resources. This impact is significant, but mitigable (Class II).	Slightly less	N/A	N/A	N/A	N/A
Impact C-2:	Development of the Tri-W Site will not result in disturbance or destruction of nearby archaeological resources. There is no impact.	N/A	Comparable	Comparable	Greater	Comparable
Impact C-3:	Construction of the treatment plant may disturb previously undiscovered resources. Impacts are significant, but mitigable (Class II).	N/A	Comparable	Comparable	Greater	Comparable
Impact C-4:	The installation of a disposal leach field on the Broderson Site will not disrupt known archaeological or historical sites. Impacts are considered less than significant (Class III).	N/A	N/A	N/A	N/A	N/A
Impact C-5:	Portions of the Broderson site may contain previously undiscovered archaeological resources. Impacts are significant, but mitigable (Class II).	N/A	N/A	N/A	N/A	N/A
Overall		Slightly Less Impact	Comparable Impact	Comparable Impact	Greater Impact	Comparable Impact

6.5 Consistency With adopted Plans and Policies

The Wastewater Facilities Project must be found to be consistent with the relevant goals, policies and programs which govern the development of public facilities in the community of Los Osos, which include:

San Luis Obispo County General Plan and Local Coastal Program
San Luis Obispo Natural Areas Plan
The California Coastal Act
The Air Quality Management Plan
Parks and Recreation Master Plan
Regional Water Quality Control Board, Central Coast Basin Plan
California Department of Fish and Game policies
U.S. Fish and Wildlife Services policies
Requirements of the federal Endangered Species Act and the California Endangered Species Act

Each topical section of this EIR provides a discussion of consistency with these plans and policies. The following discussion focuses on consistency with the San Luis Obispo County General Plan/Local Coastal Program and the relevant provisions of the Coastal Act.

Significance Thresholds

Appendix G of the State CEQA Guidelines states that a project could have a significant adverse impact on the environment if it conflicts with adopted environmental plans and policies.

Regulatory Setting

San Luis Obispo County General Plan/Local Coastal Program. Every city and county in California is required by the Government Code to adopt a general plan to govern land use decisions within its jurisdiction. State law prescribes seven mandatory elements for every general plan. They are:

Land Use	Circulation
Housing	Conservation
Open Space	Safety
Noise	

In addition, the Government Code provides for the adoption of additional elements to address specific topics of concern to a particular jurisdiction. For example, under the San Luis Obispo County General Plan, the Open Space element has been combined with an Agriculture element, in recognition of the important roll agriculture plays in the County's economy.

The Land Use Element of the County General Plan has been organized into four sub-components to address the combined requirements of the Coastal Act (for areas within the coastal zone) and the State Planning and Zoning Law (Government Code Section 65000 et seq.).

I. Framework for Planning. The Framework for Planning describes the overall structure for land use management within the unincorporated County. The Framework describes the relationships among land use, circulation, and public services, as well as programs for implementing and administering relevant land use policies. The Framework for Planning also defines the various land use categories applied to the unincorporated areas of the County, and provides a table (Table "O") which describes the range of allowable land uses for each land use category.

II. The Area Plans. In San Luis Obispo County, the individual general plan elements provide broad policy guidance for land use decisions throughout the unincorporated county. To provide policies and programs for specific geographic sub-areas, the County has adopted 15 *Area Plans* which serve as the general plan for the given planning area. The Estero Area Plan governs land use and development within the Estero Planning Area, which includes the community of Los Osos as well as Cayucos and the surrounding rural areas (see Figure 6.5-1).

III. Official Maps. The official maps illustrate the boundaries of the various land use categories as they are applied to the unincorporated areas of the County.

IV. Local Coastal Program Policy Document. In addition to the mandatory elements prescribed by State law, city's and counties must prepare a *Local Coastal Program* to govern land use decisions for all portions of their jurisdiction located within the coastal zone as defined by Public Resources Code section 30000 et seq. (the Coastal Act). The Local Coastal Program Policy Document describes specific policies and programs to implement the Coastal Act in San Luis Obispo County. It covers such diverse topics as shoreline access; energy and industrial development; commercial fishing and recreational boating; environmental resources and sensitive habitats; agriculture; public works; coastal watersheds; visual resources; coastal hazards; archeological resources and air quality. The Local Coastal Program Policy Document, together with the Coastal Zone Land Use Ordinance (CZLUO) contain the land use development standards and policy guidance for land use decisions within the coastal zone.

Land use designations for the Resource Park site are summarize by acres in Table 6.5-1.

Table 6.5-1: Land Use Designations – Resource Park

Land Use Category	Acres (Approx.)	Density/Min. Parcel Size
Commercial Retail	6	6,000 sq.ft. - 2.5 acres
Office & Professional	5	6,000 sq.ft. - 1 acre
TOTAL:	11	

Land Use Regulations

The LUE/LCP includes a section describing allowed land uses in the coastal zone (Table O, pages 6-29 to 6-37 of that document). Pipelines are allowed in all land use designations, subject to the restrictions contained in Section 23.08.286 of the Land Use Ordinance. A wastewater treatment facility is considered a Public Utilities Center which is a conditionally allowed use in the Residential Single Family, Residential Multifamily, Office and professional, and Retail Commercial land use categories subject to special use and development standards contained in Section 23.08.288 of the Coastal Zone Land Use Ordinance.

Pipelines. Section 23.08.286 of the Land Use Ordinance describes special restrictions for pipeline development. A minor use permit is required when the area of site disturbance would exceed 40,000 square feet. Since installation of the STEP/STEG collection system would likely disturb more than 40,000 square feet, a minor use permit would be required. Most likely, however, the collection system and treatment facility will be considered one project for purposes of permit review and both will be included in one Development Plan. In addition, Section 23.08.286 requires that proponents of pipeline projects conduct a geologic investigation, cultural resources survey, and a biological survey (when in a Sensitive Resource Area). These topics are addressed in Sections 6.4 and 6.3 of this DEIR.

Treatment Plant. Section 23.08.288 of the Land Use Ordinance describes special restrictions pertaining to the development of public utility facilities. In addition to outlining the permit application requirements, these special use and development standards require the submission of an "environmental quality assurance program" covering all aspects of construction and operation. The program provides a schedule and procedures for compliance with all conditions of Development Plan approval. Lastly, the special use standards prohibit public facilities from being located on land containing environmentally sensitive habitat unless a finding is made by the applicable approval body that there is no other feasible location. A feasibility study must be included to support such a finding.

Location Criteria For Public Facilities

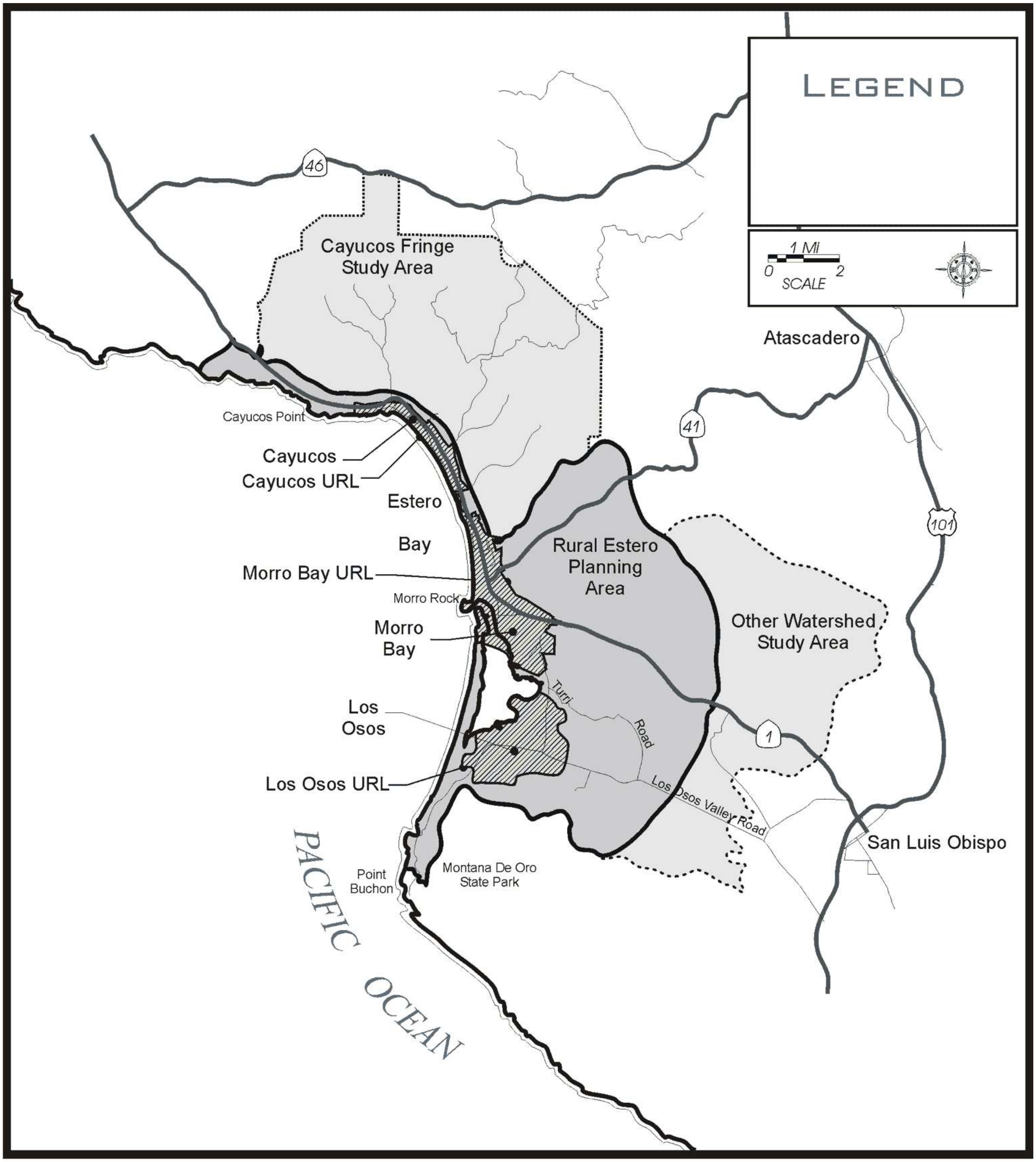
The LUE/LCP includes location criteria for new or expanded public facilities, including wastewater treatment plants. That chapter includes criteria for determining conformity of proposed public projects with the General Plan. Table P of that section indicates that such facilities can be located within 0.5 mile of a specified location on the Land Use Element map, and still be found consistent with applicable policies and standards of the LUE. It should be noted that the Tri-W site is not designated Public Facilities on the maps contained in the Estero Area Plan. This should not be interpreted as an inconsistency with the plan; rather, it indicates that the location of such a facility had not been anticipated at the time the Estero Area Plan was most recently updated.

Resource Management System

The Resource Management System is a program for the inventory, monitoring and management of essential resources and services within the unincorporated county, including water supply and sewage disposal. The system defines levels of severity with respect to the provision of a particular resource, with Level I being least severe, Level II indicating that the lead time needed to correct the deficiency is greater than the time within which the resource may be depleted, and Level III indicating that the capacity of the resource has already been met or exceeded.

The County has determined that a Level II severity may exist in the Los Osos portion of the Estero Planning Area for both water supply, and a Level III severity for sewage disposal. The County's primary purpose of the Level II designation is to establish limits for development which can be attained within the constraints of the existing resources and to develop programs to correct the problem.

The Wastewater Facilities Project is consistent with the intent of the Resource Management System by providing a mechanism to alleviate the identified deficiency for wastewater treatment and groundwater quality. The proposed system is expected to reduce the introduction of nitrates into the groundwater thereby improving water quality. It will accomplish this goal by collecting and treating septic tank effluent that is believed to contribute nitrates to the ground water. In this way, the proposed Wastewater Facilities Project functions as a program to address the problems recognized by the Resource Management System's Level III severity designation for the community of Los Osos.



LOS OSOS COMMUNITY SERVICES DISTRICT
WASTEWATER FACILITIES PROJECT

Figure 6.5-1
The Estero Planning Area

Impact Analysis

Policies of the Estero Area Plan

The first Estero Area Plan was adopted in 1980, and updated as the Local Coastal Plan in 1988. There have been several amendments since then, most recently in December 1995, and the plan is currently in the process of a major revision. The Estero Area Plan guides land use development within the Los Osos Urban Area (which includes the community of Los Osos and land within the Los Osos Community Services District), and includes regulations adopted as part of the LUE/LCP and Land Use Ordinance.

The Estero Area Plan contains Planning Area Service Programs which are non-mandatory actions or policies recommended by the Land Use Element to achieve community or areawide objectives. Program No. 13 relating to utility services recommends that the County study the need for a community sewer system to serve the Los Osos Urban Area (Los Osos). As discussed previously, the County has determined that a Level II condition of severity exists for water supply and a Level III for wastewater treatment, indicating that corrective measures are necessary. The proposed project addresses these concerns, and is, therefore, consistent with this requirement of the Estero Area Plan.

Los Osos Urban Area Programs

The Estero Area Plan recommends Urban Area Programs to achieve community objectives within the urban areas governed by the Plan, including those for the Los Osos Urban Area which includes lands within the adopted Urban Reserve Line as shown on Figure 3-1. To address the wastewater and water supply constraints affecting the Los Osos Urban Area, an Interim Resource Management program is recommended which requires the County Planning Department to produce a semi-annual report on water usage and development activity in the Los Osos area to help ensure the availability of water for coastal-priority uses such as agriculture. The program requires the Board of Supervisors to make specific findings as to whether the coastal-priority uses will be adversely affected by water consumption attributed to new development. If the Board finds that proposed development will result in water demand approaching 1,800 acre-feet per year for the Los Osos Basin, or that priority uses will be affected by water restrictions, then all development applications will require Development Plan approval and preference will be given to priority uses. Part of the intent of the Wastewater Facilities Project is to improve ground water quality and maintain existing ground water supplies. Consequently, the project is consistent with this Interim Resource Management program.

Planning Area Standards

Chapter 8 of the Estero Area Plan establishes special "standards" for the Estero Planning Area. These standards are mandatory requirements for development, designed to address identified problems within each community and the rural areas governed by the Estero Area Plan. Several planning area standards apply to the Wastewater Facilities Project. Chapter 8, Section C provides standards specific to the Los Osos Urban Area and includes a standard that sets priorities for the allocation of interim water service capacity within the Los Osos area. In the absence of a definitive water resource study, the highest priority for water use is agriculture, followed by residential and commercial infill. Development in areas that would correct existing ground water problems receive the next highest priority, followed by other uses consistent with the coastal zone LUE/LCP and Land Use Ordinance. A stated objective of the Wastewater Facilities Project is to improve ground water quality through the reduction of septic system discharge to the ground water basin. Therefore, the proposed project is consistent with the Planning Area Standards.

Urban Reserve Line/Urban Services Line

The Urban Reserve Line for the Los Osos Urban Area lies within the Estero Area Plan, and defines the limits of urban development within Los Osos/Baywood Park for the next 20 years (see Figure 3-1). The Urban Services Line represents the area within which urban services are expected to be provided within a 5 to 10 year timeframe, and conversely, defines areas where development is prohibited until such time as adequate water and wastewater services can be provided. The Urban Reserve Line and its relation to the RWQCB Septic Prohibition Area is shown on Figure 3-1.

As currently proposed, the Wastewater Facilities Project is designed to collect wastewater from properties within the RWQCB Septic Prohibition Area.

Population Projections and Treatment Capacity

The current (2000) population of the Los Osos Urban Area is estimated to be 14,606 (San Luis Obispo County Department of Building and Planning, 1998). The currently adopted Estero Area Plan projects a buildout population of 28,700 in the Los Osos Urban Area (Table B, page 2-3 of the Estero Area Plan). The Estero Area Plan also predicts a Los Osos Urban Area population of 17,300 by the year 2000 (Table A, page 2-2). However, in anticipation of updating the Estero Area Plan, the County has recently revised population projections for the Los Osos Urban Area. The revised buildout population projection is 24,536 (San Luis Obispo County Department of Building and Planning, 1998). The Draft Area Plan under consideration by the County could accommodate a slightly lower buildout population of 23,700.

The proposed Wastewater Facilities Project is designed to serve a buildout population of 19,200 in the year 2020, which is some 5,536 lower than the population accommodated by the adopted Area Plan. The discrepancy between the stated population that could be accommodated by the proposed Wastewater Facility and the buildout population accommodated by the Estero Area Plan is due primarily to the retirement of development potential on land designated for urban development within the Urban Reserve Line and RWQCB Septic Service Prohibition Area as mitigation for the loss of habitat for special status plant and animal species.

For planning purposes, the adopted Estero Area Plan assumes an average annual growth rate of 2.3 percent (Table A, page 2-2). At 2.3 percent per year, a buildout population of 19,000 would be achieved in about 13 years from the time the treatment plant becomes operational and the building moratorium is lifted. Based on the above assumptions, the proposed Wastewater Treatment Facility is consistent with the population projections of the Estero Area Plan.

Consistency With Relevant Coastal Act Policies

Chapter 8 of the San Luis Obispo County certified LCP contains policies for public works. Policy 9 of this chapter, entitled "Review of Treatment Works”, states:

> *For any development that constitutes a treatment works (PRC 30120), issuance of a permit shall be consistent with the certified LCP and PRC 30412 and shall address the following aspects of such development:*
>
> *a. The siting and visual appearance of treatment works within the coastal zone.*
>
> *b. The geographic limits of the service area within the coastal zone which is to be served by the treatment works and the timing of the extension of services to allow for phasing of development consistent with the certified LCP.*
>
> *c. Projected growth rates used to determine the sizing of the treatment works.*

PRC 3041 2, which is incorporated into the above Policy, states:

1.1 In addition to Section 73142.5 of the Water Code, this section shall apply to the [Coastal] commission and the State Water Resources Control Board and the California regional water quality control boards.

1.2 The State Water Resources Control Board and the California regional water quality control boards are the state agencies with primary responsibility for the coordination and control of water quality. The State Water Resources Control Board has primary responsibility for the administration of water rights pursuant to applicable law. The commission shall assure that proposed development and local coastal programs shall not frustrate this Section. The commission shall not, except as provided in subdivision (c), modify, adopt conditions, or take any action in conflict with any determination by the State Water Resources Control Board or any California regional water quality control board in matters relating to water quality or the administration of water rights. Except as provided in this section, nothing herein shall be interpreted in any way either as prohibiting or limiting the commission, local government, or part governing body from exercising the regulatory controls over development pursuant to this division in a manner necessary to carry out this division.

1.3 Any development within the coastal zone or outside the coastal zone which provides service to any area within the coastal zone that constitutes a treatment work shall be reviewed by the commission and any permit it issues, if any, shall be determinative only with respect to the following aspects of the development:

1. *The siting and visual appearance of treatment works within the coastal zone;*
2. *The geographic limits of service areas within the coastal zone which are to be served by particular treatment works and the timing of the use of capacity of treatment works for those service areas to allow for phasing of development and use of facilities consistent with this division.*
3. *Development projections which determine the sizing of treatment works for providing service within the coastal zone.*

The Coastal Commission shall make these determinations in accordance with the policies of this division and shall make its final determination on a permit application for a treatment works prior to the final approval by the State Water Resources Control Board for the funding of such treatment works, except as specifically provided in this subdivision, the decisions of the State Water Resources Control Board relative to the construction of treatment works shall be final and binding upon the commission.

1.4 The commission shall provide or require reservations of sites for the construction of treatment works and points of discharge within the coastal zone adequate for the protection of coastal resources consistent with the provisions of this division.

1.5 Nothing in this section shall require the State Water Resources Control Board to fund or certify for funding, any specific treatment works within the coastal zone or to prohibit the State Water Resources Control Board or any California regional water quality control board from requiring a higher degree of treatment at any existing treatment works.

Taken together, Policy 9 for Public Works and Section 30412 of the Coastal Act, limit the Coastal Commission's consideration of a permit for a treatment works project to the following specific issues:

<u>Siting and design:</u> has the project been sited and designed in a manner that complies with LCP standards, such as those requiring the protection of environmentally sensitive habitats and visual resources, and with Coastal Act access and recreation policies?

<u>Service area and phasing:</u> is the proposed service area and phasing program consistent with LCP directives regarding the location and timing of new development?

<u>Capacity:</u> has the project been sized consistent with the amount of development planned for by the LCP?

These issues ore analyzed in detail below.

LCP Requirement: Avoid Locating Public Facilities in Sensitive Area Where Feasible

Section 23.08.288 of the Son Luis Obispo County Coastal Zone Land Use Ordinance (CZLUO) specifically regulates Public Utility Facilities. Part d. of the ordinance states:

Limitation on use – sensitive environmental areas. Uses shall not be allowed in sensitive areas such as on prime agricultural soils, Sensitive Resource Areas, Environmentally Sensitive Habitats, or Hazard Areas unless a finding is made by the applicable approval body that there is no other feasible location on or off-site of the property. Applications for Public Utility Facilities in the above sensitive areas shall include a feasibility study, prepared by a qualified environmental professional approved by the Environmental Coordinator. The feasibility study shall include a constraints analysis, and analyze alternative locations.

In this case, 'feasibility" not only includes the ability to appropriately treat and dispose of wastewater, but to do so in a manner that will replenish the groundwater basin. Policy I for Coastal Watersheds of the Coastal Plan Policies component of the certified LCP requires that the long term integrity of groundwater basins be protected, and Policy 11 from the same LCP section mandates that new development maximize groundwater replenishment.

<u>Analysis</u>

The first test of project compliance with LCP Section23.08.288 is determining whether the project is located in a sensitive area. The LCP defines such areas as follows:

Sensitive Resource Area: Means those identifiable and geographically bounded land and water areas within the coastal zone of vital interest and sensitivity, pursuant to Section 23.07.043c(3) of this title. [Section 23.01.043c(3) includes: special marine and land habitat areas, wetlands, lagoons, and estuaries mapped and designated as Environmentally Sensitive Habitats in the Local Coastal Plan; areas possessing significant recreational value, including any "V'(Visitor Serving designation as shown in the Land Use Element and areas in or within I 00 feet of any park or recreation area; highly scenic areas which are identified as Sensitive Resource Areas by the Land Use Element, archaeological sites referenced in the California Coastline and Recreation Plan or as designated by the State Historic Preservation Officer; Special Communities or Small-Scale Neighborhoods which are significant visitor destination areas as defined by Chapter 23.11of this title; areas that provide existing housing or recreational opportunities for low-and moderate income persons; and, areas where divisions of land could substantially impair or restrict coastal access-]

> *Environmentally Sensitive Habitats: A type of Sensitive Resource Area where plant or animal life or their habitats are either rare or especially valuable because of their special nature or role in an ecosystem and which could be easily disturbed or degraded by human activities and development. They include wetlands, coastal streams and riparian vegetation, terrestrial and marine habitats and are mapped as Land Use Element combining designations.*

The topical sections of this DEIR, along with other environmental documents, have documented the presence of many sensitive species and habitats at both the proposed treatment plant location and alternative sites. Thus, the sites definitely contain Environmentally Sensitive Habitat as described by the LCP. Based on the identified sensitivity, rarity, and value of habitat at both the treatment plant site and three of the four potential alternative sites, and the Broderson and Powell disposal sites, the project will be located within both Sensitive Resource Areas and Environmentally Sensitive Habitats, as defined by the San Luis Obispo County LCP.

The next step in evaluating project conformance with LCP Section 23.08.288 is to determine whether alternative locations, on or off site, could feasibly accommodate the project. Alternatives to the project are considered throughout the topical sections of this DEIR, including alternative treatment plant sites. A screening analysis (Chapter 5) was employed to limit the analysis in the topical sections to those that could feasibly accomplish the fundamental goals of the project, while minimizing environmental impacts. Alternative sites, treatment technologies and disposal options were considered and those that could not meet the objectives of the project were eliminated from further consideration. Thus, all of the alternative treatment plant locations could accommodate the proposed wastewater treatment system, albeit with differing environmental consequences. However, three of the four alternative treatment plant sites under consideration (Holland, Pismo and Morro Shores Southwest) contain Sensitive Resource Areas and Environmentally Sensitive Habitats, as defined by the Son Luis Obispo County LCP. The fourth (Andre) contains productive (but non-prime) agricultural land. In addition, the Andre property is located on the east side of Los Osos Creek and would necessitate the extension of collection and disposal trunk lines over the creek. The engineering consultants advising the LOCSD indicate the pipelines could be hung from the existing bridge with minimal cost and environmental impact to the creek.

Thus, although alternative sites could accommodate the project, they would also result in the loss or disturbance of sensitive habitats for wastewater disposal, groundwater modeling indicates that the Broderson site provides the best combination of depth to groundwater on the west side of the Los Osos fault to accommodate the reintroduction of the treated wastewater while cleansing the shallow aquifer. However, the Broderson site is considered critical habitat for the Morro Shoulderband Dune Snail and contains other special status species, such as Morro Manzanita (see Chapter 6.11: Biology). Given the sub-surface geologic conditions unique to the Broderson site, there are no other feasible locations for the disposal leach field. Other disposal sites were considered and rejected by the 1 987 EIR and included areas along the eastern side of Los Osos and west of Los Osos creek, undeveloped areas in western Los Osos genera ly north of Los Osos Valley Road, and areas west of Pecho Road and east of the southern end of Morro Bay State Park. These sites were rejected due to high groundwater levels, inappropriate geologic conditions, proximity to Morro Bay, the presence of significant habitat values, and/or other reasons (1987 EIR, p- VI 1-30 - VI 131). The EIR findings rejecting these disposal sites were reconfirmed in a subsequent alternative investigation performed in 1995, known as the Task G report.

Conclusion: As required by CZLUO Section 23.08.288, the DEIR has analyzed the constraints and feasibility of alternative project locations that would avoid sensitive habitat areas. The results of these analyses support a conclusion that the Andre property is a feasible alternative location for the wastewater treatment that would reduce impacts to sensitive habitats but would be at the expense of the permanent conversion of about I 1 acres of productive agricultural land. With regard to disposal in order to achieve the LCP directive to maximize groundwater replenishment, the Broderson site offers the only feasible location for the quantity of disposal necessary to achieve the objectives of the project. The project is therefore consistent with CZLUO Section 23.08.288.

LCP Requirement: Design Projects to Minimize Impacts on Sensitive Resources

In addition to considering alternative locations that avoid sensitive habitat areas, other policies and ordinances contained in the LCP call for projects to be designed and sited in a manner which avoids or minimizes impacts to sensitive habitat areas. These include the following Coastal Plan Policies for Environmentally Sensitive Habitats:

Policy 27: Protection of Terrestrial Habitats. Designated plant and wildlife habitats are environmentally sensitive habitat areas and emphasis for protection should be placed on the entire ecological community. Only uses dependent upon the resource shall be permitted within the identified sensitive habitat portion of the site.

Development adjacent to environmentally sensitive habitat areas and holdings of the State Department of Parks and Recreation shall be sited and designed to prevent impacts that would significantly degrade such areas and shall be compatible with the continuance of such habitat areas.

Policy 33: Protection of Vegetation. Vegetation which is rare or endangered or serves as cover for endangered wildlife shall be protected against any significant disruption of habitat value. All development shall be designed to disturb the minimum amount possible of wildlife or plant habitat.

<u>Analysis</u>

As previously established, the treatment plant site and the effluent disposal site are environmentally sensitive habitat areas, and are therefore subject to the above policies. The first requirement of Policy 27 is that the proposed use be dependent upon the identified sensitive habitat that will be impacted.

Although the effluent disposal facilities are not dependent upon the specific habitat resources of the Broderson site, they are dependent upon the unique geologic resources within this area. After extensive analysis, the limited geographic region in which the wells are proposed was the only area identified as having the geologic characteristics necessary to effectively accommodate the treated effluent and replenish the groundwater basin, without adversely affecting downslope residences. These unique geologic characteristics, upon which the project is dependent, include high depth to groundwater, adequate percolation rates, and the absence of impermeable layers that would prevent the disposed effluent from traveling vertically. In addition, the acquisition of a 40 acre portion of the site, and the preservation of the 32 acres that will not be impacted by the disposal facilities, will protect the sensitive biological resources dependent upon these habitat areas.

Similarly, the location of the treatment plant is not fully consistent with Policy 27 because this type of facility is not dependent upon the habitat resources found on the proposed site. However, the habitat values at the treatment plant site are diminished by the fact that the site is surrounded by development on three sides, and is therefore a fragmented habitat that has limited value towards the long term survival of the species found on the site. Developing the treatment plant at this location will also avoid greater environmental impacts associated with alternative locations, including pipeline creek crossings, the loss of prime agricultural land impacts to wetlands, and the disturbance of environmentally sensitive habitats with more significant habitat value.

And as already mentioned, it is also important to recognize that the wastewater treatment project is necessary to ovoid significant adverse impacts to important groundwater resources and environmentally sensitive habitat areas within the Morro Boy National Estuary that would result from continued use of septic systems throughout Los Osos.

Finally, Policy 27 must be read in conjunction with Section 23.08.288 of the CZLUO, which does not prohibit the siting of public facilities in Environmentally Sensitive Habitat areas if no other feasible alternatives available. As discussed above, such is the case here. In addition, development on this site has been extensively conditioned to avoid, minimize or mitigate impacts on existing habitat values. As conditioned, the project can be found to be consistent with the sensitive habitat protection provisions of the LCP.

Overall, then, the project is generally consistent with the resource dependent requirements of Policy 27.

The second requirement of Policy 27, and the standard established by Policy 33, is that projects within and adjacent to environmentally sensitive habitat areas be designed to minimize the disruption of habitat values. The treatment plant site contains marginal habitat for the Morro Shoulderband Dune Snail and sensitive plant species which would be lost upon development of the treatment plant. The treatment plant would consume about 5 acres of the I I acre site, with the balance developed as a park to meet the parks and recreation goals of the community. The area of sensitive habitat lost could be reduced somewhat if the area designated for park development were reduced and restored with native vegetation. However, even when restored it would be fragmented resource surrounded by urban development and of little long-term habitat value.

With regard to disposal, the exact configuration of the disposal leach fields has not been designed and will need to await further groundwater modeling. However, an eight-acre portion of the Broderson site upslope from Highland Drive will be needed. As stated above, the Broderson site is considered critical habitat for the Morro Shoulderband Dune Snail and any loss of habitat would be considered significant. Although the disposal leach fields are land intensive, alternative disposal technologies were considered and rejected because of the sub-surface geology (injection wells) or because they were at least as land intensive as leach fields but would also prove infeasible over the long-term (infiltration ponds). To be consistent with this policy, the leach fields designed for the Broderson and Powell properties would have to minimize the amount of disturbance to the habitat present. Mitigation measures recommended by this DEIR will accomplish this requirement.

Conclusion: The project is consistent with the site design requirements of Policy 27.

LCP Requirement- No Significant Impact to Environmentally Sensitive Habitats, Ensure Biological Continuance of Sensitive Species

When new development is proposed within or adjacent to environmentally sensitive habitats, the LCP requires that the development must not have a significant adverse impact on such habitats, must allow for the biological continuance of the habitat, and must provide for the maximum feasible mitigation. As previously noted, LCP Policy 33 for Environmentally Sensitive Habitats requires that vegetation which is rare or endangered, or serves as cover for endangered wildlife, must be protected against any significant disruption of habitat value. Other such LCP provisions include:

> Policy I for Environmentally Sensitive Habitats, which requires that "New development within or adjacent to locations of environmentally sensitive habitats (within 100 feet unless sites further removed would significantly disrupt the habitat) shall not significantly disrupt the resource...".
>
> Policy 2 for Environmentally Sensitive Habitats, which requires "As a condition of permit approval, the applicant is required to demonstrate that there will be no significant impact on sensitive habitats and that proposed development or activities will be consistent with the biological continuance of the habitat. This shall include an evaluation of the site prepared by a qualified professional which provides a) the maximum feasible mitigation measures (where appropriate) , and b) a program for monitoring and evaluating the effectiveness of mitigation measures where appropriate."

CZLUO Section 23-07.1 70a(l), which requires that permit applications for projects within or adjacent to Environmentally Sensitive Habitat "identify the maximum feasible mitigation measures to protect the resource and a program for monitoring and evaluating the effectiveness of the mitigation measures".

CZLUO Section 23,07.1 70b., which requires that approvals of projects within or adjacent to environmentally sensitive habitats be accompanied by a findings that "there will be no significant negative impact on the identified sensitive habitat and the proposed use will be consistent with the biological continuance of the habitat", and "the proposed use will not significantly disrupt the habitat'.

Standards for environmentally sensitive habitat areas established by CZLUO Section 23.07.1 70d include "(1) New development within or adjacent to the habitat shall not significantly disrupt the resource" and "(4) Development shall be consistent with the biological continuance of the habitat".

Analysis

Under the LCP requirements identified above, the wastewater treatment project must mitigate for its unavoidable impacts to environmentally sensitive habitats to a degree that will ensure that the impacts of the project will not result in a significant adverse impact to the affected habitats, or jeopardize their biological continuance. The first step in confirming compliance with this requirement is to document the impacts to environmentally sensitive habitats that will result from project implementation.

1) Biological impacts of the treatment plant:

The treatment plant and associated facilities will result in a total site disturbance of 11 acres on an 11 acre parcel. All 11 acres of the disturbed area could be considered environmentally sensitive habitat, as it provides suitable habitat for the federally endangered Morro shoulderband snail. The amount and suitability of the habitat is described in greater detail in Chapter 6.11: Biology.

2) Biological impacts of treated wastewater disposal facilities:

A total of 8 acres of the Broderson site would be disturbed by the construction of the sub-surface leach fields and associated infrastructure. All 8 acres could be considered environmentally sensitive habitat. This included suitable habitat for the Morro Bay Kangaroo Rat, Morro Shoulderband Snail, and Morro Manzanita.

3) Indirect biological impacts:

Indirect impacts to environmentally sensitive habitats include those impacts that will result from new development facilitated by the elimination of septic tank moratorium established by the RWQCB. Such development will be regulated by the San Luis Obispo County certified LCP, which contains provisions to ensure that such development will take place consistent with the protection of environmentally sensitive habitats. The current effort to update the Estero Area Plan being undertaken by the County includes programs to improve the protection of sensitive habitats throughout the Los Osos area, such as a transfer of development program, clustered subdivisions and changes in zoning densities.

4) Adequacy of proposed mitigation:

Impacts to federally listed plant or animal species are governed by the federal Endangered Species Act and endangered by the United State Fish and Wildlife Service (USFWS). Recognizing that any permanent loss of habitat for an endangered species will be considered a significant and irreversible environmental impact, the Los Osos CSD has made the following mitigation proposal to the USFWS:

Primary Impacts

A. Purchase outright a parcel of land designated by the USFWS as critical habitat for the Morro Shoulderband Dune Snail which also contains habitat for other special status plant and animal species adversely affected by the Wastewater Facilities Project. This parcel should be a significant addition to the community's greenbelt protection program. One such property is the northern 40 acres of the so-called Broderson property located south of Highland Avenue and west of Broderson Avenue. This property is designated critical habitat for the dune snail and provides excellent habitat for the Morro Kangaroo rat (federally endangered) and Morro manzanita. Another advantage is that this property adjoins the 204 acre Morro Palisades property which was recently approved for purchase by the State Coastal Conservancy.

B. Grant this parcel to an appropriate conservation organization (perhaps the same as will receive the Morro Palisades property) in exchange for:

- Satisfaction of all direct impacts of the wastewater facility's collection, treatment & disposal systems.
- An eight acre easement across the southerly portion of the Broderson property for the purpose of installing leachfields.

Secondary Impacts

A. The LOCSD, in conjunction with the California Department of Fish and Game (CDFG), the US Fish and Wildlife Service (USF&WS), San Luis Obispo County and the California Coastal Commission shall prepare and implement a Habitat Conservation Plan (HCP) or Natural Community Conservation Plan (NCCP) for the long-term preservation of habitat remaining within the Los Osos Greenbelt, including habitat remaining on individual vacant lots. The HCP/NCCP shall identify the habitat resources and the quality of those resources on the remaining vacant properties within the Greenbelt. The range of potential conservation programs to be considered in the HCP/NCCP shall include, but not be limited to the following:

- The identification of policies and programs to be incorporated into the Estero Area Plan aimed at the long-term preservation of sensitive biological resources in the Los Osos area; such policies and programs may include:

  – Transfer of development credits
  – Clustering
  – Avoidance of sensitive resources in site design
  – Changes in density and land use
  – Incorporation of open space into the design of new development

- Programs aimed at facilitating coordination among agencies and organizations involved in management and conservation/preservation of sensitive resources, including USF&WS, CDFG, California Coastal Commission, San Luis Obispo County, the LOCSD, MEGA, NEP, Land Conservancy of San Luis Obispo County, and others;

- The creation of a landbank program to facilitate the purchase of properties with high quality habitat within the Greenbelt, to be repaid over time from fees on new building permits;

- Programs for the acquisition of properties within the Greenbelt with significant habitat resources;

In analyzing the adequacy of this proposal with LCP standards, it is necessary to determine whether or not the mitigation will preserve the same type of habitat impacted, in adequate quantities, so that, overall, the project would not significantly disrupt such areas, or jeopardize their biological continuance.

The final details and adequacy of the proposed mitigation plan will be resolved with the USF&WS through completion of a Habitat Conservation Plan for the community of Los Osos. The HCP is discussed in greater detail in Chapter 6.11: Biology.

With regard to alternative treatment and disposal sites, the Holland, Morro Shores Southwest and Pismo sites all provide habitat for sensitive species, and in particular support habitat for the federally endangered Morro Shoulderband Dune Snail. The quality of habitat is slightly lower on the Holland and Morro Shores sites. While the Pismo site provides better habitat than that of the project site and also supports a number of special status plants. The mitigation of habitat loss in each case, however, would be equal to or, in the case of the Pismo site, could be greater than that required for the project site.

The Andre site offers no suitable habitat for endangered species and therefore shows greater consistency with this policy.

LCP Requirements Regarding Project Capacities, Phasing and Service Area

Local Coastal Plan Policy 2 for Public Works states:

> *New or expanded public works facilities shall be designed to accommodate but not exceed the needs generated by projected development within the designated urban reserve lines. Other special contractual agreements to serve public facilities and public recreation areas beyond the urban reserve line may be found appropriate.*

The implementing ordinance for the above policy, Section 23.04.430 of the CZLUO, states:

> *A land use permit for new development that requires water or disposal of sewage shall not be approved unless the applicable approval body determines that there is adequate water and sewage disposal capacity available to serve the proposed development, as provided by this section. Subsections a. and b. of this section give priority to infilling development within the urban services line [USL] over development proposed between the USL and URL (Urban Reserve Line]. in communities with limited water and sewage disposal service capacities as defined by Resource Management System alert Levels I I or 111:*

1. A land use permit for development to be located between an urban services line and urban reserve line shall not be approved unless the approval body first finds that the capacities of available water supply and sewage disposal services are sufficient to accommodate both existing development, and allowed development on presently vacant parcels within the urban services line.

2. Development outside the urban services line shall be approved only if it can be served by adequate on-site water and sewage disposal systems, except that development of a single-family dwelling on an existing parcel may connect to a community water system if such service exists adjacent to the subject parcel and lateral connection can be accomplished without trunk line extension.

Section 23.04.432 of the CZLUO states:

> *To minimize conflicts between agricultural and urban land uses, development requiring new community water or sewage disposal service extensions beyond the urban services line shall not be approved.*

The location of the urban reserve line designated by the LCP for the Los Osos Urban Area is illustrated by Figure 3-2.

Other applicable LCP Polices for Public works include Policy 8, which states:

> *Where existing or planned public works facilities can accommodate only a limited amount of new development, the following land uses shall hove priority for services in accordance with the Coastal Act and be provided for in the allocation of services in proportion to their recommended land use within the service area:*
>
> *a. Uses which require location adjacent to the coast (coastal-dependent uses).*
>
> *b. Essential public services and basic industries vital to the economic health of the region, state, or notion including agriculture, visitor-serving facilities and recreation.*;

and Policy 9, which states:

> *For any development that constitutes a treatment works (PRC 30720), issuance of a permit shall be consistent with the certified LCP and PRC 304 12 and shall address the following aspects of such development:*
>
> *1. The siting and visual appearance of treatment works within the coastal; zone.*
>
> *2. The geographic limits of the service area within the coastal zone which is to be served by the treatment works and the timing of the extension of services to allow for phasing of development consistent with the certified LCP.*

Analysis

Projected growth rates used to determine the sizing of treatment works.

The LCP provisions cited above regulate both the capacity and service area of new wastewater treatment projects, and sets priorities regarding connections to wastewater treatment systems. Under these provisions, new wastewater treatment projects must be sized to serve the buildout within the Urban Reserve Line allowed under the LCP. However, wastewater treatment service can only be provided to development located within the Urban Service Line, and coastal dependent, visitor-serving, and recreation land uses have priority for connecting for such services. Projects located between the Urban Service Line and Urban Reserve Line are not eligible for wastewater treatment service until such a time that the LCP has been amended to include such properties within the Urban Service Line. In this way, treatment projects can be sized to accommodate full buildout within the Urban Reserve Lines, but the expansion of treatment services outside the Urban Service Line must take place only after such expansions have been determined to be consistent with the Coastal Act.

The service area for the Wastewater Facilities Project coincides with the Urban Reserve Line for the community of Los Osos contained in the LCP. With respect to the sizing of the project, the proposed wastewater treatment system is designed to accommodate the buildout allowed by the certified LCP within the Los Osos Urban Area Urban Reserve Line, consistent with LCP Policy 2 for Public Works.

The proposed wastewater treatment project has been appropriately sized to serve the maximum intensity of development allowed within the Urban Reserve Line by the San Luis Obispo County LCP, as required by LCP Policy 2 for Public Works.

The flow rate and population service area would be identical regardless of the treatment technology or treatment site chosen. Therefore, none of the alternatives offer a significant environmental advantage over the project.

LCP Requirements Grading and Water Resources

LCP Policy 1 for Coastal Watersheds states:

> *'The long-term integrity of groundwater basins within the coastal zone shall be protected. The safe yield of the groundwater basin, including return and retained water, shall not be exceeded except as part of a conjunctive use or resource management program which assures that the biological productivity of aquatic habitats are not significantly adversely impacted."*

Policy 2 for Coastal Watersheds states, in relevant part:

> *"Groundwater levels and surface flows shall be maintained to ensure that the quality of coastal waters, wetlands and streams is sufficient to provide for optimum populations of marine organisms, and for the protection of human health."*

Analysis

In order to maintain the safe yield of this basin, the project proposes to dispose of treated wastewater in a manner that will replenish the groundwater basin. Project hydrogeologic studies identify that the disposed effluent will primarily go into the upper aquifer and produce a net basin balance. These reports further identify that some of this water will likely reach the lower aquifer, from which the community water-supply is obtained. This will be achieved through the percolation of treated effluent through the permeable soils at the disposal site. The RWQCB has established Waste Discharge Standards for the project to ensure that the disposal of treated wastewater will protect the quality of groundwater resources. More significantly, the RWQCB views this project as an opportunity to remediate the upper aquifer, which currently contains levels of nitrate in excess of state drinking water quality and basin Plan standards.

In achieving the LCP's directive to protect groundwater resources, water conservation, as well as proper wastewater handling, is an important issue. In response, a Draft Water Conservation Program has been prepared and will be implemented once adopted. The Conservation Program anticipates a savings of about 150,000 gallons of water per day.

Conclusion. The wastewater treatment project provides an opportunity to correct the existing groundwater nitrate problem of the Los Osos groundwater basin. The project, as mitigated, will protect and improve the water quality of the Los Osos groundwater basin and Morro Bay estuary, consistent with the objectives of LCP Policies for Coastal Watersheds. In addition, the indirect groundwater replenishment that will result from the disposal of treated effluent will help maintain groundwater levels, and restore groundwater quality, consistent with LCP Policies protecting water resources.

Development of the wastewater treatment plant on any of the alternative sites would accomplish the same goal. Therefore, none of the alternative sites offer a significant advantage over the preferred project site.

LCP Requirements Regarding Archaeological Resources

The San Luis Obispo County LCP contains six policies relevant to the identification and protection of archaeological resources (Land Use Element, Coastal Plan Policies pages. 1 2-2 to 1 2-5). These policies direct development away from archaeological sites if possible (Policy 1) and require mitigation plans for projects which must be located on parcels containing resources (Policy 5). Other policies require preliminary surveys to identify resources and the maintenance of county data files on known sites.

These policies are implemented by Sections 23.07.1 04 and 23.05.1 40 of the Coastal Zone Land Use Ordinance. Section 23.07.1 04 requires a preliminary site survey by a qualified archaeologist for parcels determined to be "archeologically sensitive" as defined in the ordinance. If the preliminary site survey reveals the prescience of archaeological resources, a mitigation plan to protect the resources must be prepared by a qualified archaeologist and considered in the evaluation of the project (23.07.104(c)). According to 23.07-104(d), projects may only be approved if they include adequate measures to protect significant archaeological resources. Section 23.05.1 04 provides guidance for treatment of archaeological sites discovered during the course of construction. This ordinance requires construction to stop immediately upon discovery and remain stopped until a qualified archaeologist con inventory the site and determine the appropriate disposition of the artifacts or human remains.

<u>Analysis</u>

Chapter 6.4 of this DEIR addresses cultural resources. The study was prepared by a qualified archaeologist who concluded that while the treatment site and the Broderson disposal site do not contain any previously discovered sites. There are, however, significant resources located offsite to the north on the adjoining Morro Shores property. Mitigation measures included in this DEIR require previously undiscovered resources to be investigated prior to continuing project construction.

Coastal Act policies require the preservation of significant archaeological resources. This will be accomplished by investigating the resources that are discovered during construction and assessing the appropriate strategy for preservation on a case by case basis, regardless of the treatment plant site chosen. It should be noted that the STEP/STEG collection system, by virtue of its ability to be constructed using trenchless technology, has a slight environmental advantage over the gravity system and could be considered slightly more consistent with this policy.

Although the Morro Shores and Pismo sites have previously discovered archaeological resources, the Holland and Andre sites could reveal such resources upon construction of the wastewater project at these locations. However, they appear to offer no significant environmental advantage to the project site with regard to consistency with this policy.

LCP Requirements for Visual Resources

LCP Policy 1 for Visual and Scenic Resources requires:

> *Unique and attractive features of the landscape, including but not limited to unusual landforms, scenic vistas, and sensitive habitats are to be preserved and protected, and in visually degraded areas restored where feasible.*

LCP Policy 2 for Visual and Scenic Resources states:

> *Permitted development shall be sited so as to protect views along the ocean and scenic coastal areas. Wherever possible, site selection for new development is to emphasize*

locations not visible from major view corridors. In particular, new development should utilize slope created "pockets" to shield development and minimize visual intrusion.

LCP Policy 6 for Visual and Scenic Resources provides:

Within the urbanized areas defined as small-scale neighborhoods or special communities, new development shall be sited to complement and be visually compatible with existing characteristics of the community which may include concerns for the scale of new structures, compatibility with unique or distinguished architectural style, or natural features that add to the overall attractiveness of the community.

LCP Policy 7 for Visual and Scenic Resources requires:

The location and design of new development shall minimize the need for tree removal. When trees must be removed to accommodate new development or because they are determined to be a safety hazard, the site is to be replanted with similar species or other species which are to be reflective of the community character.

Analysis

The waste water treatment facilities authorized by this permit, with the exception of the treatment plant and the lift stations, will be located either below ground, or in the case of the disposal wells, slightly above ground level.

The treatment plant will be located in the center of the community, and, because it will be constructed largely underground, will not significantly impact scenic views of the coast. It does, however, have the potential to diminish the quality of a scenic rural area of the County. Mitigation measures recommended by this DEIR are intended to ensure compatibility with the character of the community and preserve views.

The Holland and Morro Shores sites offer comparable settings with respect to views from prominent vantage points. Each affords the opportunity to construct the treatment plant underground while preserving views to the north from Los Osos Valley Road and surrounding residences.

The Pismo site is isolated with regard to views from surrounding properties, which are designated largely for rural residential (1 acre or larger) development. Views to the ocean from South Bay Boulevard are not obstructed by the site.

The Andre property is located in a transition area between agriculture and rural residential development on the outskirts of Los Osos. Views of Hollister Peak from Los Osos Valley Road can be experienced looking to the north across the site, but only for a brief moment to west-bound travelers. Nonetheless, the site affords the opportunity to construct the treatment plant underground where views would be maintained.

Overall, although the Pismo and Andre sites are located along less prominent view corridors, they do not offer a significant environmental advantage over the project site.

LCP Requirements Regarding Public Access and Recreation

Although the treatment plant is approximately 0.5 miles inland of the ocean, it is located between the ocean and the first through public road paralleling the sea, which in the southern portion of the Los Osos community is Los Osos Valley Road. As a result, the project must be analyzed for conformance both with the public access and recreation policies of the certified LCP and the Coastal Act pursuant to Public Resources Code Section 30604(c).

Due to its distance from the ocean, the project will not have any direct affect upon coastal access and recreation opportunities, except in a beneficial way by providing useable park and recreation facilities. In addition, by providing a solution to the water quality problems resulting from the use of septic systems, the project will enhance and preserve opportunities for water-oriented recreational activities, consistent with Coastal Act Section 30220.

The Holland, Morro Shores Southwest and Pismo sites are all similarly located with respect to access to the ocean. The Pismo site is furthest removed but does not offer any constraints to public access to the shoreline for recreation purposes. These alternative sites, therefore, offer no significant environmental advantage when compared with the project site.

The Andre property is located furthest from the shoreline and access is not an issue.

State Revolving Fund Requirements

The State of California Water Resources Control Board (WRCB), Division of Clean Water Programs has adopted guidelines for compliance with environmental review requirements for applicants for State Revolving Fund (SRF) funding. The SRF loan program is partly funded by the U.S. Environmental Protection Agency and is therefore subject to federal environmental regulations. These requirements supplement those contained in the State CEQA Guidelines (California Code of Regulations Title 14, Division 6, Chapter 3) and are intended to ensure compliance with CEQA and relevant federal environmental laws. The environmental review documents (in this case, the EIR) are considered part of the SRF loan application and must, therefore, address all of the relevant environmental issues associated with the project. Specific guidelines are provided relating to compliance with the Federal Endangered Species Act and the National Historic Preservation Act.

> *Endangered Species Act*. The WRCB has been designated the non-federal representative under the Endangered Species Act for all projects in California that involve an SRF loan. To comply with Section 7 of the Act, the WRCB will review SRF projects during the facilities planning process to determine whether a project could adversely affect federally listed species. The WRCB will confer informally with the U.S. Fish and Wildlife Service (FWS) as appropriate. If federally listed species may be affected, the WRCB will evaluate the extent of the impacts as part of the environmental review process and submit its findings to the FWS. If the WRCB determines that the project will affect any federally listed species it will notify the EPA of the need to request formal consultation with FWS.
>
> *National Historic Preservation Act (NHPA)*. SRF funded projects are also required to demonstrate compliance with Section 106 of the National Historic Preservation Act. This involves development of an Area of Potential Effects (APE) map and extensive background research regarding the potential for the presence of archaeological/historical resources. More importantly, documentation must be provided of consultation with Native Americans, including a letter which must be submitted to the Native American Heritage Commission (NAHC) requesting a review of its Sacred Lands Inventory. Applicants are also encouraged to contact local Native American representatives. A survey report must be submitted with the SRF loan application which complies with the requirements of the California Office of Historic Preservation Planning Bulletin 4(a), December, 1989.

In addition, loan applicants are encouraged to include wide public involvement in the CEQA/environmental review process.

The project has complied with the State Revolving Fund environmental review guidelines regarding the Endangered Species Act and the National Historic Preservation Act.

Basin Plan for the Central Coast Region

The Porter-Cologne Water Quality Control Act of 1969 (Division 7 of the State Water Code) requires the Regional Water Quality Control Board to prepare and implement a Water Quality Control Plan, or Basin Plan, to show how the quality of surface and groundwater resources in the Central Coast Region should be managed to provide the highest water quality reasonably possible. The Regional Board implements the Plan by issuing and enforcing waste discharge requirements, which can be either State Waste Discharge Requirements for discharges to land, or federally delegated National Pollution Discharge Elimination System permits for discharges into surface water.

The Basin Plan for the Central Coast Region (Region 3), which includes San Luis Obispo County and large portions of central California to the north and south, was adopted in 1994 and establishes objectives for the quality of surface and groundwater relating to such factors as color; taste and odor; floating materials; suspended materials; sediment; turbidity; dissolved oxygen; pesticides and other chemicals; and other qualities. The Basin Plan establishes minimum standards which must be met for each sub-basin within the region to achieve and maintain acceptable water quality.

The purpose of the Wastewater Treatment Facility is to achieve and maintain these standards. In this sense, the project is consistent with the Basin Plan. All of the alternative treatment technologies have a demonstrated ability to meet the discharge requirements set by the Regional Board. In this sense, none offers superior consistency with the Basin Plan.

Habitat Conservation Plans

The federal Endangered Species Act requires the preparation of a Habitat Conservation Plan (HCP) for species listed as endangered. Within the Los Osos/Baywood Park area there are a number of endangered species for which a conservation plan has been prepared, including the Morro shoulderband dune snail and the Morro kangaroo rat. Habitat Conservation Plans are discussed in greater detail in Chapter 5.4 of this Draft EIR.

ALTERNATIVES

Alternatives are evaluated under the discussion above.

Mitigation Measures

The project is consistent with the County General Plan and relevant Coastal Act policies. No additional mitigation is recommended

Residual Impacts

None are anticipated.

Drainage - Comparison of Alternatives						
Plan/Policies	Alternatives					
	Collection	Treatment Sites				Treatment Technologies
	STEP/ STEG	Holland	Morro Shores SW	Pismo	Andre	SBR
Estero Area Plan						
Population and Treatment Plant Capacity	Comparable Consistency	Comparable Consistency	Comparable Consistency	Comparable Consistency	Comparable Consistency	Comparable Consistency
Coastal Act						
Avoid locating public facilities in sensitive area where feasible	Comparable Consistency	Slightly Greater Consistency	Comparable Consistency	Less Consistent	Greater Consistency	Comparable Consistency
Design projects to minimize impacts on sensitive resources	Slightly greater consistency	Comparable Consistency	Comparable Consistency	Comparable Consistency	Greater Consistency	Comparable Consistency
No significant impact to environmentally sensitive habitats	Slightly greater consistency	Slightly greater consistency	Slightly greater consistency	Less Consistent	Greater Consistency	Comparable Consistency
Project capacities not exceed plans	N/A	N/A	N/A	N/A	N/A	Comparable Consistency
Protection of archaeological resources	Slightly greater consistency	Comparable Consistency	Comparable Consistency	Less Consistent	Comparable Consistency	Comparable Consistency
Visual resources	N/A	Comparable Consistency	Comparable Consistency	Comparable Consistency	Greater consistency	Less Consistent
Public Access and recreation	N/A	Comparable Consistency	Comparable Consistency	Comparable Consistency	Comparable Consistency	N/A
RWQCB Basin Plan	N/A	N/A	N/A	N/A	N/A	Comparable Consistency
Overall	Slightly Greater Consistency	Slightly Greater Consistency	Comparable Consistency	Less Consistent	Greater Consistency	Comparable Consistency

6.6 Traffic and Circulation

Increased traffic associated with the construction and operation of the Wastewater Facilities Project may adversely impact traffic conditions on roadways serving the community. The following section assesses the project's potential impact on the traffic and circulation system serving the community and recommends measures to mitigate any significant adverse effects.

Setting

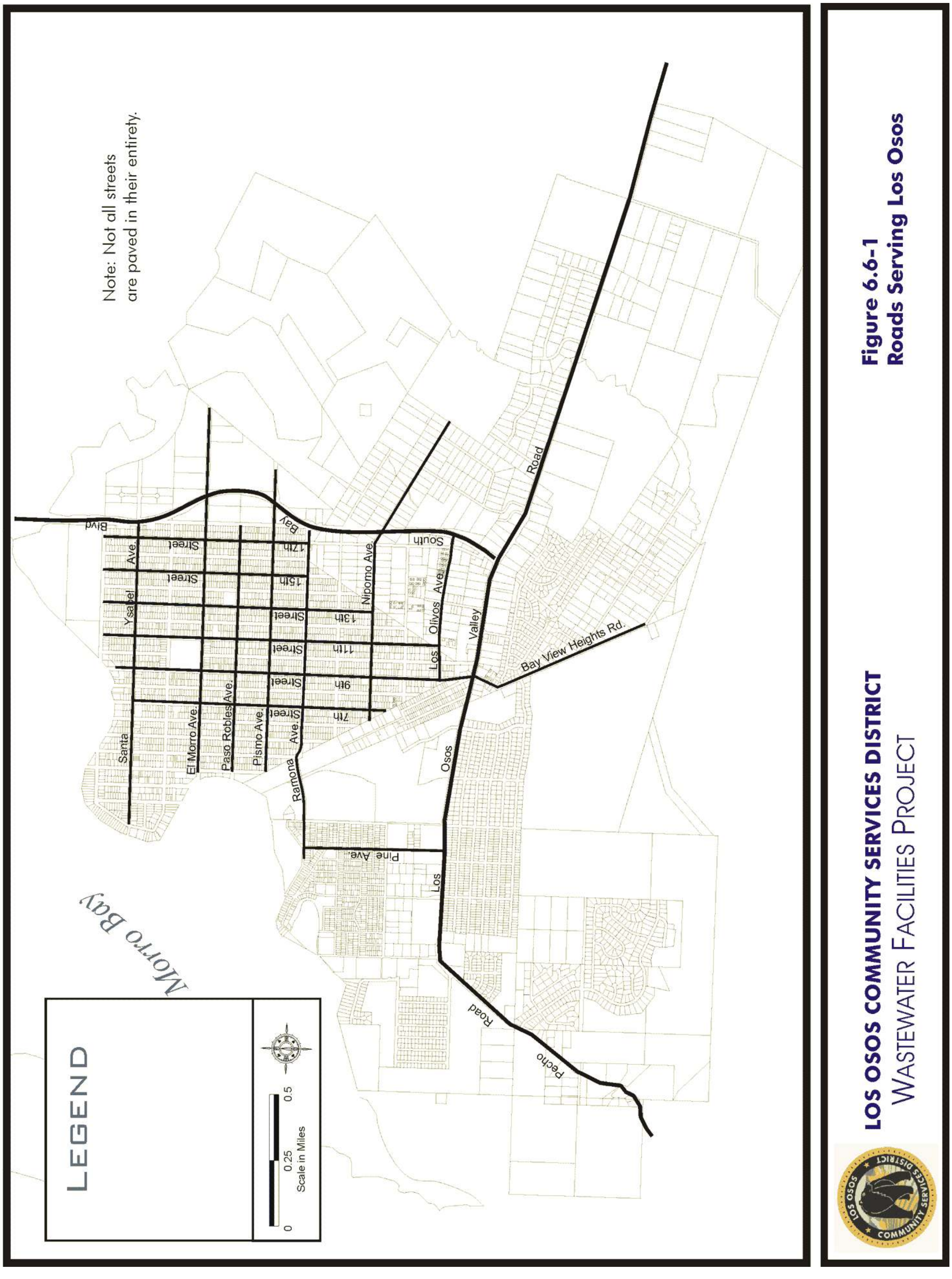
Existing Street Network

Local and regional streets and highways serving the community of Los Osos are shown on Figure 6.6-1. Regional access to the community is provided by South Bay Boulevard and Los Osos Valley Road. Circulation within the community is provided by a grid street system comprised of collector and local streets. The design and character of the streets within the grid system is rural in nature, with narrow pavement widths (24 feet or less), unpaved shoulders, and on-street parking. The following is a brief description of the primary roadway segments likely to be impacted by the project.

> Los Osos Valley Road is a four-lane east-west arterial partially improved with curb, gutter and sidewalks on both sides of the street between Los Osos Creek on the east and Ninth Street on the west. Traffic signals control the Los Osos Valley Road intersections at South Bay Boulevard, Doris Avenue, Ninth Street, and Tenth Street. West of Ninth Street the roadway continues as a two-lane arterial with paved shoulders. Street frontage improvements were installed in front of Monarch Grove Elementary School. Further west, the roadway becomes Pecho Valley Road and continues as a two-lane collector road to Montana De Oro State Park.
>
> Ramona Avenue is a two-lane collector street, extending in an east-west direction between Pine Avenue on the west and Seventeenth Street on the east. Between Tenth and Eleventh Streets, and east of 15th Street, the roadway is currently unpaved.
>
> Ravenna Avenue is a two-lane road that serves the neighborhood to the south of the proposed treatment plant site and currently T's into Los Osos Valley Road. This road will be extended to the north to serve the Tri-W site wastewater treatment facility.
>
> The portion of Palisades Avenue near the project site is a two-way dead end street serving a church, library and community center. The roadway is improved with curb, gutter and sidewalks.

Existing Traffic Volumes and Levels of Service (LOS)

Motor vehicle traffic volumes are most often expressed in terms of Average Daily Traffic, or ADT, which is the number of vehicle trips passing a given point in each travel direction. In evaluating roadway operational conditions, "Level of Service " (LOS) A through F is applied, with LOS A indicating very good operating conditions and LOS F indicating poor conditions. San Luis Obispo County has established LOS D as the minimum acceptable level of service standard for roadway segments within urban areas, and LOS C for rural areas. For signalized intersections, the County has established LOS C as the acceptable level of service.


Note: Not all streets are paved in their entirety.
LEGEND
0
0.25
0.5
Scale in Miles
Morro Bay
Santa Ysabel Ave.
El Morro Ave.
Paso Robles Ave.
Pismo Ave.
Ramona Ave.
7th Street
9th Street
11th Street
13th Street
15th Street
17th Street
Bay Blvd
South Bay Blvd
Nipomo Ave.
Los Olivos Ave.
Los Osos Valley Road
Bay View Heights Rd.
Pine Ave.
Pecho Road
Figure 6.6-1
Roads Serving Los Osos
LOS OSOS COMMUNITY SERVICES DISTRICT
WASTEWATER FACILITIES PROJECT

Existing ADT volumes and Levels of Service for the street segments and intersections serving the project area are shown in Tables 6.6-1 and 6.6-2.

Table 6.6-1: Project Area - Existing Roadway Levels of Service

Roadway Segment	Roadway Classification	Capacity (ADT)	Existing ADT	Existing LOS
Los Osos Valley Rd., west of Pine Ave.	2-Lane Arterial	18,000	5,300	A
Los Osos Valley Rd., west of Ninth St. (a)	2-Lane Arterial	16,000	8,300	A
Los Osos Valley Rd., west of South Bay Blvd.	4-Lane Arterial	35,900	13,400	A
Ramona Ave., west of Seventh St.	2-Lane Collector	14,400	1,000	A
Ramona Ave., east of Eleventh St.	2-Lane Collector	14,400	1,300	A

(a) Reduced capacity due to narrow width and side friction between Ninth Street and Pine Avenue.
Source: *Draft Estero Area Plan EIR.* 1999.

Table 6.6-2: Los Osos Community - Existing Intersection Levels of Service

Intersection	P.M. Peak Hour Level of Service
Santa Ysabel Ave/South Bay Blvd	LOS B
Los Osos Valley Rd/9th St	LOS C
Los Osos Valley Rd/10th St	LOS B
Los Osos Valley Rd/South Bay Blvd	LOS B

Source: *South Bay Circulation Study*; CH_2M Hill, January 1994.

Existing Parking Facilities

On-street parking is provided along Palisades Avenue; off-street parking is provided on the nearby church and library in accordance with County standards.

Regulatory Setting

San Luis Obispo County General Plan - Estero Area Plan Circulation Element (1988). The Estero Area Plan contains a Circulation Element which establishes goals, policies and programs to meet the transportation needs of the Los Osos community. The Area Plan identifies specific roadway deficiencies, as well as improvements necessary to achieve and maintain an acceptable level of service through buildout of the community.

1995 Regional Transportation Plan (RTP).[3] The RTP examines transportation issues, opportunities and needs of the San Luis Obispo region. It also identifies the goals, policies and objectives to guide planning and implementation of improvements for all transportation modes (public transit, highways, streets and roads, bikeways, rail, harbor, aviation and pedestrian). The primary purpose of this plan is to guide the development of a coordinated and balanced transportation system that meets the basic transportation

[3] 1995 Regional Transportation Plan, San Luis Obispo Council of Governments, 1995.

needs of all social groups, businesses and industries in the region. A secondary purpose is to satisfy federal and state requirements for a regional transportation plan and an ongoing regional planning process.

San Luis Obispo County Clean Air Plan (CAP).[4] The CAP provides strategies designed to achieve and maintain compliance with state and federal ambient air quality standards.

County Bikeways Plan. The Bikeways Plan identifies bicycle circulation routes as well as bike path design and improvement standards.

Significance Thresholds

The County has established LOS D for road segments in urban areas. For signalized intersections, County Engineering has established LOS C as the acceptable level of service. A significant adverse impact on transportation and circulation would occur if the project would result in the reduction of levels of service below these thresholds. A significant impact would also occur if local parking facilities were exceeded by the project, emergency access was restricted, or local vehicle/pedestrian traffic was obstructed.

Impact Analysis

Collection and Disposal System

Construction Related Impacts

Impact TR-1: Construction activities for all aspects of the project will generate additional vehicle trips on area streets and intersections. These impacts are considered less than significant (Class III).

The majority of trips generated by construction will be associated with travel of workers to and from the construction site(s), and materials deliveries. These trips would be temporary, lasting only as long as the construction activities (max. 2 years). Deliveries are estimated to generate approximately 40 trips per day, while construction workers would generate 80 trips per day. Worker trips would most likely coincide with the morning and afternoon peak hours of traffic which occur generally between 7AM and 8 AM in the morning and between 5 PM and 6 PM in the evening. Materials deliveries would occur throughout the workday. Construction equipment, once on site, would generate minimal additional trips.

According to the traffic analysis prepared for the Estero Area Plan Update Draft EIR (Associated Traffic Engineers, 1999) all the major streets and intersections serving the community of Los Osos are currently operating at LOS C or better. The incremental contribution to the street network serving the community is a fraction of the total and is not expected to decrease the level of service of any street segment or intersection.

Although impacts are less than significant, it is recommended that a construction traffic management plan be drafted for the project to minimize construction related impacts to local streets (Mitigation TR-1).

Impact TR-2: Installation of the collection and disposal systems will result in temporary lane closures and the disruption of local circulation. These impacts to circulation are considered significant unless mitigated (Class II).

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4 San Luis Obispo County Clean Air Plan, San Luis Obispo Air Pollution Control District, 1998.

The traffic capacities of streets and intersections serving the community will be reduced during the period of construction activities. Access to residences and commercial areas may be temporarily blocked, and circulation patterns may be altered. These impacts will be short-term and restricted to a 300-400 foot portion of the street system at any one time. The project description limits the length of open trench to a 200 feet (0.03 miles) at any given time. Mitigation TR-1 would reduce impacts to a less than significant level.

Treatment Plant

Construction Related Impacts

Impact TR-3: Construction traffic associated with the treatment facility at the Tri-W site could adversely impact the safety of local streets used by school children and other nearby residents that travel Los Osos Valley Road. This impact would be short-term and temporary, lasting for approximately 2 years. These impacts are considered significant unless mitigated.

Construction traffic has the highest likelihood of becoming a hazard for pedestrians and school children between the hours of 8:00 a.m. - 8:30 a.m. and between 2:30 p.m. 3:30 p.m. immediately after school is dismissed. Most construction related trips will occur as workers arrive at work in the morning and when they leave at the end of a typical work day (5:00 p.m.). In other words, workers would likely arrive before school starts and leave after school dismisses. However, material deliveries and other truck trips associated with construction of the site could occur throughout the day and in some cases could coincide with arrival and departure times for schools. These impacts are considered significant unless mitigated (Class II).

Operational Impacts

Impact TR- 4: Operation of the proposed wastewater treatment system is expected to generate minimal additional traffic. The operation includes hauling bio-solids to a Class I or Class II landfill three times per week and collection of septage from the 1,051 septic tanks outside the wastewater collection area but within the SSMMP. Impacts to surrounding street systems are considered less than significant (Class III).

Traffic associated with the ongoing operation of the treatment plant, disposal and collection system would be generated by employees, maintenance vehicle trips, and truck trips associated with the disposal of septage, the maintenance of remaining septic tanks and the disposal of wastewater associated with the ion exchange system. These trips are summarize in Table 6.6-3.

Table 6.6-3: Trip generation

Activity	PM Peak Hour Trip Generation Rate[1]	Quantity	Total PM Peak Hour Trips[2]
LOCSD Offices	11 trips/1000 sq.ft.	4.0	44.0
Septage Disposal	1.0/day		1.0
Septic Tank Maintenance	2.0/day		2.0
Park	0.22 trips/acre	7.0	1.54
TOTAL:			49.5/PM Peak Hour

1. Institute of Traffic Engineers Vol. 1
2. Assumes trips associated with septage disposal and septic tank maintenance occur during the PM peak hour each day.

Table 6.6-3 suggests that total peak hour vehicle trips associated with the project will increase PM peak hour traffic on Los Osos Valley Road in the vicinity of the project site by about 6%. However, when compared with the total PM peak hour capacity for Los Osos Valley Road (1,600 trips) the contribution of this project falls to about 3%, which is not expected to reduce the level of service of surrounding street segments to LOS "D" or below. It should also be noted that the net change in truck traffic in the community will likely be reduced as a result of fewer septic tank maintenance truck trips once the collection and treatment system are in place.

With regard to intersection operations, the project is being designed with its primary (public) vehicle access from Palisades Drive, which forma an un-signalized intersection with Los Osos Valley Road about one-quarter mile west of Ninth Street. According to the County Engineering Department, although projected future traffic volumes at the intersection are not expected to meet warrants for a traffic signal, the nature of the uses served by the intersection (a park, library, church and community center) have generated interest in providing a signal for safety purposes. The County has included a signal at this intersection its capital improvement program for the Los Osos area and is collecting an impact fee from new development to pay for it. At present, the County has not decided whether a traffic signal would be required with the wastewater project. However the project will be required to pay the fee at the time of Coastal Development Permit approval.

Impact TR-5: Trucks carrying chemicals utilized in the treatment process and sludge being removed from the treatment plant could use roadways adjacent to residential areas. Although these materials are not classified as 'hazardous', in the unlikely event of an accidental release, these materials could be spilled onto local roadways creating a temporary hazard to motorists and pedestrians. This impact is considered adverse but less than significant impact (Class III).

Trucks will carry chemicals used for treating wastewater to the treatment plant about 1 to 3 times per month. Such chemicals (alum, polymer and methanol) are not considered hazardous, as they are neither volatile nor flammable. Additionally, approximately 3 trips per week are anticipated for the hauling of sludge to the landfill. Produced sludge would comply with federal and state quality requirements, and would not present a health threat (please refer to Section 6.9, Public Safety, for a more detailed discussion).

Impact TR-6: Operation of the treatment plant will increase the demand for parking associated with employees and visitors. These impacts are considered less than significant (Class III).

The project description indicates that parking will be provided for the treatment plant and recreation facilities in accordance with County standards.

Impact TR-7: Street frontage improvements along the treatment plant's Los Osos Valley Road and Ravenna Avenue rights-of-way will have a beneficial traffic impact (Class IV).

The project description includes full frontage improvements along the treatment plant's Los Osos Valley Road and Ravenna Avenue rights-of-way. The street improvements also include a Class I bike lane along Los Osos Valley Road and through the treatment plant site itself. Impacts from these improvements are considered beneficial (Class IV).

Mitigation Measures

Mitigation TR-1: Construction Traffic Mitigation Plan. The LOCSD shall prepare a construction traffic mitigation plan which identifies the location of equipment and trenches to be used; sequencing/phasing of installation; the location of materials and equipment staging areas; and proposed detour routes. The plan shall also provide for adequate emergency access, and routing of construction-related vehicles to minimize impacts to sensitive land uses. The plan shall also provide for the scheduling of construction related traffic so that it does not create safety hazards to school children and other pedestrians. (Impacts TR-2, TR-3)

Mitigation TR-2: Public Notice of Construction. The public shall be notified of potential obstructions and alternative access provisions. This notification may be accomplished by posting signs near the construction area at least one week in advance of the commencement of construction. In addition, information signs shall be posted on Los Osos Valley Road, with a phone number to call for questions. Phone inquiries shall be answered by a live public relations official, and not a pre-recorded message. Alternative access provisions and parking will be provided where necessary, with guide signs to inform the public. There will also be alternative pedestrian facilities provided to avoid obstruction to pedestrian circulation. (Impacts TR-2, TR-3)

Cumulative Impacts

Cumulative impacts associated with the long term operation of the treatment facility are considered insignificant.

Residual Impacts

Mitigation measures stated above and included in the project will effectively reduce potential impacts to a less than significant level.

ALTERNATIVE TREATMENT SITES

Holland. The Holland site consists of about 19 acres that is located south of the Sea Pines Golf Course and west of Pecho Rd. The property is surrounded by residential neighborhoods to the west and east, a golf course to the south, and an elementary school to the east. Traffic and circulation impacts associated with construction would be comparable to those associated with the Tri-W site. Workers and deliveries would approach the site from the east on Los Osos Valley Road and pass by the main commercial district as well as Sunnyside and Monarch Grove Elementary Schools. Overall, the Holland site offers no environmental advantage with respect to traffic.

Morro Shores Southwest. The 11 acre Morro Shores Southwest site is located immediately west of the Tri-W site and is therefore most comparable to the project site among the alternative sites. Construction and operational impacts would be comparable to the Tri-W site.

Pismo. The Pismo site consists of an 11 acre parcel located east of South Bay Blvd. immediately south of the Los Osos Middle School. To the south and west of South Bay Blvd. are residential neighborhoods. The Pismo site is more removed from developed portions of the community and is less likely to result in construction or operational traffic hazards. Although located on a heavily traveled arterial (South Bay Boulevard) adjacent to a middle school, a grade-separated pedestrian/bike access is provided from Pismo Street. For these reasons, the site offers slightly better alternative to the Tri-W site in terms of potential safety impacts to school children and nearby residents.

Andre. The Andre site is located on the north side of Los Osos Valley Road adjacent to the Los Osos Valley Memorial Park. The site is located furthest away from urban development; therefore traffic hazards to pedestrians and school children would be minimal. However, the site would require east-bound truck traffic to make left turns into the site from Los Osos Valley Road without the benefit of a controlled intersection or left-turn lane. These impacts are considered significant unless mitigated. Roadway channelization could accommodate an east-bound left-turn lane to mitigate this potential impact. However, the amount of truck traffic would be low.

ALTERNATIVE SITES FOR BIO-SOLIDS RECYCLING

Bio-solids recycling has been considered as an alternative to hauling the sludge (bio-solids) to a Class I or Class II landfill. The treated bio-solids would be transported from the treatment plant to a recycling center where it would be combined with mulch and re-used as a soil amendment. The bio-solids recycling facility would require about four acres and would contain a two-acre covered concrete pad and support facilities. Truck traffic associated with bio-solids recycling would amount to about two trips per day.

Ogle. The property is located on the north side of Turri Road about one mile east of South Bay Blvd. The site is located away from urban development, which will eliminate potential safety hazards created by increased truck traffic during construction and operation of the bio-solids disposal site.

Andre. As described above, the Andre property is located at the northeast corner of Clark Valley Road and Los Osos Valley Road. The use of the Andre site for bio-solids recycling would result in similar impacts to those anticipated for the site if developed with a treatment plant.

Traffic/circulation - Comparison of Alternatives

Project Impacts		Alternatives				
		Treatment				Bio-solid Recycling
		Holland	Morro Shores SW	Pismo	Andre	Andre, Low, Ogle
Impact TR-1:	Construction activities for all aspects of the project will generate additional vehicle trips on area streets and intersections. These impacts are considered less than significant (Class III).	Comparable	Comparable	Comparable	Comparable	Comparable
Impact TR-2:	Installation of the collection and disposal systems will result in temporary lane closures and the disruption of local circulation. These impacts to circulation are considered significant unless mitigated (Class II).	N/A	N/A	N/A	N/A	Comparable
Impact TR-3:	Construction traffic associated with the treatment facility at the Tri-W site could adversely impact the safety of local streets used by school children and other nearby residents that travel Los Osos Valley Road. This impact would be short-term and temporary, lasting for approximately 2 years. These impacts are considered significant unless mitigated.	Greater Impact	Comparable	Comparable	Less impact	Comparable

Project Impacts		Alternatives				
		Treatment				Bio-solid Recycling
		Holland	Morro Shores SW	Pismo	Andre	Andre, Low, Ogle
Impact TR- 4:	Operation of the proposed wastewater treatment system is expected to generate minimal additional traffic. The operation includes hauling bio-solids to a Class I or Class II landfill three times per week and collection of septage from the 1,051 septic tanks participating in the SSMMP. Impacts to surrounding street systems are considered less than significant (Class III).	Comparable	Comparable	Comparable	Comparable	Comparable
Impact TR-5:	Trucks carrying chemicals utilized in the treatment process and sludge being removed from the treatment plant could use roadways adjacent to residential areas. Although these materials are not classified as 'hazardous', in the unlikely event of an accidental release, these materials could be spilled onto local roadways creating a temporary hazard to motorists and pedestrians. This impact is considered adverse but less than significant (Class III) impact.	Greater Impact	Comparable	Comparable	Comparable	Comparable
Impact TR-6:	Operation of the treatment plant will increase the demand for parking associated with employees and visitors. These impacts are considered less than significant (Class III).	Comparable	Comparable	Comparable	Comparable	Comparable

Project Impacts		Alternatives				
		Treatment				Bio-solid Recycling
		Holland	Morro Shores SW	Pismo	Andre	Andre, Low, Ogle
Impact TR-7:	Street frontage improvements along the treatment plant's Los Osos Valley Road and Ravenna Avenue rights-of-way will have a beneficial traffic impact (Class IV).	Comparable	Comparable	Comparable	Comparable	Comparable
Overall		Comparable Impact	Comparable Impact	Comparable Impact	Slightly Less Impact	Comparable Impact

6.7 Air Quality

Air pollution is considered a health hazard. To help protect the public from the harmful effects of air pollution, federal and State air quality standards have been adopted. Currently, San Luis Obispo County is a "moderate" non-attainment area for the State standards for ozone and respirable particulate matter (PM10). This section analyzes the potential for increases in the emissions of these air pollutants, and their precursors associated with the proposed project.

Setting

Climate

The climate of the Los Osos area can be described as semi-arid with warmer, foggy summers followed by a cool, rainy period from November to March. During the summer months, the daily pattern consists of dense morning fog followed by periods of afternoon sunshine. The nearest weather station to the area is located in San Luis Obispo, about 12 miles to the east, where minimum average January temperatures have averaged about 42° F and maximum September temperatures have averaged about 79°F. The average annual rainfall in San Luis Obispo measured from 1950 to 1980 was 23 inches. These data are considered representative of the project area, although the high and low temperatures will be moderated by the proximity of the ocean.

Environmental factors which affect air quality in the Los Osos area include:

- *The type, quantity and location of pollutant emissions.*

The emissions inventory compiled by the San Luis Obispo Air Pollution Control District (SLOAPCD) indicates the primary emissions source affecting the coastal air shed is motor vehicles and emissions from the Duke Energy Morro Bay power plant. Therefore, projects that result in an increase in motor vehicle trips could have an adverse impact on air quality. Likewise, changes to the operation of the power plant could have an impact on air quality.

- *The physical setting.*

The Los Osos area contains varied topography ranging from coastal dunes to low mountains. The Los Osos Valley extends well inland, providing an avenue for pollutants to travel on the prevailing westerly breezes. During periods of low inversions (see below) pollutants may be trapped against these hills causing pollutant concentrations to rise.

- *The weather and climate of the area.*

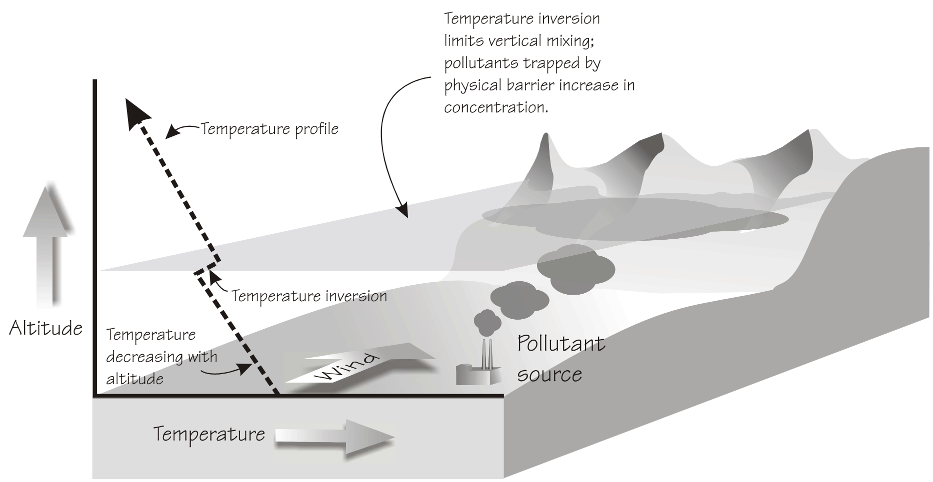
Local and regional weather conditions, including wind speed and direction (as outlined above), atmospheric stability, air temperature, and the presence or absence of temperature inversions can all contribute to increasing pollutant concentrations.

The speed and direction of local winds are influenced by several factors, including: 1) the location and strength of the Pacific High Pressure System, 2) local and regional topographic conditions, and 3) circulation patterns resulting from temperature differences between the land and the sea.

During the spring and summer, the Pacific High attains its greatest strength. During the day, the prevailing winds are onshore from the northwest. As evening approaches, the onshore winds die down and the wind direction reverses resulting in weak easterly winds flowing down the coastal mountains and valleys toward the ocean. In the fall, onshore winds decline allowing an occasional offshore flow. The combination of daily onshore breezes and nightly offshore flow can result in a "sloshing" effect which allows pollutants to accumulate over the ocean and be carried onshore with the return of sea breezes.

Normally, air temperature decreases with altitude in the atmosphere. The temperature is said to be "inverted" when it decreases for a certain altitude and then increases for a short distance before decreasing again (see Figure 6.7-1). The resultant warm air mass acts as a barrier to vertical circulation, confining pollutants and increasing their local concentration. When inversions occur at altitudes lower than surrounding topographic features, such as the coastal hills and mountains, pollutants can be especially concentrated.

Figure 6.7-1: Temperature Inversion



Temperature inversion

Regulatory Setting

Table 6.7-11 summarizes federal and State air quality standards that establish thresholds for the maximum acceptable concentrations of selected pollutants (so-called "criteria pollutants"). In most cases, the State standards are more strict than their federal counterparts.

Air Quality Standards. Ambient air quality (the level of certain pollutants) is monitored at several locations throughout the County by the SLOAPCD and others. For example, ozone, sulphur dioxide and respirable particulate matter (also known as PM10) have been monitored in Morro Bay since 1985. Maximum ozone concentrations in areas near Los Osos are summarized for the years 1985 to 1995 in Table 6.7-1. Table 6.7-1 shows that the State ozone standard was equaled or exceeded for seven consecutive years (1986 to 1992) at the Morro Bay monitoring station.

On a regional basis, ozone (O_3) appears to be the pollutant of most concern. Ozone is a form of oxygen formed in the atmosphere by complex photochemical reactions involving precursor pollutants (compounds that provide a chemical pathway for the formation of ozone in the atmosphere) and sunlight. Precursors include reactive organic gases (ROG), also known as reactive hydrocarbons (RHC), and oxides of nitrogen (NOx). NOx emissions result from the combustion of fuels, including the so-called "fossil fuels" (oil, natural gas, coal, etc.). Sources of ROG emissions include the incomplete combustion of fossil fuels and the evaporation of petroleum products. The amount of ozone formed in the atmosphere depends on the concentration of these chemical precursors and the intensity and duration of sunlight. Consequently, ambient ozone concentrations tend to vary with the seasons (higher in summertime, lower in winter when there is less sunlight).

San Luis Obispo County is either an "attainment area" or "unclassified" for all pollutants regulated by the Federal Clean Air Act and the National Ambient Air Quality Standards. An "attainment area" is one where air quality meets, or attains the air quality standard. An area is said to be "unclassified" when there is insufficient data to determine attainment or nonattainment.

The County is currently a "moderate nonattainment area" for the State ozone standard. To meet the standard, the County is required to reduce emissions of ozone precursors by at least 5 percent per year until the standard is achieved. The California Air Resources Board (ARB) requires that emissions of ozone precursors countywide be decreased by 20 percent from 1987 levels as a strategy to meet the State standard. However, it is currently estimated that countywide emissions of nonattainment pollutants must be reduced by at least 40 percent from 1987 levels to meet State standards.

The County is also a nonattainment area for the State standard for respirable particulate matter (PM10). According to the Air Pollution Control District, a plan will be developed to provide strategies to meet this standard in the future. One source of respirable particulate matter is "re-entrained" road dust, or dust that is generated and re-circulated by on-road motor vehicles. Mitigation strategies to reduce the total amount and length of on-road motor vehicle trips will have a beneficial impact on PM10 as well.

Table 6.7-1: Maximum Ozone Concentrations Measured From Selected Locations in San Luis Obispo County from 1985-1998[1]

Station	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
San Luis Obispo	*0.10*[2]	*0.09*	*0.09*	*0.12*	0.08	*0.09*	0.08	*0.09*	0.07	*0.09*			
Morro Bay	*0.09*	*0.11*	*0.10*	*0.15*	*0.09*	*0.10*	*0.10*	0.08	0.06	0.07	0.10	0.06	0.07

Source: SLOCAPCD

Notes:
1 In parts per million
2 Exceedence of State Standard Shown In Italics

The California Clean Air Act. In 1988, the California Clean Air Act (CAA) was signed into law. The CAA requires the APCD to prepare and adopt an Air Quality Management Plan which demonstrates how the state air quality standards will be attained and maintained. The Plan must, therefore, discuss the sources of emissions, how the amount of these emissions is expected to change in the future, and emission control strategies. As stated above, the CAA designates San Luis Obispo County as a "moderate" nonattainment area for the state 1-hour ozone standard (0.09 parts per million). Among the requirements of the CAA is that non-attainment areas reduce the emission of non- attainment pollutants, or their precursors, by five percent per year until the standard is achieved. The CAA requires the following:

- No net increase in emissions of nonattainment pollutants or their precursors from any new or modified source.
- Application of Best Available Control Technology (BACT) to existing emissions sources.
- Implementation of all reasonably available transportation control measures, and a program to achieve a "substantial reduction" in the growth rate of passenger trips and miles traveled.
- Demonstration that the control measures will achieve at least a 20 percent reduction in ozone precursor emissions (ROG and NO_x) countywide compared to 1987 levels.

The Clean Air Plan (CAP) was updated in 1998. Implementation of control measures contained in the CAP are expected to bring the county into compliance with the State ozone standard within 3 to 5 years.

The decline in NOx and ROG emissions is expected to result primarily from the application of controls on motor vehicles, electric utilities (Morro Bay Power Plant), the petroleum industry, and various types of solvent use. Additional control measures are proposed in the Plan to help achieve compliance with this standard.

Significance Thresholds

In 1996, the San Luis Obispo County Air Pollution Control District prepared and adopted the *California Environmental Quality Act (CEQA) Air Quality Handbook* to assist in the assessment of air quality impacts. The Handbook provides methodology for the assessment of air quality impacts from development activities and establishes thresholds of significance for both construction and operational impacts. For projects such as a general plan whose scope is large and implemented over time (i.e., “programmatic”), the Handbook provides a range of land use and circulation management strategies aimed at reducing the generation of emissions through community design.

Thresholds for Construction-Related Impacts

The District’s CEQA Handbook contains thresholds for construction-related emissions. Construction activities that are expected to exceed these thresholds must incorporate mitigation measures to address emissions of reactive organic compounds, oxides of nitrogen and respirable particulate matter. Construction-related thresholds are contained in Table 6.7-2.

Table 6.7-2: SLOAPCD Threshold Criteria for Construction

Threshold By Pollutant			Mitigation Required
Reactive Organic Compounds	Oxides of Nitrogen	Respirable Particulate Matter	
> 185 lbs/day or 2.0 to 6.0 tons/quarter or >400,000 cubic yards of material/quarter or >15,000 cubic yards of material/day	> 185 lbs/day or 2.0 to 6.0 tons/quarter or >50,000 cubic yards of material/quarter or >2,000 cubic yards of material/day	> 2.5 tons/quarter or >4.0 acres of graded area	Best Available Control Technology for Construction Equipment (CBACT)
> 6.0 tons/quarter or >970,000 cubic yards of material/quarter	> 6.0 tons/quarter or >125,000 cubic yards of material/quarter	--	CBACT plus further mitigation which may include offsets

Thresholds for Operational Impacts

Operational impacts are those associated with the long-term use of the land for a particular purpose. The APCD has published guidelines for the evaluation of long-term air quality impacts from urban development. The guidelines establish four criteria for assessing the significance of project impacts:

1. Comparison of calculated project emissions to District emission thresholds;

2. Comparison of predicted ambient pollutant concentrations resulting from the project and State and federal health standards;
3. Consistency with the Clean Air Plan;
4. The existence of special conditions that apply to certain projects.

Table 6.7-3: Thresholds of Significance for Operational Impacts

Pollutant	Threshold	Tier 1	Tier 2	Tier 3
ROG, NOx, SO_2, PM_{10}	<10 lbs/day	10 lbs/day	25 lbs/day	25 tons/year
CO	<50 lbs/day	50 lbs/day	550 lbs/day	25 tons/year
Significance	Not significant	Significant	Significant	Significant
Required Mitigation	None required	On-site mitigation required	On-site and off-site mitigation required (if needed)	On-site and offsite mitigation required (if needed)
Appropriate Environmental Document	Negative Declaration	Mitigated Neg. Dec.	Modeling of CO emissions, mitigated Neg. Dec. or EIR	Environmental Impact Report

Notes:
ROG = Reactive organic compounds
Nox = Oxides of nitrogen
SO_2 = Sulphur dioxide
PM_{10} = Respirable particulate matter

Significance Thresholds for Odors

Section 41700 of the *California Health and Safety Code* establishes the nuisance criteria adopted by the APCD as Rule 402, Nuisance. This criteria states:

> *"…no person shall discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public…"*

Additionally, the APCD *CEQA Air Quality Handbook (1997)* identifies the threshold of significance for projects involving odor emissions. Section 2.4(b), Special Conditions, states the following:

> *"If a project has the potential to cause an odor or other nuisance problem which could impact a considerable number of people, then it may be considered significant. A project may emit a pollutant in concentrations that would not otherwise be significant except as a nuisance, for example, hydrogen sulfide (H_2S)."*

For purposes of this analysis, the project is considered to have a significant impact if implementation would have the potential to impact "*a considerable number*" of people, as stated in the APCD threshold. Additionally, the significance of the project impacts will be assessed in relation to the distance and frequency at which odor complaints have been received from the public from similar wastewater facilities. This analysis is based on the significance thresholds established by the Bay Area Air Quality Management Plan which says that a project would be considered significant if long-term operation is anticipated to result in a) more than one confirmed complaint per year averaged over a three year period, or b) three unconfirmed complaints per year averaged over a three year period. Combining the guidance from the San Luis Obispo County CEQA Guidelines with the standard used by the BAAQMP, for purposes of this analysis, a "considerable number" will be defined as affecting residents of more than one residence, since a complaint-driven threshold could be exceeded by a single household.

Specific criteria for the siting of odor sources within developed areas is not identified by the APCD *CEQA Air Quality Handbook.* However, the *Bay Area Air Quality Management District CEQA Guidelines (1996)* provides the following criteria for siting of odor sources in developed areas

> *"For projects locating near a source of odors where there is currently no nearby development <u>and</u> for odor sources locating near existing receptors, the determination of significance should be based on the distance and frequency at which odor complaints from the public have occurred in the vicinity of a similar facility."*

Impact Analysis

Air quality impacts associated with the Wastewater Facilities Project can be divided into short-term and long-term impacts. Short-term impacts are those usually associated with construction activities, and are therefore of limited duration. Construction of the Wastewater Facilities Project (including the collection, treatment and disposal facilities) will result in short-term construction-related impacts. Long-term (or operational) impacts are those associated with the continuing operation of the Wastewater Treatment Facilities and can be further divided into emissions produced by stationary and mobile sources. Stationary source emissions result directly from the operation of heating, air conditioning and other machinery or other processes that produce emissions originating from one particular location, and indirectly from power generation facilities serving the project. Mobile source emissions are those generated by motor vehicles.

Secondary impacts associated with the development of vacant land within the community of Los Osos once the building moratorium is lifted are assessed by comparing project consistency with the adopted Clean Air Plan.

Construction Related Impacts

Impact AQ-1: Construction activities associated with the treatment plant, collection and disposal facilities will generate emissions which may exceed thresholds of significance adopted by the SLO APCD. These impacts are considered adverse and unavoidable (Class I).

Construction would generally consist of site preparation, grading and excavation, and the installation of collection and disposal facilities and structures. Construction-related emissions include particulates generated by soil disturbance, and combustion emissions from the operation of large earth-moving vehicles during grading and excavating operations. The rate of particulate generation depends on the type of soil, the moisture content, wind speed, activity level and silt content. Particulate generation typically occurs at a rate of about 0.6 tons per acre per quarter year of construction activity. Construction activities can exceed PM10 standards on a short term basis. Therefore, construction activities can hinder progress toward the attainment of the state 24-hour PM10 standard. In addition, airborne dust can pose substantial nuisance to neighboring properties.

Emissions associated with construction equipment and vehicles would be short-term and consist of fugitive dust and exhaust emissions.

Construction of the Wastewater Treatment Facility

Site preparation emissions are much greater due to the larger size of the internal combustion engines in construction machinery, the number of emission sources present, and the amount of dust generated. Heavy equipment assumed to be used for site preparation and treatment facility construction include two tracked tractors (Caterpillar D8), two elevating scrapers (Caterpillar 623E), one tandem scraper (Caterpillar 637E), one excavator (Caterpillar 245), one motor grader (Caterpillar 140G), and two wheeled loaders (Caterpillar 966E). Construction emissions are estimated using emission factors from EPA documents *Compilation of Air Pollutant Emission Factors (AP-42)* (1995) and *Nonroad Engine and Vehicle Emission Study* (1991). The emission estimate assumes excavation of a 4 acre area, 30 feet deep to accommodate the treatment plant, and grading of the site for landscaping and water features.

Table 6.7-4: Tri-W Construction Emissions Estimate

Source	ROG		NOx		PM10	
	Pounds/day	Tons/ quarter	Pounds/ day	Tons/ quarter	Pounds/ day	Tons/ quarter
Heavy equipment	16.0	0.5	237.7	7.7	15.9	0.5
Worker Vehicles	1.26	0.0	1.78	0.0	1.1	0.1
Materials Deliveries	3.57	0.1	31.9	0.1	3.0	0.1
Total	20.8	0.6	271.3	7.8	20.0	0.7
Threshold	185	2.5	185	2.5	NA	2.5

Collection System and Pump Station Construction

Construction of the collection system will involve trenching within public rights-of-way and easements to install 204,000 feet of collection pipe that will convey septic tank effluent to the Treatment Plant site. No more than 200 feet of open trench will be allowed at any given time. Trenches will be 2-3 feet wide and will vary in depth between 4-20 feet.

Although the collection system is designed to take advantage of gravity flow wherever possible, a series of 11 pump stations will be needed to serve areas where gravity flow is infeasible. About three of the pump stations will consist of small pumps (10 horsepower or less) and will require a concrete vault approximately 6 feet wide by 8 feet long. The remainder of the stations will require pumps between 30 and 85 horsepower in concrete vaults approximately 8 feet wide by 12 feet long. The depth of all the pump stations will generally be less than approximately fifteen feet. Pump stations will involve the excavation of about 800 cubic feet of material.

Table 6.7-5: Collection and Pump Station Construction Emissions Estimate

Source	ROG		NO_x		PM_{10}	
	Pounds/day	Tons/ quarter	Pounds/ day	Tons/ quarter	Pounds/ day	Tons/ quarter
Heavy equipment	9.6	0.37	106.2	4.15	5.4	0.21
Total	9.6	0.37	106.2	4.15	5.4	0.21
Threshold	185	2.5	185	2.5	NA	2.5

Disposal Facilities Construction

The preferred disposal system strategy will consist of trenching and installing subsurface leach fields and distribution pipe for surface recycling (spraying) during dry weather. Leach fields would be constructed in linear arrays parallel with Highland Avenue on an eight-acre portion of the Broderson site, and in various street rights-of-way on either side of the inferred trace of the Los Osos Fault. The linear arrays will require the use of heavy equipment including a grader and backhoe. The leach fields are expected to take 12 months to construct, with the equipment operating eight hours per day. Table 6.7-6 provides an estimate of disposal facilities emissions. Emissions associated with construction workers is assumed to be negligible.

Table 6.7-6: Disposal Facilities Construction Emissions Estimate

Source	ROG		NOx		PM10	
	Pounds/day	Tons/ quarter	Pounds/ day	Tons/ quarter	Pounds/ day	Tons/ quarter
Heavy equipment	1.4	0.02	23.5	0.23	0.7	0.01
Total	1.4	0.02	23.5	0.23	0.7	0.01
Threshold	185	2.5	185	2.5	NA	2.5

Table 6.7-7: Summary of Construction Emissions – All Sources

Source	ROG		NOx		PM10	
	Pounds/day	Tons/ quarter	Pounds/ day	Tons/ quarter	Pounds/ day	Tons/ quarter
Treatment Plant	20.8	0.60	271.3	7.80	20.0	0.70
Collection/Pump Stations	9.6	0.37	106.2	4.15	5.4	0.21
Disposal Facilities	1.4	0.02	23.5	.23	0.7	0.01
Total	31.8	0.99	401.0	12.18	26.1	.92
Threshold	185	2.5	185	2.5	NA	2.5

Construction emissions would exceed the APCD's significance thresholds for NO_x and PM_{10} and are considered a significant impact to regional air quality. Combustion emissions generated by construction would degrade local air quality and contribute to exceedances of the nitrogen dioxide (NO_2) 1-hour state air quality standard. This impact cannot be mitigated to a level of less than significant; therefore, it is considered Class I, significant and unavoidable.

Impact AQ-2 Dust generated by construction activities may be exceed thresholds of significance adopted by the APCD for respirable particulate matter. This impact is considered significant unless mitigated (Class II).

Should a considerable number of persons be affected, a violation of APCD Rule 402 would result. Violation of Rule 402 is considered a significant impact unless mitigated (Class II).

Operational Impacts

Impact AQ-3: Mobile source emissions associated with treatment plant operation will increase but are not expected to exceed thresholds of significance established by the APCD. These impacts are considered adverse but not significant (Class III).

Operational impacts associated with implementation of the Area Plan are assessed below, based on methodology described in the APCD's CEQA Handbook. Based on the project description, the project is expected to generate about 49 trips during the afternoon peak hour.

Table 6.7-8 compares the estimated emissions from mobile sources with APCD adopted thresholds of significance. The assumptions used in the model are summarized in Appendix E, Emissions Calculations. The model predicts emissions from motor vehicles by assigning an emission factor (or factors) to the average daily vehicle trips associated with a particular land use. In this case, the trip characteristics associated with the day-to-day operation of the Wastewater Facility was used to quantify mobile source emissions.

Table 6.7-8: Estimated Emissions From Mobile Sources
(Pounds Per Day)

Pollutant	Estimated Project Emissions[1]	SLO APCD Threshold
Reactive Organic Gases	0.47 pounds per day	25 pounds per day
Oxides of Nitrogen	0.91 pounds per day	25 pounds per day
Particulate Matter (PM_{10})	0.03 pounds per day	25 pounds per day
Carbon Monoxide	3.54 pounds per day	550 pounds per day

1. Source: URBEMIS7. Refer to Appendix E for calculations.

Table 6.7-8 shows that emissions associated with mobile sources are adverse but not significant, Class III.

Traffic-congested intersections have the potential to cause high concentrations of carbon monoxide, known as CO "hot spots." Such "hot spots" are defined as locations where the ambient CO concentrations exceed the State or Federal ambient air quality standards [20 ppm (State) or 35 ppm (Federal) 1-hour, or 9 ppm (both) for 8 hours]. Sensitive receptors (schools, hospitals, parks, homes) could be adversely affected if these standards were exceeded. However, given the generally low volumes of traffic at intersections within the community and low ambient CO concentrations, the addition of traffic associated with the project is not expected to produce hotspots exceeding the State standard. Therefore, a hotspot analysis was not conducted.

Stationary Source Emissions

Stationary source emissions from heating, air conditioning and other equipment, and from power generation facilities serving the project were estimated using emission factors used by the APCD. These potential emissions are summarized on Table 6.7-9.

The electrical demand associated with the Extended Aeration treatment system is estimated to be about 9 megawatt-hours on a peak day. Using emission factors used by the South Coast Air Quality Management District CEQA Air Quality Handbook (1993), peak day electrical demand is expected to generate emissions as shown on Table 6.7-9. These emissions are considered adverse but not significant.

Table 6.7-9: Estimated Emissions From Stationary Sources (Pounds Per Day)

pollutant	Estimated Project Emissions[1]	SLOAPCD Threshold
Reactive Organic Gases	0.09	25 pounds per day
Oxides of Nitrogen	10.35	25 pounds per day
Particulate Matter (PM_{10})	0.364	25 pounds per day
Carbon Monoxide	1.80	550 pounds per day

1. Source: South Coast Air Quality Management District CEQA Air Quality Handbook (1993)

Table 6.7-10: Summary of Estimated Operational Emissions From Mobile & Stationary Sources (Pounds Per Day)

pollutant	APCD Threshold	Mobile Sources	Stationary Sources	TOTAL
Reactive Organic Gases	25	0.47	0.09	0.56
Oxides of Nitrogen	25	0.91	10.35	11.26
Particulate Matter (PM_{10})	25	0.03	0.364	0.394
Carbon Monoxide	550	3.54	1.80	5.34

Source: URBEMIS7 and South Coast Air Quality Management District CEQA Air Quality Handbook (1993)

Impact AQ-4: Operation of the treatment facility may result in periodic odors that would adversely affect surrounding neighborhoods. These impacts are considered significant unless mitigated (Class II).

Individuals have greatly varying sensitivity to odors, and continual exposure to an odor tends to decrease sensitivity. Therefore, quantifying odor impacts is difficult. Although odor measurement methods have been established to determine detectable threshold odor concentrations on a dilution basis, the application of this test and its use for the assessment of odor impacts is purely subjective. Therefore, modeling of odor concentrations associated with the Wastewater Facilities Project was not conducted. Instead, the potential for impact has been assessed based on the meteorological conditions and proposed treatment process, and by comparing the experience of conventional treatment facilities elsewhere in San Luis Obispo County.

The Tri-W site where the treatment facility will be located is bordered to the south by single family residences and on the east by the library and community center/county park. Prevailing winds are generally on-shore during the day (from the west) and would be expected to carry odors downwind (to the east) and elsewhere should odors emanate from the plant.

Odors generated at wastewater treatment facilities are typically associated with specific components of the treatment train that deal with organic solids or provide the opportunity for septic conditions. Sources of odor commonly generated at wastewater treatment plant facilities include hydrogen sulfide gas and ammonia which are by-products of the treatment process. The proposed project would employ an Extended Aeration plant constructed underground where it would be sealed and fully odor scrubbed.

However, under adverse circumstances, accidents or malfunctions can occur which, if left uncorrected, could result in adverse odors being emitted. During light wind conditions when the dissipation of odors generated onsite is reduced, the potential exists for increased odor concentrations to occur. These concentrated odors can then be transported, without breaking up, offsite to adjacent land uses. Prevailing wind conditions within the Los Osos area are characterized by wind speeds of 2 to 8 mph, with prevailing winds associated with eastward onshore flow from the Pacific Ocean. Under these prevailing conditions, windspeed is anticipated to be adequate such that odors generated onsite are reduced to adequate concentrations.

With regard to wind conditions that could contribute to concentrated movement of odors, it should be noted that light wind conditions of less than 1 mph have a 19 percent occurrence frequency. This is equivalent to 69 days per year. Under these light wind conditions, wind direction is variable, with a small prevailing frequency occurrence of 31 percent (of light wind days) from the south. However, light winds from both the east and west occur at a frequency of 29 percent. Therefore, concentrated movement of air under light wind conditions would have a basically equal potential to affect sensitive receptors located to the east, west and north of the subject property.

Complaints associated with other conventional treatment plants in San Luis Obispo County have been compiled by the APCD. Primary factors associated with nuisance complaints appear to be geographic location of the plant with respect to sensitive receptors, prevailing wind conditions, and treatment procedures. Review of 1994 to 1996 nuisance complaints for treatment plants within San Luis Obispo County indicate that the APCD has received complaints for only the City of San Luis Obispo Water Reclamation Plant and the California Men's Colony, neither of which are extended aeration plants or fully odor scrubbed. The City of San Luis Obispo Water Reclamation Plant is located upwind and adjacent to residential areas along South Higuera Street. It should be noted that this plant utilizes secondary biological treatment processes that differ from those proposed with the Hybrid Extended Aeration system, and is located adjacent to residential land uses.

Review of the APCD file for the City of San Luis Obispo Water Reclamation Plant indicate eleven complaints were received by the APCD in 1994 (all from one resident), three were received in 1995, and eight were received in 1996. Review of files indicate that these complaints are generally associated with periodic procedures or conditions, rather than long-term operation.

Given the design of the system, and the proximity of residences, in the event of a malfunction in the odor scrubbing system odor levels could potentially reach levels that would prompt a nuisance complaint. Based upon the number of complaints associated with the City of San Luis Obispo Treatment Plant, and given the proximity of the Tri-W site to existing sensitive receptors, it is anticipated that the number of complaints received would average about one per year. Therefore, under the BAAQMP threshold previously discussed, this impact is considered adverse but not significant because of mitigation incorporated into the design of the project.

Comparison To Federal and State Air Quality Standards

As outlined above, the State of California has adopted clean air regulations (the California Clean Air Act) which require the adoption of a plan that demonstrates a continued reduction in emissions until the new standards are attained. Specifically, the law now requires a 5-percent per year reduction in district-wide emission of ozone precursors based on 1987 emission levels. Table 6.7-10 shows that the total estimated emission of precursors within the planning area will increase if no other mitigation measures are adopted.

Consistency with the Clean Air Plan

Secondary impacts associated with emissions associated with the continued development of vacant lands within the community in accordance with the adopted Estero Area Plan are assessed by determining consistency of the project with the adopted Clean Air Plan. Consistency is determined by comparing projected population and vehicle trip generation with projections contained in the CAP, and by assessing whether or not all of the applicable land use strategies contained in the CAP are being incorporated into the project as appropriate. The following analysis compares applicable CAP consistency criteria with the project description.

5. *Are the population projections contained in the proposed Estero Area Plan equal to or less than those used in the Clean Air Plan?*

The adopted Estero Area Plan would accommodate a buildout population of about 31,729 within the total Estero Area Plan planning area, an increase of 12,995 over the current planning area population of about 18,734. The CAP projects a population of 35,013 for the Estero Area by the year 2020. Thus, the projected population contained in the Area Plan is consistent with, and slightly lower than, the CAP projection.

The Wastewater Facilities Project is being designed to accommodate full buildout of the land uses within the Los Osos Urban area portion of the Estero Planning Area with a population of 20,590 residents. This buildout population is less than that accommodated by the Estero Area Plan for the community of Los Osos. Therefore, construction of the Wastewater project will be consistent with the Clean Air Plan because it will accommodate a buildout population that is less than the projections for the planning area contained in the Clean Air Plan.

Moreover, it would take about 27 years to reach buildout based on the maximum 2.3 percent annual growth rate allowed by the Countywide Growth Ordinance, which is beyond the planning time frame (20 years) envisioned by the Estero Area Plan. Therefore, the proposed Area Plan is consistent with the CAP and secondary impacts related to population growth are considered less than significant.

2. *Is the rate of increase in vehicle trips and miles traveled equal to or less than the rate of population growth projected by the proposed Estero Area Plan?*

Since the project will accommodate a buildout population that is less than that contained in the Clean Air Plan, the rate of growth of vehicle trips is not expected to exceed population growth.

3. *Have the applicable land use planning strategies and transportation control measures contained in the Clean Air Plan been incorporated into the project to the extent feasible?*

A third measure of consistency is whether or not the project is consistent with the various policies and strategies described in the CAP for attainment of the ozone and PM10 standards. Overall, the CAP promotes the use of both circulation and land use strategies to help meet the state ozone standard. The following discussion focuses on applicable land use strategies contained in the CAP.

<u>Compact Communities</u>. Strategy L-1 of the CAP promotes the development of communities in which housing, job centers, and support services are located close together to enable the efficient use of alternate forms of transportation such as walking, bicycling and transit. The strategy also promotes the development of urban land uses within the existing urban reserve lines of cities to discourage "sprawl".

The project is designed to serve properties within the RWQCB Prohibition Area, which is contained within the Los Osos Urban Area Urban Reserve Line. Moreover, no changes to the urban reserve line are proposed. Overall, the Estero Area Plan incorporates the intent of this policy.

<u>Providing For Mixed Land Uses</u>. A corollary to strategy L-1, the mixed-use strategy, promotes the development of land uses in close proximity that are complementary in terms of trip origins and destinations. For example, projects that incorporate residences with commercial or office land uses on the same site promote walking and make vehicle trips shorter.

Development of the treatment site with a wastewater treatment facility may limit opportunities within the community to develop land uses that complement and support one another, leading to a greater balance between jobs and housing.

<u>Balancing Jobs and Housing.</u> This strategy encourages the development of housing in sufficient quantities and price to meet the needs of the local work force, enabling workers to live near their jobs and reduce the home-to-work commute distance. For areas that are "housing rich", this strategy would promote the development of job-generating land uses to encourage residents to work within a City or unincorporated community. Communities with jobs/housing ratios of between 1.0 and 1.6 jobs per housing unit are typically considered "balanced."

According to the County Planning Department, the Estero planning area can be considered 'housing rich' for purposes of discussing the jobs/housing balance. The draft Area Plan proposes to increase the amount of land devoted to non-residential land uses, such as the 66 acre Resource Park site.

Special Conditions (Hazardous Emissions)

The proposed wastewater treatment system is not expected to emit any hazardous emissions that violate the Clean Air Act.

ALTERNATIVES

None of the alternative treatment technologies offer significant environmental advantages to the Hybrid Extended Aeration Plant from an air quality perspective. All require similar amounts of grading and land area and would produce the same or grater odor impacts. A conventional EA plant constructed above ground would not require as much excavation or grading, but at the expense of potential odor and visual resources impacts.

Similarly, all of the alternative sites would result in comparable construction related impacts. However, the Pismo and Andre sites offer an advantage over the project site in regard to potential odors as they are more removed from residential development. A conventional treatment plant on the Andre site may not be constructed underground, thereby saving construction costs.

Surface disposal would offer an environmental advantage over the proposed construction of underground leach fields in that less excavation would be required and fewer emissions would be generated from construction.

Mitigation Measures

Mitigation AQ-1. Equipment Emission Control Measures. The applicant shall fully implement CBACT for the highest emitting piece of diesel-fired heavy equipment used to construct each major component of the proposed project. It is expected that tandem scrapers or tracked tractors would be the highest emitters. CBACT includes:

- Fuel injection timing shall be retarded 1.5 to 2.0 degrees from the manufacturer's recommendation;
- High pressure fuel injectors shall be installed in all engines;
- Reformulated diesel fuel shall be used on the project site;
- Ceramic coating of the combustion chamber;
- Installation of catalytic converters;

In addition, Caterpillar pre-chamber, diesel-fired engines (or equivalent low NO_x engine design) shall be used in heavy equipment used to construct the project to further reduce NO_x emissions. These requirements shall be noted on the grading plan and listed in the contractor and subcontractor contracts. If implementation of such measures is not feasible within the time-frame mandated for the proposed project, other vehicle fleets would be considered as alternatives, subject to APCD approval. At a minimum, if the above CBACT or an equivalent are not considered for mitigation, all heavy duty equipment operation onsite should have the timing retarded 4 degrees.

(Impacts AQ-1, AQ-2)

Mitigation AQ-2. Dust/PM10 Control Measures. Dust generated by construction activities shall be kept to a minimum by full implementation of the following measures:

- During clearing, grading, earth moving, excavation, or transportation of cut or fill materials, water trucks or sprinkler systems are to be used to prevent dust from leaving the site and to create a crust after each day's activities cease;
- During construction, water trucks or sprinkler systems shall be used to keep all areas of vehicle movement damp enough to prevent dust from leaving the site. At a minimum, this would include wetting down such areas in the morning and after work is completed for the day and whenever wind exceeds 15 miles per hour;
- Stockpiled earth material shall be sprayed as needed to minimize dust generation;
- During construction, the amount of disturbed area shall be minimized, and onsite vehicle speeds should be reduced to 15 mph or less;
- Exposed ground areas that are planned to be reworked at dates more than one month after initial grading should be sown with a fast-germinating native grass seed and watered until vegetation is established;
- After clearing, grading, earth moving, or excavation is completed, the entire area of disturbed soil shall be treated immediately by watering or revegetating or spreading soil binders to minimize dust generation until the area is paved or otherwise developed so that dust generation will not occur;
- Grading and scraping operations shall be suspended when wind speeds exceed 20 mph (one hour average);
- All roadways, driveways, and sidewalks associated with construction activities should be paved as soon as possible. In addition, building and other pads shall be laid as soon as possible after grading unless seeding or soil binders are used.

(Impacts AQ-1, AQ-2)

Mitigation AQ-2. Best Available Technology. Project implementation shall be designed to conform with energy efficiency requirements outlined in Title 24 of the California Code. To the extent feasible, design of the proposed project should incorporate best available technology for energy efficiency . Additionally San Luis Obispo County APCD recommends the following measures be implemented to further reduce or offset long term emissions:

- Provide an on-site lunch room with refrigeration and food preparation (i.e., microwave) appliances to reduce daily trips to and from the treatment facility;
- Use of double paned windows in office area where interior heating/air conditioning will occur;
- Use of energy efficient interior lighting where applicable.

(Impact AQ-4)

Mitigation AQ-3. Odor Performance Standard. Neighbors of the Tri-W site shall be informed that odor nuisance complaints are to be directed to the APCD for documentation. Any odor complaints received by the County Engineering Department or plant staff shall be forwarded within one day of receipt to the APCD. The APCD will contact plant staff following each odor nuisance complaint to determine the nature and cause of the odor sources. The Los Osos Community Services District shall utilize a threshold of three nuisance complaints per year as a performance guideline with respect to odor generation. Should nuisance complaints exceed this number, the District shall assess odor levels at the treatment plant site. The assessment shall include the following:

- Utilization of a scentometer to assess odor concentration with respect to the BAAQMD dilution to threshold ratio (D/T ratio). This ratio indicates the number of equal volume dilutions to the point at which 50% of the population below the age of 45 first detects the odor. Regulation 7 adopted by the BAAQMD restricts the release of odorous substances to 4 D/T at the property line. If the D/T ratio exceeds the 4 D/T ratio threshold established by the BAAQMD, the district shall provide a letter report to the APCD summarizing the nature and cause of the odor source, the frequency at which this source has caused complaints in the past, the frequency at which this source is anticipated to occur, and a course of action to reduce onsite odor generation. Measures may include, but are not limited to, the following:

  Upstream addition of ferrous chloride to the influent stream to reduce septic conditions;
  Establishment of additional "negative air" containment areas;
  Additional treatment component enclosure, and;
  Installation of air flow baffles to improve odor dissipation.

  (Impact AQ-4)

Mitigation AQ-4. Activity Management Techniques. The following additional measures related to construction emissions shall be implemented:

- A comprehensive construction activity management plan designed to minimize the amount of large construction equipment operating during any given time period should be developed.
- Construction of truck trips should be scheduled during nonpeak hours to reduce peak hour emissions.
- The length of the construction work day period should be limited, if necessary.
- Construction activities should be phased, if appropriate.

(Impacts AQ-1, AQ-2)

Cumulative Impacts

Cumulative air quality impacts will result from development which occurs throughout the air basin described in the CAP. Cumulative emission increases associated with residential and nonresidential development will contribute to the degradation of regional air quality.

As previously discussed, population projections for the proposed Estero Area Plan are similar to those included in the CAP. The Area Plan proposes a number of measures designed to reduce vehicle miles traveled and associated air emissions. Consequently, emissions associated with cumulative development in the area would be within the emission projections upon which the CAP's control strategies are based.

Residual Impacts

Implementation of the measures recommended above would help reduce construction-related and operational air emissions to the extent feasible. However, construction related emissions will still be significant and adverse, Class I.

Air Quality - Comparison of Alternatives

Project Impacts		STEP/STEG	Alternative Treatment Sites			
			Holland	Morro Shores SW	Pismo	Andre
Impact AQ-1:	Construction activities associated with the treatment plant, collection and disposal facilities will generate emissions which may exceed thresholds of significance adopted by the SLO APCD. These impacts are considered adverse and unavoidable (Class I).	Less impact	Comparable	Comparable	Comparable	Comparable
Impact AQ-2:	Dust generated by construction activities may be exceed thresholds of significance adopted by the APCD for respirable particulate matter. This impact is considered significant unless mitigated (Class II).	Less impact	Comparable	Comparable	Comparable	Comparable
Impact AQ-3:	Mobile source emissions associated with treatment plant operation will increase but are not expected to exceed thresholds of significance established by the APCD. These impacts are considered adverse but not significant (Class III).	Less impact	Comparable	Comparable	Comparable	Comparable
Impact AQ-4:	Operation of the treatment facility may result in periodic odors that would adversely affect surrounding neighborhoods. These impacts are considered significant unless mitigated (Class II).	N/A	Comparable	Comparable	Less impact	Less impact
Overall		Less Impact	Comparable Impact	Comparable Impact	Slightly Less Impact	Slightly Less Impact

Table 6.7-11: State and Federal Ambient Air Quality Standards						
Pollutant	Averaging Time	California Standards[1]		National Standards[2]		
		Concentration[3]	Method[4]	Primary[3,5]	Secondary[3,4,6]	Method[7]
Ozone	1 Hour	0.09 ppm (180 µg/m3)	Ultraviolet Photometry	0.12 ppm (235 µg/m3)	Same as Primary Std.	Ethylene Chemiluminescence
Carbon Monoxide	8 Hour	9.0 ppm (10 mg/m3)	Non-dispersive infrared Spectroscopy (NDIR)	9.0 ppm (10 mg/m3)		Non-dispersive infrared Spectroscopy (NDIR)
	1 Hour	20 ppm (23 mg/m3)		35 ppm (40 mg/m3)		
Nitrogen Dioxide	Annual Average	---	Gas Phase Chemiluminescence	0.053 ppm (100 µg/m3)	Same as Primary Std.	Gas Phase Chemiluminescence
	1 Hour	0.25 ppm (470 µg/m3)		---		
Sulfur Dioxide	Annual Average	---	Ultraviolet Fluorescence	80 µg/m3 (0.03 ppm)	---	Pararosoaniline
	24 Hour	0.05 ppm[8] (131 µg/m3)		365 µg/m3 (0.14 ppm)	---	
	3 Hour	---		---	1300 µg/m3 (0.5 ppm)	
	1 Hour	0.25 ppm (655 µg/m3)		---	---	
Suspended Particulate Matter (PM_{10})	Annual Geometric Mean	30 µg/m3	Size Selective Inlet High Volume Sampler and Gravimetric Analysis	---	---	---
	24 Hour	50 µg/m3		150 µg/m3	Same as Primary Stds.	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	---	---	50 µg/m3		
Sulfates	24 Hour	25 µg/m3	Turbidimetric Barium Sulfate	---	---	---
Lead	30 Day Average	1.5 µg/m3	Atomic Absorption	---	---	Atomic Absorption
	Calendar Quarter	---		1.5 µg/m3	Same as Primary Std.	
Hydrogen Sulfide	1 Hour	0.03 ppm (42 µg/m3)	Cadmium Hydroxide Stractan	---	---	---
Vinyl Chloride (chloro-ethane)	24 Hour	0.010 ppm (26 µg/m3)	Tedlar Bag Collection, Gas Chromatography	---	---	---
Visibility Reducing Particles[9]	8 Hour (10 a.m.-6 p.m. PST)	In sufficient amount to produce an extinction coefficient of 0.23 per kilometer due to particulates when the relative humidity is less than 70 percent. Measurement in accordance with ARB method V.		---	---	—

Notes for Table 6.7-11

1. California standards for ozone, carbon monoxide, sulfur dioxide (1 hour), nitrogen dioxide, suspended particulate matter - PM_{10} and visibility-reducing particulates, are values that are not to be exceeded. The sulfur dioxide (24-hour), sulfates, lead, hydrogen sulfide and vinyl chloride standards are not to be equaled or exceeded.

2 National standards, other than ozone and those based on annual averages or annual arithmetic means, are not to be exceeded more than once a year. The ozone standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above the standard is equal to or less than one.

3. Concentration is expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25°C and a reference pressure of 760 mm of mercury. All measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 mm of mercury (1,013.2 millibar); ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.

4. Any equivalent procedure which can be shown to the satisfaction of the Air Resources Board to give equivalent results at or near the level of the air quality standard may be used.

5. National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health. Each state must attain the primary standards no later than three years after that state's implementation plan is approved by the Environmental Protection Agency.

6. National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant. Each state must attain the secondary standards within a "reasonable time" after the implementation plan is approved by the EPA.

7. Reference method as described by the EPA. An "equivalent method" of measurement may be used but must have a "consistent relationship to the reference method" and must be approved by the EPA.

8. At locations where the state standards for ozone and/or total suspended particulate matter are violated. National standards apply elsewhere.

9. This standard is intended to limit the frequency and severity of visibility impairment due to regional haze and is equivalent to a ten-mile nominal visual range when relative humidity is less than 70 percent.

6.8 Noise

This section addresses noise impacts that would result from construction and operation of the proposed wastewater collection, treatment and disposal system as it relates to existing noise conditions. The analysis is guided by the San Luis Obispo County Noise Element (1992).

Setting

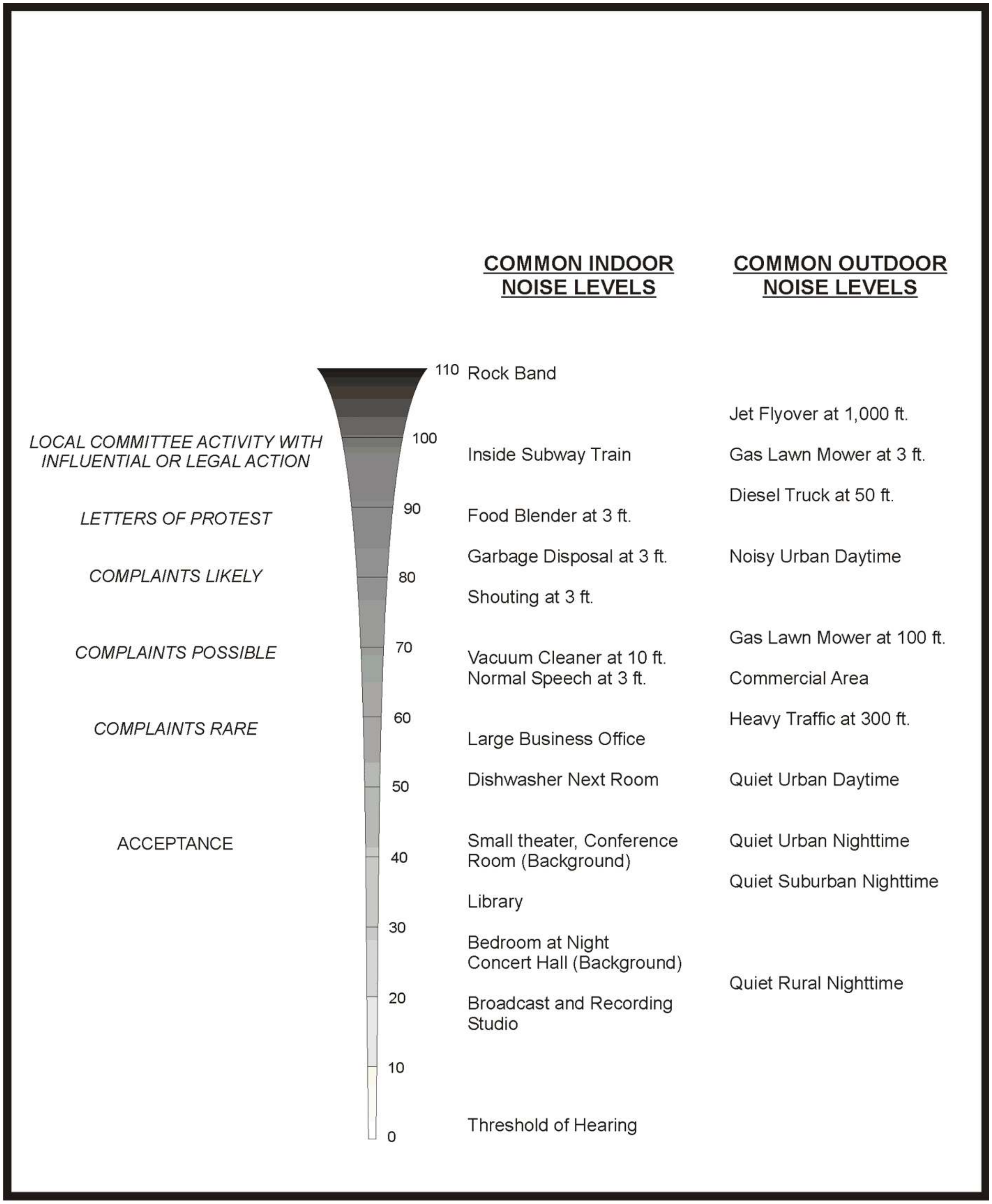
Characteristics and Measurements of Noise

Nature of noise. Noise levels are measured on a logarithmic scale, and are typically expressed in decibels (dB). A doubling of noise energy normally results in a 3 dB increase in noise levels. Because of the structure of the human auditory system, a 10 dB increase in noise is required to perceive a doubling of noise. A 1 to 2 dB change in ambient noise levels is generally not perceptible.

Noise levels are generally reported in terms of the "A" weighting scale, which modifies actual sound power levels to correspond to the human perception of sound. The symbol dBA indicates a noise measurement incorporating this weighting scale. Noise levels diminish (or attenuate) as distance from the source increases based on an inverse square rule, but the rate constant varies with the type of sound source. Sound from point sources, such as industrial facilities, attenuates at a rate of 6 dBA per doubling of distance. Heavily-traveled roads with few gaps in traffic behave as continuous line sources with an attenuation rate of 3 dBA per doubling of distance. Otherwise, roads typically have an attenuation rate of 4.5 dBA.

Factors Affecting Noise. The duration of noise and the time at which it occurs are important factors in determining the impact of noise on sensitive land uses. Such factors are accounted for by the Community Noise Equivalent Level (CNEL) and the Day-Night Average Level (DNL or Ldn), indices used to measure average daily noise levels. They are time-weighted average values based on the equivalent sound level (Leq), which is a constant sound level that equals the same amount of acoustic energy as actual time-varying sound over a particular time period. While the methods employed in determining a CNEL and Ldn reading differ slightly, the results of the two are generally equivalent. CNEL penalizes evening (seven to 10:00 p.m.) noise levels by 5 dBA and Ldn penalizes nighttime (10:00 p.m. to 7:00 a.m.) noise levels by 10 dBA.

Effects of Noise. People are subject to a multitude of sounds in their environment. Noise levels typical of indoor/outdoor environments and public response to these sounds are shown in Figure 6.8-1. Excessive noise can be not only undesirable but may also cause physical and/or psychological damage. The amount of annoyance or damage caused by noise is dependent primarily upon three factors: the amount and nature of the noise, the amount of ambient noise present before the intruding noise, and the activity of the person working or living in the noise source area.



LOS OSOS COMMUNITY SERVICES DISTRICT
WASTEWATER FACILITIES PROJECT

Figure 6.8-1
Noise Levels for Common Sources

The difficulty in relating noise exposure to public health and welfare is one of the major obstacles in determining appropriate maximum noise levels. Although there has been some dispute in the scientific community regarding the detrimental effects of noise, a number of general conclusions have been reached:

- Noise of sufficient intensity can cause irreversible hearing damage;
- Noise can produce physiological changes in humans and animals;
- Noise can interfere with speech and other communication; and
- Noise can be a major source of annoyance by disturbing sleep, rest, and relaxation.

Sensitive Noise Receptors. The Noise Element of the San Luis Obispo County General Plan identifies various land use types that are considered "noise-sensitive". These include residences, schools, health care services, churches, public assembly facilities, libraries, museums, hotels and motels, outdoor recreation areas, and offices. As noted under "Significance Thresholds" below, acceptable noise levels in areas which contain these uses are relatively diminished.

Existing Noise Environment

Traffic Noise. Major sources of traffic noise in the project area include Los Osos Valley Road and South Bay Boulevard. Traffic on these roads is sufficient to produce noise levels exceeding 65 dBA Ldn. Smaller, heavily-traveled roads such as those listed below generate noise levels above 60 dBA Ldn.

Table 6.8-1: Noise Contour Data: Distance (feet) from Center of Roadway to L_{dn} Contours

Segment Nos.	Description	1990 Existing (dB)		
		60	65	70
COUNTY AREA ROADS				
91-92	Los Osos Valley Rd (SLO Plng Boundary to Sombrero)	293	136	63
93-94	Los Osos Valley Rd (Sombrero Dr to South Bay Blvd)	252	117	54
95-96	Los Osos Valley Rd (South Bay Blvd to 9th St)	158	74	34
97-98	Los Osos Valley Rd (9th St to Pecho Rd)	106	49	23
99-100	Santa Ysabel Ave (2nd St to South Bay Blvd)	95	44	20
101-102	South Bay Blvd (Los Osos Valley Rd to URL)	223	104	48
103-104	El Morro Ave (3rd St to 11th St)	36	17	8
105-106	7th St (Ramona Ave to Santa Ysabel)	52	24	11
107-108	Ramona Ave (Pine St. to 11th St)	46	21	10
109-110	Pine Ave (Ramona Ave to Los Osos Valley Rd)	47	22	10
111-112	9th St (Ramona Ave to Los Osos Valley Rd)	56	26	12
113-114	Santa Ynez Ave (9th St to 11th St)	59	27	13
115-116	10th St (Los Osos Valley Rd to Nipomo Ave)	59	27	13

Source: Noise Element, San Luis Obispo County General Plan (1992)

Stationary Noise Sources. No significant stationary sources of noise currently exist in the project area. The nearest major stationary noise source is the Duke Power Plant, located in the City of Morro Bay. Noise from this plant is not sufficient to impact the Los Osos area.

Construction-Related Noise. Construction in the Los Osos area is sporadic and is generally associated with construction of new homes, existing structure renovations, and minor commercial development. This report does not attempt to quantify noise levels from these sources because they are intermittent in nature, and involve varying amounts and types of equipment.

Noise-sensitive Uses. The treatment plant is the only component of the project expected to generate noise on a long-term basis. Noise-sensitive uses in the vicinity of the treatment plant are listed in Table 6.8-2, below.

Table 6.8-2: Noise sensitive Uses Near the Treatment Plant and Distance from Aerators, Construction, and Other Noise Sources

Description	Distance from Construction/Site Boundary (feet)	Other Noise Sources (distance from nearest point - est. in feet)
Mobile Home Park	3274	Ramona Avenue (50)
Library	0	Los Osos Valley Road (400)
Community Center	50	Los Osos Valley Road (500)
Church	100	Los Osos Valley Road (900)
Residences - Skyline	3170	Los Osos Valley Road (350)
Other Residences (east)	1580	LOVR (700)
Other Residences (south)	50	LOVR (50)
Note: Nearest noise-sensitive use is in bold face type		

Regulatory Setting

The Noise Element contains policies that are applicable to all development in the County. The most relevant policy is shown below.

Policy 3.3.5 - "Noise created by new proposed stationary noise sources or existing stationary noise sources which undergo modifications that may increase noise levels shall be mitigated as follows and shall be the responsibility of the developer of the stationary noise source.

a. Noise from agricultural operations conducted in accordance with accepted standards and practices is not required to be mitigated.

b. Noise levels shall be reduced to or below the noise level standards in Table 3-2 [of the Noise Element] where the stationary noise source will expose an existing noise-sensitive land use (which is listed in the Land Use Element as an allowable use within its existing land use category) to noise levels which exceed the standards in Table 3-2. When the affected noise-sensitive land use is Outdoor Sports and Recreation, the noise level standards in Table 3-2 shall be increased by 10 dB. Where the noise source is one of the following electrical substations which is not modified so as to increase noise levels, the noise standards shall instead be fifty dB between 10 p.m. and 7 a.m. and fifty-five dB between 7 a.m. and 10 p.m., determined at the property line of the receiving land use: [includes the Cayucos, Baywood, and the Highway 1 between the Men's Colony and Morro Bay electrical substations].

c. Noise levels shall be reduced to or below [a daytime Leq of 50 dBA and nighttime Leq of 45 dBA] where the stationary noise source will expose vacant land in the Agriculture, Rural Lands, Residential Rural, Residential Suburban, Residential Single-Family, Residential Multi-Family, Recreation, Office and Professional and Commercial Retail land use categories to noise levels in excess of [these standards]. This policy may be waived when the Director of Planning and Building determines that such vacant land is not likely to be developed with a noise-sensitive land use."

Significance Thresholds

County of San Luis Obispo. According to the Noise Element, a significant noise impact occurs when a sensitive land use is exposed to stationary noise exceeding a daytime Leq of 50 dBA and a nighttime Leq of 45 dBA. These standards are increased by 10 dB for outdoor recreational activities.

The County has not developed thresholds for short-term noise levels. Thresholds for construction noise are therefore based upon the EPA report, "Information on Levels of Environmental Noise Requisite to Protect Health and Welfare with Adequate Margin of Safety" (1984), cited in the 1997 FSEIR for the CSA 9 project. According to these guidelines, an increase in noise exceeding existing background (ambient) noise by 10 dBA is considered to be disturbing, and would constitute a short-term annoyance. It should be noted that construction between the hours of 7 a.m. and 9 p.m. on weekdays, and 8 a.m. and 5 p.m. on weekends are exempted from regulation under the County Noise Ordinance. The Noise Ordinance also exempts activities associated with maintenance, which will therefore not be considered in this report.

Impact Analysis

Collection System

Construction Related Impacts

Impact N-1: Construction of the collection and disposal systems will generate temporary noise levels in excess of applicable standards. These impacts are considered significant unless mitigated (Class II).

Construction of the collection and leach field disposal systems will involve approximately 18 months of excavation and piping in various portions of the community. Typical equipment used for these operations and their associated noise levels are listed in Table 6.8-3 below. To portray the worst-case scenario, simultaneous operation of equipment is assumed.

Table 6.8-3: Collection System Construction Equipment and Associated Noise Levels

Equipment	Noise Levels (at 50 feet from source in dBA)	Average dBA	Ambient Noise Level	Amount in Excess of 10 dBA Threshold
Backhoe	72-95	83.5		
Pipelayer/drill	82-95	90		
Roller	73-75	73.5		
Loader	72-85	78.5		
Total Noise (Simultaneous operation)		91.4	55	26.4
Source: EPA. 1971. *Noise from Construction Equipment and Operations, Building Equipment and Home Appliances.* NTID 300-1				

In the 1997 FSEIR, the ambient noise level throughout the community was assumed to be 55 dBA. As mentioned under "Significance Thresholds" above, noise exceeding ambient levels by more than 10 dBA would be considered a short-term adverse impact. Noise generated by equipment used for the installation of the collection system would exceed thresholds by 26.4 dBA, thereby posing a short-term adverse impact to sensitive receptors in the community.

Installation is expected to take place in 200 foot increments. Impacts to individual receptors will therefore be minimized as the construction moves through the community. Mitigation included in the project will further reduce impacts to a less than significant level (Class III).

Operational Impacts

Impact N-2: Operation of the collection system will involve the use of pumps, which would be located underground and would not generate noise at significant levels. These impacts are considered adverse but not significant (Class III).

Approximately 11 pump stations would be located throughout the community as shown in Figure 3-3. The pumps will be installed in underground vaults within the roadway, and will range from 2 to 10 hP and powered by electric motors. Because the pump stations will be installed in underground vaults sealed from the ambient noise environment, noise impacts are not expected to be significant.

Treatment Plant

Construction Related Impacts

Impact N-3: Construction of the treatment plant will generate temporary, short-term impacts on surrounding noise-sensitive uses. These impacts are considered significant unless mitigated (Class II).

Construction crews will require approximately 12-18 months of continuous operation to complete the treatment plant. Construction plans for the plant have not yet been drafted. It is assumed, however, that equipment used for construction will be as follows: two tracked tractors (Caterpillar D8), two scrapers (Caterpillar 623E), one motor grader (Caterpillar 140G), one excavator (Caterpillar 245), and two wheeled loaders (Caterpillar 988B) would be used during site preparation. During construction, it is assumed that two cranes and one wheeled loader (Caterpillar 966B) would be used. To provide a worst-care scenario, operation of all equipment simultaneously is assumed.

Except near roadways, ambient noise levels are assumed to be 55 dBA Ldn. Site preparation would result in greater short-term impacts than treatment plant construction. Table 6.8-4 shows the expected noise levels caused by site preparation and construction activities."

Table 6.8-4. Treatment Plant Construction Noise Levels (dBA Ldn)

Distance from Site (feet)	Treatment Plant (Site Prep)	Treatment Plant (Construction)
100	*82.1*	*75.6*
200	*76.2*	*69.7*
400	*70.2*	64.1
600	*66.9*	61.2
800	64.6	59.5
1,000	62.9	58.3
1,200	61.6	57.6

Note: Noise more than 10 dB greater than ambient levels shown in italics.
Source: Fugro West, Inc. FSEIR, 1997

Noise-sensitive uses within 600 feet of the site would experience short-term noise levels that exceed County standards. Near the treatment site, this includes a portion of the sensitive uses listed in Table 6.8-2, above. It should be noted that although residences to the south of Los Osos Valley Road are within 600 ft., they are impacted by roadway noise. Mitigation incorporated into the project would reduce impacts to a less than significant level (Class III).

Operational Impacts

Impact N-4: Because the treatment plant will be constructed underground, operation of the treatment plant is not expected to increase ambient noise levels above County standards. These impacts are considered adverse but not significant (Class III).

Noise sources associated with plant operation include the following:

- Aerators (total of 70 hP, but will be underground)
- Vehicle Traffic (Staff Vehicles and Septage Trucks)
- Miscellaneous pumps

The 1997 FSEIR prepared for the CSA 9 system, which was an above-ground conventional system, assumed plant noise generation similar to that at the Morro Bay treatment plant. In general, conventional systems utilize mechanical aeration and other components which contribute to higher overall noise levels. Measured daytime noise was approximately 52 dBA at 100 feet from the plant, 2 dBA above acceptable stationary noise levels.

The noise generating components of the Hybrid Extended Aeration Wastewater Treatment Plant will be constructed almost entirely underground. The treatment components installed above ground will be housed in the operations building. For these reasons, operation of the treatment plant is not expected to generate noise in excess of county standards. Aspirating aerators, such as the type slated for the proposed system, pull air through a vortex to mix with water below. There is usually a low hum associated with operation, but significant noise is more likely if anything is worn or loose inside the aerator. A site visit by the CSD Board to a similar underground system operating in the community of Pacifica, California revealed that an underground plant produces virtually no exterior noise.

In addition to noise generated by plant operations, the plant is expected to generate approximately 10 vehicle trips per day which will increase ambient noise levels in the vicinity. Existing average daily traffic on nearby roadways is shown in Table 6.8-5 below.

Table 6.8-5: Project Area - Existing Roadway Traffic Levels and Project Impact

Roadway Segment	Project ADT	Existing ADT	Percent Increase	Relative Increase in dBA
Los Osos Valley Rd., west of Pine Ave.	10	5,300	0.1	N/A
Los Osos Valley Rd., west of Ninth St. (a)	10	8,300	0.1	N/A
Los Osos Valley Rd., west of South Bay Blvd.	10	13,400	0.07	N/A

N/A = Not audible
Source: *Draft Estero Area Plan EIR.* 1999.

According to Figure 3-2 in the *Noise Element Technical Reference Document* (1992), traffic levels on surrounding streets would have to increase approximately 60 percent to create the usually audible 3-dBA increase in noise. Increased traffic associated with the project will not be sufficient to create adverse noise levels.

ALTERNATIVE TREATMENT PLANT SITES

The main factor differentiating alternative treatment plant sites from a noise perspective is the proximity of nearby sensitive receptors during the construction phase of the project.

Holland. The Holland site is bordered on the south and west by residential neighborhoods; to the east is an elementary school. Noise impacts from construction would likely be greater than that experienced at the project site due to the proximity of residences. The Holland site is not large enough to offer sufficient separation or temporary noise buffers to minimize noise impacts.

Morro Shores Southwest. The Morro Shores Southwest site is most comparable to the project site in terms of existing noise sources and proximity of sensitive receptors. Residential neighborhoods to the west and south would experience similar noise levels during construction. The site does not offer any additional topographic or other physical features which would help minimize noise impacts, compared with the Tri-W site.

Pismo. The Pismo site is largely removed from sensitive noise receptors and would therefore expose fewer receptors to adverse construction noise impacts. The Middle School play field is immediately to the north and large-lot residential subdivisions are to the south. Overall, this site offers a superior setting for minimizing noise impacts when compared to the Tri-W site.

Andre. The Andre property is farthest removed from sensitive noise receptors, being located in a predominantly rural agricultural setting. This site offers the best noise environment among the alternatives regarding mitigation of construction noise impacts.

Disposal System

Construction Related Impacts

Impact N-5: Construction of the disposal leachfields within street rights-of-way and on the Broderson property will temporarily subject nearby residences to noise levels in excess of County Standards. These impacts are considered significant unless mitigated (Class II).

Installation of the leach fields will involve similar construction equipment and associated noise as that associated with the collection system.

In addition, four harvesting wells will be needed to ensure that groundwater mounding does not surface downslope of the Broderson disposal site. Each well will be constructed in an underground vault similar to the collection pump stations and would result in similar noise impacts.

Operational Impacts

Impact N-6: Noise generated by the operation of harvesting wells will increase ambient noise levels but not above County standards. These impacts are considered adverse but not significant (Class III).

As described above, the harvesting wells will be constructed in underground vaults and sealed from the ambient noise environment. No exterior noise is expected.

Mitigation Measures

Mitigation N-1: Construction will be limited to the hours of 7 a.m. to 6 p.m. on weekdays, and 8 a.m. to 5 p.m. on weekends. (Impacts N-1, N-3, N-5)

Mitigation N-2: The construction contractor shall agree to the following upon hire:

- Equipment shall be fitted with mufflers, in good operating condition and fitted with factory standard silencing features;
- A hauling route and staging plan shall be submitted to the LOCSD which is designed to minimize noise impacts with sensitive land uses;
- When available and proper for the task, contractor shall use electric versus diesel equipment;
- Portable noise barriers shall be employed where necessary to minimize noise impacts;

(Impacts N-1, N-3, N-5)

Mitigation N-4: Design of the treatment plant shall incorporate housing for pumps, aerators and other accessories generating noise in excess of 50 dB Leq. (Impact N-4)

Mitigation N-5: Operation and Maintenance plans for the facility will ensure that all pumps and aerators are kept in proper working order.(Impact N-4)

Residual Impacts

No residual impacts are identified.

Noise - Comparison of Alternatives

Project Impacts		Alternative Treatment Site			
		Holland	Morro Shores SW	Pismo	Andre
Impact N-1:	Construction of the collection and disposal systems will generate temporary noise levels in excess of applicable standards. These impacts are considered significant unless mitigated (Class II).	N/A	N/A	N/A	N/A
Impact N-2:	Operation of the collection system will involve the use of pumps, which would be located underground and would not generate noise at significant levels. These impacts are considered adverse but not significant (Class III).	N/A	N/A	N/A	N/A
Impact N-3:	Construction of the treatment plant will generate temporary, short-term impacts on surrounding noise-sensitive uses. These impacts are considered significant unless mitigated (Class II).	Comparable	Comparable	Less impact	Less impact
Impact N-4:	Because the treatment plant will be constructed underground, operation of the treatment plant is not expected to increase ambient noise levels above County standards. These impacts are considered adverse but not significant (Class III).	Comparable	Comparable	Less impact	Less impact
Impact N-5:	Construction of the disposal leachfields within street rights-of-way and on the Broderson property will temporarily subject nearby residences to noise levels in excess of County Standards. These impacts are considered significant unless mitigated (Class II).	N/A	N/A	N/A	N/A
Impact N-6:	Noise generated by operation of the harvesting wells will increase ambient noise levels but not above County standards. These impacts are considered adverse but not significant (Class III).	N/A	N/A	N/A	N/A
Overall		Comparable Impact	Comparable Impact	Less Impact	Less Impact

6.9 Public Health, Safety and Services

This section analyses potential project impacts to public health, safety and services required for construction and operation of the Wastewater Facilities Project.

Potential hazards to public safety associated with wastewater treatment facilities are generally limited to the risk of upset associated with the storage and use of chemicals within the treatment process, and to the risk of release of wastewater in the event of an accident or malfunction in the collection, treatment or disposal system.

Setting

Public Health and Safety/Hazardous Materials

Hazardous materials are defined as "*a substance or combination of substances which, because of its quantity, concentration, or physical, chemical or infectious characteristics, may either: 1) cause, or significantly contribute to, an increase in mortality or increase in serious irreversible, or incapacitating reversible illness; or 2) pose a substantial present or potential hazard to human health or environment when improperly treated, stored, transported, or disposed of or otherwise managed*" (California Code of Regulations [CCR], Title 22, Section 66084). Hazardous materials onsite will include:

- Diesel fuel for emergency generators (>250 gallons in double wall containers)
- Oils, lubricants, herbicides in minor quantities in operations center
- Polymers and alum for flocculation and settling
- Caustic (pH adjustment)
- Anhydrous ammonia (nitrogen source)
- Miscellaneous lab chemicals (acids, reagents, etc.)

Public Services

In general, public services required for the construction of the system would be limited to electrical power and motor vehicle storage. Operation of the system would require minor additional water supplies, and electrical power. Accident or upset conditions would require response from area fire and police personnel, as well as health and safety officials.

Regulatory Setting

To reduce public health and safety risks associated with hazardous materials, the storage, treatment, use and disposal of hazardous materials is regulated through a complex set of federal, state, and local laws and regulations. Agencies responsible for the regulation of these materials include: the United States Environmental Protection Agency (EPA), the California Department of Health Services (DHS), the California Environmental Protection Agency (CAL-EPA), and the San Luis Obispo County Division of Environmental Health.

At the federal level, the Superfund Amendments and Reauthorization Act (SARA) of 1986 specifically addresses the management of hazardous materials by requiring public disclosure of information relating to the types and quantities of hazardous materials used at various types of facilities. SARA is often referred to at the State level as the Emergency Planning and Community Right-to-Know Law (Assembly Bill 2185). The Right-to-Know Law addresses toxic air contamination emissions, inventories, community emergency planning, emergency release notification and hazardous chemical inventory reporting. In addition, this law also includes requirements for making hazardous material safety data sheets (MSDSs) readily available in the work place and mandates community information programs for industries with substantial hazardous material use.

An additional law applicable to the project is the State Hazardous Material Management Act (HMMA) which requires that any business which handles hazardous material in excess of specified threshold quantities (500 pounds of solid material, 55 gallons of liquid, or 200-cubic feet of compressed gas) must prepare a business plan. The business plan must include a complete inventory of hazardous material stored onsite, a location map indicating the specific area where hazardous materials are stored onsite, a training program for employees on the proper handling of hazardous materials and personnel protection measures, an evacuation plan for the business and surrounding properties in case of an accidental spill or release, an Emergency Response Plan (ERP), a financial liability statement, and a plan for closure and abandonment of the facility. Such plans must be prepared at the time when a new facility would begin operation and are recertified every 2 years or whenever the conditions change at the facility.

In San Luis Obispo County, the Division of Environmental Health is the local agency responsible for implementation of the hazardous materials inventory, reporting and release procedures. In addition, the County also has a hazardous response team coordinated between the California Department of Forestry and the County Fire Department. Applicable plans from these agencies are summarized below.

<u>San Luis Obispo County Fire Department Fire Protection Plan</u>. *The San Luis Obispo County Fire Department Fire Protection Plan* contains goals pertaining to the identification and control of hazardous materials. The plan is a joint document prepared by the California Department of Forestry (CDF) and the County of San Luis Obispo addressing issues relevant to fire management. Since the Fire Department and CDF also provide a hazardous response team, hazardous materials are also discussed in the Plan.

<u>Coastal Zone Land Use Ordinance, Title 23 of the San Luis Obispo County Code</u>. The Coast Zone Land Use Ordinance, Section 23.06.120 addresses the storage and use of Toxic and Hazardous Materials.

<u>Estero Area Plan (1988)</u>. The Estero Area Plan includes County land use policies for the coastal zone portion of the Estero Planning Area. Specific "development standards" are included to address special issues and conditions within individual communities. Proposed programs or recommended actions to assist communities in correcting local problems are also provided.

<u>Public Services Funding</u>. On August 20, 1991, the San Luis Obispo County Board of Supervisors adopted Ordinance No. 2519 establishing Title 18 of the County Code entitled "Public Facilities Fees." The ordinance established fees on new development in the county to pay for public improvements, public services, and community amenities that are needed as a result of development. The fees apply to construction permits issued for any development project and are intended to provide funding for fire protection, general government services, parks and recreation, Sheriff's patrol, and fee administration. The fee amounts for various types of construction are presented in Table 6.9-1.

Table 6.9-1: Public Facilities Fees

Facilities	Residential (Per Dwelling Unit)		Non-Residential (Per 1,000 Building Sq. Ft.)		
	Single Family	Multi Family	Office	Retail	Industrial
Fire	$ 723	$ 413	$891	$535	$382
General Government	503	287	621	372	266
Parks & Recreation	1,533	886	N/A	N/A	N/A
Sheriff's Patrol	126	71	157	95	66
Library	292	168	134	80	58
Subtotal	$3,177	$1,825	$1,803	$1,082	$772
Fee Administration	80	46	45	27	19
Total	$3,257	$1,871	$1,848	$1,109	$791

Source: San Luis Obispo County Public Facilities Fees, effective April 1999.

As shown in Table 6.9-1, a portion of the development fees are used for county fire protection facilities. By law, the revenue generated by these fees can only be used to fund capital facilities, such as the purchase of land, construction of buildings, or the purchase of major equipment. The revenue cannot be used to fund employee salaries or other operations and maintenance expenses. This fund is to provide services countywide on an as-needed basis.

Significance Thresholds

Public Health and Safety

According to CEQA Guidelines, *a project will normally have a significant effect on the environment if it will "create a potential public hazard or involve the use, production or disposal of materials which pose a hazard to people or animal or plant populations in the area affected".* A violation of applicable health and safety codes would also constitute a significant impact, as would the inability of local public services to respond to accident conditions.

Public Services

A project could have a significant effect on public services if:

- The project creates additional demand for public services beyond levels anticipated by the service provider;
- The project would substantially increase the demand for energy.

Impact Analysis

Collection System

Construction Related Impacts

Impact PS-1: Construction activities could accidently break main water supply lines, creating a localized loss of water for fire fighting. This impact is significant unless mitigated (Class II).

The Fire Department has expressed the need to provide a water tender to mitigate the temporary localized impacts associated with water supply interruption as may occur during construction.

Impact PS-2: Construction activities may result in additional calls for emergency personnel and may require specialized safety and rescue training and equipment. This impact is considered adverse but not significant (class III).

The Occupation Safety and Health Administration (CAL-OSHA) establishes specific safety and rescue requirements for construction activities which must be followed. Some of the specialized equipment would not be used beyond the life of the wastewater construction operations.

Impact PS-3: A break or malfunction in the collection system could result in the accidental release of untreated effluent. These impacts are considered significant unless mitigated (Class II).

As discussed in Chapter 6.1: Geology, the collection system would be designed for rapid repair and isolation of damaged sections. Operation of the collection and treatment system will require preparation of an Emergency Response Plan identifying manpower and equipment needed for efficient response to release onsite. The plan is required to address the following topics.

- Hazardous materials handling, storage and application.
- Hazardous material spill response.
- Emergency release of untreated influent from the collection system or treatment facilities.
- Emergency failure of treatment facilities, resulting in a release of untreated or primary treated effluent.

Impact PS-4: A break or malfunction in the collection system at a pump station could result in the accidental release of untreated effluent. These impacts are considered adverse but mitigated by measures incorporated into the project description (Class III).

The thirteen underground pump stations will be equipped with emergency electrical generators to provide for continued operation in the event of a power outage. The generators would utilize diesel fuel stored underground on the pump station site. Fuel storage would be in concrete-mounted storage tanks located adjacent to each generator in the underground pump vault. The storage tanks would include secondary containment and would be alarmed for leak detection. Storage of diesel fuel is common to industrial uses such as gas stations and fueling depots, and is not considered a significant public safety risk. Due to the fact that the proposed facilities include secondary containment and leak detection, potential impacts are considered less than significant.

Treatment System

Operational Impacts

Impact PS-5: Chemicals utilized within the proposed treatment process would be limited to agents utilized for sludge thickening, and to ensure adequate removal of nitrogen. Agent utilized (alum, polymer and methanol) are liquids with low human contact risks. This is considered to be potentially significant, but mitigable (Class II).

The proposed treatment process is based upon breakdown of influent utilizing an extended aeration process to promote denitrification in oxygenated and anoxic conditions. As such, hazardous material storage and use would be relatively limited. Chemical agents required with this type of treatment train include alum, an agent added to improve flocculation of solids, and polymer, an agent utilized to assist in sludge thickening. Neither of these agents have human contact risks, such as skin irritation. Additionally, methanol would be utilized to provide an additional food source during biological treatment to ensure adequate denitrification. Methanol, often referred to as wood alcohol, is classified as a hazardous material due to its flammable characteristics, and is toxic if ingested. In its dilute state, flammability characteristics of methanol are reduced. Storage and handling procedures would conform to appropriate state regulations and would subject to a Hazardous Materials Management Plan. Storage onsite for these materials would utilize above ground storage tanks (ASTs), and secondary containment would be provided through utilization of a wall or containment berm surrounding the tank area. These agents would be added to the treatment train through direct feed mechanisms controlled by the plant's SCADA (System Control and Data Analysis) system. Therefore, potential health risks associated with these agents is considered less than significant.

As discussed in Mitigation PS-1, operation of the treatment plant would require preparation and submittal of a Hazardous Waste Management Plan to the County Health Department for review and approval. This plan would identify material characteristics, storage volumes, handling procedures, and spill response. Project implementation would also include preparation of an Emergency Response Plan identifying manpower and equipment for efficient response to agent release onsite. The County Hazardous Materials Response Team is equipped to handle such a release. Therefore, potential public safety associated with storage and use of treatment agents onsite will be reduced to less than significant .

Impact PS-6: A malfunction of the treatment plant could result in the release of untreated wastewater to the surrounding environment. This impact is considered significant unless mitigated (Class II).

Effluent generated by the treatment plant would conform with effluent quality requirements established by the RWQCB in Order No. 83-12. These requirements include limitations for biological oxygen demand (BOD), suspended solids, turbidity, total nitrogen, coliform bacteria, dissolved oxygen, and chlorine residual, and are listed in Section 3.0, "Project Description."

The quality of effluent water resulting from the proposed treatment process would comply with requirements established by the RWQCB so long as the system is operated and maintained in accordance with accepted practice. Effluent discharged to the disposal leach fields, or potential release onsite or from disposal transmission lines, would not pose a health risk to the public.

The project will be designed to minimize the risk of upset or malfunction by incorporating redundancy in the treatment process and by incorporating on-site storage to allow time for the plant operators to repair interruptions to service. The project would be designed with parallel treatment trains in accordance with CCR Title 22 (see Figure 3-4). In this configuration, two parallel and identical treatment trains would be provided. This dual system provides redundancy for the entire treatment process. In addition, the project will be designed with approximately six hours of emergency storage at the treatment plant.

Project implementation would also include a Emergency Response Plan identifying humanpower and equipment for efficient response in the event of accidental releases of effluent. Therefore, potential impacts associated with effluent are considered less than significant (Class III).

Impact PS-7: Operation of the collection, treatment and disposal system will increase the demand for electrical power. This impact is considered adverse but not significant (Class III).

The Hybrid Extended Aeration treatment system and associated pumps for the operation of the collection and disposal system will increase the demand for electricity. Total electrical demand is expected to be about 2.1 million kilowatt hours per year. Although the demand for electricity is expected to increase as a result of the project, it is not expected to increase beyond anticipated levels for the community as a whole. The project will be new and constructed to current energy efficiency standards which will minimize electrical demand.

Impact PS-8: A malfunction of the treatment process could adversely affect water quality in a portion of the supply serving Los Osos. This impact is considered adverse but not significant because of measures incorporated into the project description (Class III).

The project description (Chapter 3) indicates that the Wastewater Facilities Project will incorporate harvesting wells to help ensure that wastewater re-introduced on the Broderson site does not surface downslope. Preliminary groundwater modeling indicates that 400,000 gpd must be pumped out of the groundwater to guard against surfacing. The water will be pumped back to the wastewater treatment plant and filtered and treated for nitrate reduction to cleanse the water to drinking water standards. The treated water will then be blended with existing water supplies in accordance with state and federal drinking water standards and distributed for consumption.

In the event of a malfunction in the nitrogen reduction process, water containing higher levels of pollutants could be re-introduced into the drinking water supply. However, the nitrate removal process, as with the treatment process itself, will contain parallel and redundant treatment systems. In the unlikely event that both systems malfunction, a number of safety features built into the system will protect the water supply. First, there is excess capacity built into the pipe system that conveys pumped groundwater to the treatment plant. Second, the harvesting wells are used to pump down the groundwater level so that the surfacing of mounded groundwater does not occur downslope of the Broderson disposal site. When the wells are fully operational and the mounding has reached the harvesting wells (about eight years after the system is operational) the groundwater level will be 20- 30 feet below the surface. If the harvesting wells were turned off, it would take about 14 days for the groundwater to surface, providing ample time to repair one or more of the ion exchange systems. It should be noted that this represents an absolute worse case in which both redundant systems fail and repairs require more than 24 hours to accomplish.

Bio-Solids Disposal

Operational Impacts

Impact PS-9: Disposal of bio-solids in a Class I or Class II landfill could adversely impact landfill capacity. This impact is considered significant unless mitigated (Class II).

Approximately1,640 pounds of brown sludge (bio-solids) would be produced by the wastewater treatment plant per day. Once treated to satisfy federal and state requirements, treated bio-solids would be removed from the Wastewater Treatment facility about three times per week and hauled to a Class I or Class II landfill. To be disposed of in a landfill, bio-solids must meet the pollutant concentrations specified by Title 40 Section 503.23 of the Code of Federal Regulations, which also prescribes landfill management practices to be followed for bio-solids handling. The bio-solids would be classified as Class B and be fully oxidized and stable. The moisture content would be approximately 25%.

Nearby landfills include Cold Canyon and Chicago Grade. According to a Site Engineer at Cold Canyon, although the recent expansion includes a lined disposal section, they have not historically accepted bio-solids. Their staff was uncertain regarding future policies for bio-solids and whether they would accept ongoing bio-solids disposal from the proposed wastewater system. It should be noted that capacity exists to accept the bio-solids associated with the project, and San Luis Obispo County received tentative approval for bio-solids disposal for the County proposed project. If Cold Canyon decides to accept the bio-solids, it would be required to meet restrictive standards and would be fairly costly (upwards of $88/ton).

A staff person from the Chicago Grade landfill in Atascadero indicated that they do not accept bio-solids due to the liquid content. The City of Atascadero has been allowed to dispose of their bio-solids, but only in a powder form.

It should be noted that the project will not start producing bio-solids for disposal until 2003. In the intervening time, the LOCSD will have the option of either securing permission to dispose of bio-solids at one of the landfills or constructing a bio-solids recycling facility.

Mitigation Measures

Mitigation PS-1 Hazardous Materials Management Plan. A Hazardous Materials Management Plan shall be developed and submitted to the County of San Luis Obispo Health Department for approval. The plan shall identify hazardous materials utilized onsite and their characteristics; storage, handling and training procedures; and spill contingency procedures. Additionally, the Plan should address fuel storage at the pump station sites. (Impact PS-3, PS-4, PS-5)

Mitigation PS-2 Best Available Technology. Project implementation shall be designed to conform with energy efficiency requirements outlined in Title 24 of the California Code. To the extent feasible, design of the proposed project should incorporate best available technology for energy efficiency . Additionally San Luis Obispo County APCD recommends the following measures be implemented to further reduce or offset long term emissions:

- Provide an on-site lunch room with refrigeration and food preparation (i.e., microwave) appliances to reduce daily trips to and from the treatment facility;
- Use of double paned windows in office area where interior heating/air conditioning will occur;
- Use of energy efficient interior lighting where applicable.

(Impact PS-6)

Mitigation PS-3 Prior to operation of the wastewater treatment system, the Los Osos CSD shall either 1) secure a contract for bio-solids disposal with a land disposal or recycling facility or 2) construct a bio-solids recycling facility that satisfies Title 40, Section 503 of the Code of Federal Regulations. (Impact PS-7)

Mitigation PS-4 The Los Osos CSD shall mitigate the potential temporary loss of water for fire fighting that may occur as a result of construction activities by either 1) acquiring a water tender, to the satisfaction of the Fire Chief, or 2) through some other equivalent means as determined by the Fire Chief and the CSD Board. (Impact PS-1)

Mitigation PS-5 All contractors shall comply with relevant provisions of CAL-OSHA CAC Title 8 regarding the provision of safety and rescue equipment, to the satisfaction of the Fire Chief. (Impact PS-2)

Residual Impacts

Applicable regulations and mitigation measures incorporated into the project would reduce all potentially significant impacts to a less than significant level. No residual impacts are identified.

ALTERNATIVES

The materials use and storage described above would occur at any of the alternative treatment plant sites. Since the impacts are considered not significant, none of the alternatives offer a significant environmental advantage to the preferred project site.

ALTERNATIVE TREATMENT PROCESSES

Sequencing Batch Reactor and Conventional Extended Aeration. A sequencing batch reactor (SBR) uses a similar quantity and type of materials as an extended aeration system. Likewise, a conventional extended aeration system is the same as the project except that it would be above ground and not odor scrubbed.

With regard to electrical power use, the estimated annual electricity costs for operating an SBR system when compared with the Extended Aeration and Hybrid Extended Aeration process are essentially the same, around $125,000 (Montgomery Watson Americas, 2000).

Public Safety and Services - Comparison of Alternatives							
Project Impacts		STEP/STEG	Alternative Treatment Site				
			Holland	Morro Shores SW	Pismo	Andre
Impact PS-1:	Construction activities could accidently break main water supply lines, creating a localized loss of water for fire fighting. This impact is significant unless mitigated (Class II).	Slightly Less	N/A	N/A	N/A	N/A
Impact PS-2:	Construction activities may result in additional calls for emergency personnel and may require specialized safety and rescue training and equipment. This impact is considered adverse but not significant (class III).	Slightly Less	N/A	N/A	N/A	N/A
Impact PS-3:	A break or malfunction in the collection system could result in the accidental release of untreated effluent. These impacts are considered significant unless mitigated (Class II).	Comparable	N/A	N/A	N/A	N/A
Impact PS-4:	Pump stations will be equipped with emergency generator facilities to ensure operation during power outages. Each pump station will include an underground diesel storage tank which could release fuel to the pump enclosure in the event of upset. These impacts are considered adverse but less than significant (Class II).	Comparable	N/A	N/A	N/A	N/A

Impact PS-5:	Chemicals utilized within the proposed treatment process would be limited to agents utilized for bio-solids thickening, and to ensure adequate removal of nitrogen. Agent utilized (alum, polymer and methanol) are liquids with low human contact risks. This is considered to be potentially significant, but mitigable (Class II).	N/A	Comparable	Comparable	Less impact	Less impact
Impact PS-6:	Operation of the collection, treatment and disposal system will increase the demand for electrical power. This impact is considered adverse but not significant (Class III).	Comparable	Comparable	Comparable	Comparable	Comparable
Impact PS-8:	A malfunction of the treatment process could adversely affect water quality in a portion of the supply serving Los Osos. This impact is considered adverse but not significant because of measures incorporated into the project description (Class III).	N/A	Comparable	Comparable	Comparable	Comparable
Impact PS-9:	Disposal of bio-solids in a Class I or Class II landfill could adversely impact landfill capacity. This impact is considered significant unless mitigated (Class II).	N/A	Comparable	Comparable	Comparable	Comparable
Overall		Comparable Impact	Comparable Impact	Comparable Impact	Slightly Less Impact	Slightly Less Impact

6.10 Visual Resources

Background

The visual character of an area is a measure of the quality and sensitivity of the visual resource. Visual quality can be described as the overall impression that is retained after driving through, walking through, or flying over an area (U.S. Bureau of Land Management 1980). Visual resources sensitivity is determined by the extent of the public's concern for a particular viewscape, the number of people who see the viewscape, and the viewing duration.

Visual sensitivity is assumed to heighten the overall importance of a view. Sensitive viewer groups, however, vary in direct relation to the length of viewing exposure and viewing expectation. For example, residential viewers are considered a sensitive viewing group; this group is typically small in number but the viewing experience is of a longer duration. Residential viewers typically have a high concern for maintaining high quality views from residences. Commuting motorists are considered a less sensitive viewer group; this group is typically large in number and has a short viewing duration and fleeting exposure to a particular view; the quality of views is of lesser importance. If both viewing groups are exposed to the same view, the overall visual quality would be considered higher for residential viewers than for commuters.

Both natural and human made features that comprise a landscape contribute to its perceived image and visual quality. Visual quality is influenced by a wide range of landscape characteristics, including, geology, hydrology, plant and animal life, recreational, and altered features.

Visual images, the moods they create, and their perceived visual quality can be transitory. Images can vary significantly, not only through the seasons but even hourly, as weather, light, shadow, and the elements that make up the viewscape change. Judgements of visual quality must also be made in the context of a regional frame of reference (U.S. Soil Conservation Service 1978). The same landform or visual resource appearing in different geographic areas could have a different visual quality and sensitivity in each setting. For example, a small hill may be a significant visual element on a flat landscape but have little significance in mountainous terrain.

Methodology

The evaluation of existing visual resources in the landscape requires the application of a process that objectively identifies the visual features, or resources, of the landscape; assesses the character and quality of those resources relative to overall regional visual character; and identifies the importance to people, or sensitivity, of views of visual resources in the landscape. It is against this baseline (existing) condition that an alteration to the landscape can be systematically evaluated. The severity of the impact depends on both the magnitude of change in the visual resource (i.e., visual character and quality) and viewers' responses to and concern for those changes.

The approach used for this visual assessment involves the following:

- Review relevant local policies regarding the protection of visual resources;
- Inventory existing visual resources (i.e. visual character and quality of the region, the immediate project area, and site using descriptions and photographs);
- Identify important viewing locations (e.g. neighborhoods and roads) and the general visibility of the project area and site using descriptions and photographs;
- Identify viewer groups and their sensitivity;
- Establish thresholds of significance for visual impacts;
- Identify visual impacts and the significance of the impacts; and
- Identify mitigation measures that would reduce significant effects to a less-than-significant level.

The Visual Resource Management (VRM) system developed by the Federal Highway Administration (FHWA, 1981) was used as an evaluation tool to determine impacts to visual resources in terms of resource change and viewer sensitivity. The VRM system divides the full range of resource changes into thirds and describes potential impact in terms of a low, moderate, or high rating. Resource change was measured through the assessment of visual character, visual quality, and viewer response to proposed land use changes. Viewer sensitivity was measured by viewer exposure and viewer concern. Viewer exposure includes the visibility of a site and the number of people viewing the site, and viewer concern was based on viewer activities and expectations. Viewer sensitivity was assigned a low, moderate, or high sensitivity rating. Visual impacts were based upon both the extent of the resource change and the viewer sensitivity.

This analysis uses a descriptive approach for describing and evaluating the project site's visual resources. Visual quality is evaluated based on the relative degree of vividness, intactness, and unity apparent in a viewscape as modified by its visual sensitivity. The terms vividness, intactness, and unity are defined as follows:

- *Vividness* is the visual power or memorability of landscape components as they combine in striking or distinctive visual patterns.

- *Intactness* is the visual integrity of the natural and human-built landscape and its freedom from encroaching elements; this factor can be present in well-kept urban and rural landscapes, as well as natural settings.

- *Unity* is the visual coherence and compositional harmony of the landscape considered as a whole; it frequently attests to the careful design of individual components in the landscape (Federal Highway Administration 1983).

High-quality views are highly vivid and relatively intact and possess a high degree of visual unity. Low-quality views lack vividness, are generally not visually intact, and possess a low degree of visual unity. Viewer sensitivity heightens the overall importance of a view.

The appearance of the landscape is described below using these criteria and descriptions of the dominance of elements of line, color, and texture. These elements are the basic components used to describe visual character and quality for most visual assessments (U.S. Forest Service 1974, Federal Highway Administration 1983).

Visibility and visual dominance of landscape elements are described with respect to their placement within the field of view. Foreground elements are those features nearest the viewer, and background elements are features at a greater distance from the viewer. The middle ground of a view is intermediate between the foreground and background. A viewshed is defined as all of the surface area visible from a particular location or sequence of locations (e.g., roadway or trail) (Federal Highway Administration 1983).

Setting

The community of Los Osos lies at the western end of the Los Osos Valley. Los Osos forms a portion of the visual backdrop from the southern end of Morro Bay and is visible from the City of Morro Bay and the estuary, two major features that make up the scenic backdrop to the community. Other features in the region include the Irish Hills to the south and the Morros to the northeast. Terrain ranges from gently sloping rolling hills to natural communities containing oak savannah and chaparral. Open space areas include perennial streams, rangelands, and oak woodlands. The inland valley is dedicated primarily to agriculture including row crops and dry grain farming.

Site-Specific Setting

The preferred wastewater treatment site known as the Tri-W property is located in the west central portion of Los Osos. This area is characterized by a mix of older and newer residential neighborhoods, a mobile home park, the County Library, and the open space along the north and west sides of the project site. The Tri-W site occupies approximately 11 acres and is located at the southeast corner of Los Osos Valley Rd. and Palisades Drive. Ramona Avenue is located to the north and Skyline Drive is located to the west. The site gently slopes downward to the north, away from Los Osos Valley Rd. and is covered with a variety of native and introduced plant species, including eucalyptus trees, lupine, manzanita, and coast live oak.

Views of the Project Site from Surrounding Residences. Residences located north of the project site have views oriented south toward Los Osos Valley Road and the Irish Hills. These views expand across undeveloped land with annual grasslands, mature trees, and coastal scrub vegetation and are considered highly vivid and intact. Residences along community streets have intact views of a small, residential area that provides a suburban character to the viewshed. Residences along the south side of the project site have views oriented north toward Ramona Avenue and consist primarily of grasses and eucalyptus trees in the middle ground, and obstructed views of Baywood Park and Morro Bay. Views of this area are highly vivid and of good quality.

Views from residences include partially screened homes, commercial development, the community library, and a small church. These views are considered intact and of moderate visual quality.

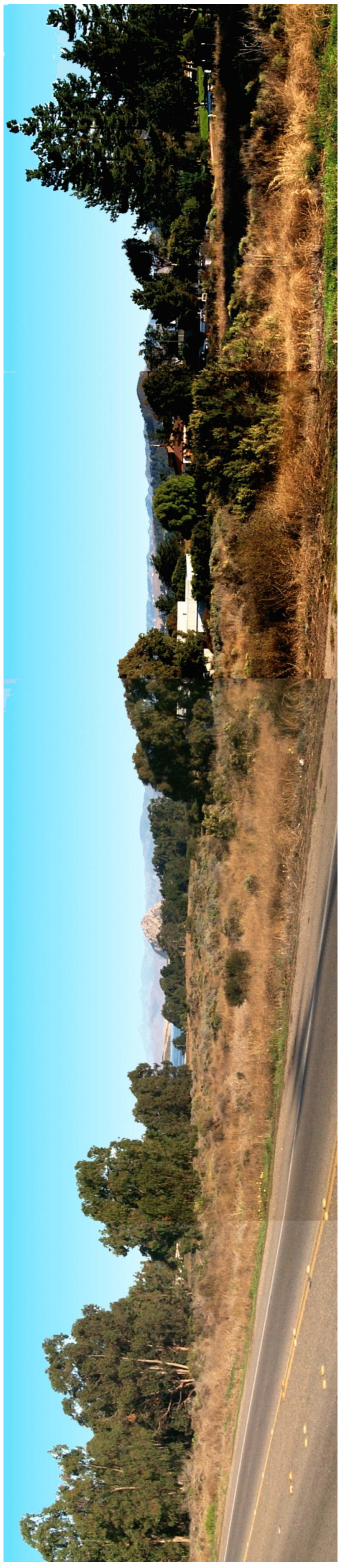
Views from Major Roadways in the Project Area. The Tri-W site can best be viewed from Los Osos Valley Road and Palisades Drive. Other roads that may have partial views of the project site include Skyline Drive and Ramona Avenue. Commuters have good quality views of the project site traveling east and west along Los Osos Valley Road. Views from this road include agricultural flatlands of the Los Osos valley; the Irish Hills; partially screened single-family homes to the northwest along Skyline Drive; the community center, library, and the county park; and the mobile home park to the north. Background views from Los Osos Valley Road also include highly vivid and intact views of Morro Bay and Morro Rock.

Views from Ramona Avenue consist of tall, mature eucalyptus trees and shrubs and partially screened residences. Views in a southerly direction from this road include Los Osos Valley Road, single-family homes and the Irish Hills. These views are intact and of good quality.

Views from Palisades Drive consist of partially screened residences, tall mature eucalyptus trees, and obstructed views of Morro Bay. Views in a westerly direction from this road include single family residences along Los Osos Valley Road and Skyline Drive, and a partially screened mobile home park.

Views from Skyline Drive primarily include partially screened single family homes to the south and north. Views oriented in an easterly direction from this road include the community center and the library; tall, mature trees; grassland, and shrub vegetation. These views are considered intact and of good quality.

Figure 6.10-1: View of the Tri-W Site from Los Osos Valley Road



Regulatory Setting

The 1988 Estero Area Plan. The Area Plan contains policies and standards relating to visual quality in the Los Osos area.

The California Coastal Act of 1976. Section 30251 of the Coastal Act specifically addresses the preservation of scenic and visual qualities, emphasizing the protection of ocean and coastal views from public viewing areas such as highways, roads, beaches, parks, coastal trails and access-ways, vista points, and other public vistas.

The Coastal Plan Policies Document is part of the Land Use Element/Local Coastal Plan (LUE/LCP)and contains policies that have been incorporated into the LUE/LCP as standards or policies. The Coastal Plan Policies Document sets forth a number of policies related to the preservation of visual and scenic resources, including:

- Protecting visual and scenic resources;
- Selecting sites for new development;
- Stringline method for siting new development;
- New development in rural areas;
- Landform alterations;
- Special communities and small-scale neighborhoods;
- Preservation of trees and native vegetation;
- Utility lines within view corridors;
- Signs;
- Development on beaches and sand dunes; and
- Development on coastal bluffs.

Coastal Zone Framework for Planning. The Coastal Zone Framework for Planning contains baseline information and policies that are further refined and applied through the area plans. The Framework for Planning also contains information pertaining to visual and scenic resources, including circulation design considerations, allowable uses within land use categories, and the combining designations program description and definitions.

The Agriculture and Open Space Element. The Agriculture and Open Space element includes policies regarding establishment of scenic corridors and development within these corridors. Additionally, numerous policies aimed at the protection of natural resources may have an indirect effect on the protection of visual resources. Further, the Agriculture and Open Space Element recommends studying the following roads and highways to determine if and where scenic corridors should be designated (OSP 24):

- Los Osos Valley Road between Clark Valley Road and Foothill Boulevard
- South Bay Boulevard from Santa Ysabel Avenue to Highway 1

OSP 25 contains policies to protect scenic vistas within scenic corridors through location of structures, grading, screening and design, and placement of signs in discretionary development and land divisions.

Significance Thresholds

Criteria for determining the significance of impacts are based on Appendix G of the State CEQA Guidelines which state that a project will normally have a significant effect on the environment if it will:

- Conflict with adopted environmental plans and goals of the community where it is located; or

- Have a substantial, demonstrable negative aesthetic effect.

Visual impacts of this project are considered significant if the project:

- Substantially reduces the visual quality of existing views from major roads, parks, or residences in the project area;
- Is highly visible from a primary viewing corridor; or
- Conflicts with the visual resources policies or plans as described above.

Impact Analysis

Collection and Disposal System

The collection system will consist of approximately 204,000 feet of sewer mains. In addition to the gravity and pressurized sewer lines, a series of 11 pump stations would be needed. Pump stations would provide continuous pressure in the sewer line to enable to transfer of wastewater to the treatment plant from areas that cannot be served by gravity. The sewer pipes and pumps will be installed underground in the street rights-of-way. The system will be fairly shallow to minimize surface and street disruption during construction. There will be large equipment stationed where the trenches are being dug, as well as temporary excavation and disturbances of the soil.

Construction Related Impacts

Impact AES-1: Temporary construction activities related to the collection and disposal systems will involve the use and storage of construction equipment which will adversely affect the visual quality of construction areas throughout the community. These impacts are considered adverse but not significant (Class III).

This is not considered a significant impact and will be assisted by Mitigation Measure AES-1.

Impact AES-2: Construction of the disposal leach field on the Broderson property will result in temporary visual impacts associated with vegetation removal. This impact is considered adverse but not significant (Class III).

Treated wastewater will be pumped to subsurface leach fields where it will percolate into the shallow aquifer. The preferred site for the leach fields is known as the Broderson site, which is located in the foothills south of the community and south of Highland Drive as shown in Figure 3-5. The Broderson site is characterized by a relatively undisturbed 80-acre site that slopes upward to the south from Highland Drive. The site contains good examples of several types of plant communities including a dense area of Morro manzanita toward the southern end of the property; more importantly, the site is considered critical habitat for the morro shoulderband dune snail. The surrounding area contains residential development to the north and west and privately owned undisturbed land that lies to the east and south. The subsurface leach fields will occupy approximately eight acres which will be re-vegetated once the leach fields are installed. The remaining undisturbed area will be set aside to preserve important plant communities and snail habitat.

Construction of the subsurface leach fields will require the removal of portions of the existing vegetation over approximately 8-acres of area. Although, a site plan has not yet been prepared for the disposal site, it is likely that the leach field will be located at the southern end of the northerly 40-acres. The leach fields will be underground and not be visible from the surrounding areas once installed. Until the re-vegetation of the disturbed area matures, the area will be visible but not from a prominent vantage.

Treatment Plant

The treatment facility consists of two major components, the primary treatment areas, which are buried beneath the park; and a cluster of buildings that include final treatment and processing, lab facilities, visitor and operations space and maintenance facilities. Preliminary site plans (see Figure 3-8) show buildings clustered on the north side of the site. Approximately three-quarters of the treatment facility will be located below grade, thereby minimizing visual impacts, and creating additional area for recreational uses. Vehicular access to the treatment facility will be directly from the northerly extension of Ravenna Avenue.

A new office and public meeting hall for the CSD, which will be located in a single story building near the County Library site.

As illustrated in Figure 3-8, park improvements will include turf playfields, demonstration/community gardens with water features, riparian gardens, and a fenced dog park located on the southern half of the property closer to Los Osos Valley Road. A multi-use path will be constructed along the perimeter of the project site in addition to a native landscaping buffer. The buildings will be clustered on the northerly portion of the site and set into the natural grade so that only a portion of the roofs are visible from Los Osos Valley Road. Although the building design and materials have not yet been determined, the final building design and materials are expected to be consistent with the form and residential character of surrounding development.

Construction Related Impacts

Impact AES-3: Construction activities associated with the treatment plant would result in temporary, short-term impacts on views from Los Osos Valley Road as well as nearby land uses. These impacts are considered significant unless mitigated (Class II).

Development of the Tri-W site will result in temporary impacts to the views from Los Osos Valley Rd and surrounding residences during construction activities. Construction equipment and associated vehicles would be visible from the adjacent residences for the duration of construction activities which are expected to last between eighteen months to two years.

Impact AES-4: Construction of the treatment facility and park would permanently alter the visual character of views from Los Osos Valley Road and Palisades Drive, and to a lesser degree from Skyline Drive and Ramona Avenue. The quality of the views from Los Osos Valley Road are considered vivid and in tact. In addition, the quality of the views from the surrounding residences will also be altered. These impacts are considered significant unless mitigated (Class II).

Construction and operation of the proposed treatment facility would involve the removal of native vegetation (see Section 6-11: Biological Resources) which would permanently alter views of Morro Bay from neighboring homes and from Los Osos Valley Road. However, views from surrounding properties and from Los Osos Valley Road will be maintained due to the underground construction of the treatment plant and the incorporation of the treatment plant design into the slope of the site. Views from Los Osos Valley Road will be over the project to the Bay beyond. The scale and character of buildings associated with the project will be consistent with the form and character of surrounding development.

Impact AES-5 Security lighting for the proposed wastewater treatment facility would have the potential to adversely impact nearby residential uses.

Security lighting would be required for the treatment plant; however, a lighting plan has not been developed to date. Lighting will be required to comply with relevant provisions of the County Coastal Zone Land Use ordinance.

Mitigation Measures

Mitigation AES-1: Construction staging Area. For all aspects of the project, construction staging areas shall be located away from sensitive viewing areas to the extent feasible. Before construction activities begin, an area for construction equipment storage away from direct views of sensitive viewing corridors (e.g. residences and major roads in the project area) shall be designated. (Impact AES-3)

Mitigation AES-2: Conformance With County Development Standards. The final design and construction plans for the park and treatment plant site shall be consistent with relevant visual resource protection policies and standards of the San Luis Obispo County General Plan, Estero Area Plan, Coastal Zone Framework for Planning, and the Agriculture and Open Space Element. (Impact AES-4)

Mitigation AES-3: Landscaping Plan. A final landscaping plan shall be prepared for the entire project site and approved by the County prior to building permit issuance for the Tri-W site. Said landscaping plan shall emphasize native plant materials and shall include sufficient planting to screen views of the project from nearby roads and residential developments. The goal for the landscaping plan shall be to visually integrate the project into the community by creating a park-like setting, while preserving and enhancing existing views. (Impact AES-4)

Mitigation AES-4: Revegetation Plan. A revegetation plan shall be prepared to the satisfaction of the US Fish and Wildlife, California Department of Fish and Game and San Luis Obispo County for the 8-acre portion of the Broderson site that will be disturbed by the installation of the disposal leach fields. The plan shall be prepared by a qualified landscape architect and/or botanist and shall, to the extent feasible, restore the site to its condition prior to disturbance. (Impact AES-4)

Mitigation AES-5 Lighting Plan. A final lighting plan shall be prepared for the treatment facility. The lighting plan shall meet County design standards. This shall include proper shielding, proper orientation and applicable height standards. (Impact AES-5)

Residual Impacts

No adverse residual impacts are anticipated.

ALTERNATIVE TREATMENT SITES

Holland. The Holland site offers similar visual characteristics as that of the project site, except that site vegetation is more disturbed (view is less intact) and residences adjoin the site to the west. The site offers less obstructed views of Morro Bay from Los Osos Valley Road but for a shorter duration. The site affords similar topographic conditions as those of the Tri-W site and would allow the treatment plant to be constructed underground with minimal surface features to impair views. Park facilities constructed on this site would be highly visible from Los Osos Valley Road and surrounding properties. Overall, the visual qualities and opportunities for visually-sensitive development of this site are comparable to that of the Tri-W site.

Morro Shores Southwest. The Morro Shores Southwest is located immediately west of the project site and is therefore most comparable among the alternatives with regard to visual character and impacts. The site is characterized by gently sloping terrain with coastal scrub vegetation and several large eucalyptus trees. The site is visible from Los Osos Valley Road, and surrounding residential uses. Overall, the visual qualities and opportunities for visually-sensitive development of this site are comparable to that of the Tri-W site.

Pismo. The Pismo site is located east of South Bay Blvd. and immediately south of the Los Osos Middle School. The property slopes gently from South Bay Boulevard toward Los Osos Creek; adjacent to the South Bay Boulevard right-of-way the site contains a prominent high point which screens views of the site south of Pismo Avenue. The surrounding land uses include the Los Osos Middle School athletic fields to the north, undeveloped land to the east, and residential neighborhoods west of South Bay Blvd. Additionally, there are two residences located southwest and an orchid growing operation to the southeast.

The site is more rural in character since the surrounding lot sizes are larger (1-5 acres) and predominantly residential or small ranches. The topography of the site helps screen views from South Bay Boulevard and the sparsity of surrounding residences minimizes impacts to permanent viewsheds. Visual impacts associated with this site would be slightly less than those associated with the Tri-W site.

Andre. The Andre site is located on the north side of Los Osos Valley Road adjacent to the Los Osos Valley Memorial Park in an area characterized by agricultural operations and large lot residential and quasi-public (churches) uses. The site slopes gently to the north toward Warden Lake from atop a rise east of Los Osos Creek and would afford similar opportunities for screening as the project site. The parcel stretches 0.25 miles north of Los Osos Valley Road which would allow the treatment plant to be constructed above ground to save costs, while minimizing the obstruction of views from Los Osos Valley Road Overall, this site offers less visual impacts for treatment plant construction as the Tri-W site.

ALTERNATIVE SITES FOR BIO-SOLIDS DISPOSAL

All of the alternative sites for bio-solids recycling are located in rural areas and could be developed in a manner that minimizes impacts to views from the adjoining road.

Visual Quality - Comparison of Alternatives

Project Impacts		Alternative Treatment Site: Holland	Morro Shores SW	Pismo	Andre
Impact AES-1:	Temporary construction activities related to the collection and disposal systems will involve the use and storage of construction equipment which will adversely affect the visual quality of construction areas throughout the community. These impacts are considered adverse but not significant (Class III).	N/A	N/A	N/A	N/A
Impact AES-2:	Construction of the disposal leach field on the Broderson property will result in temporary visual impacts associated with vegetation removal. This impact is considered adverse but not significant (Class III).	N/A	N/A	N/A	N/A
Impact AES-3:	Construction activities associated with the treatment plant would result in temporary, short-term impacts on views from Los Osos Valley Road as well as nearby land uses. These impacts are considered significant unless mitigated (Class II).	Comparable	Comparable	Comparable when viewed from South Bay boulevard	Less impact
Impact AES-4:	Construction of the treatment facility and park would permanently alter the visual character of views from Los Osos Valley Road and Palisades Drive, and to a lesser degree from Skyline Drive and Ramona Avenue. The quality of the views from Los Osos Valley Road are considered vivid and in tact. In addition, the quality of the views from the surrounding residences will also be altered. These impacts are considered significant unless mitigated (Class II).	Comparable	Comparable	Comparable when viewed from South Bay boulevard	Less impact
Impact AES-5:	Security lighting for the proposed wastewater treatment facility would have the potential to adversely impact nearby residential uses.	Comparable	Comparable	Less impact	Less impact
Overall		Comparable Impact	Comparable Impact	Less Impact	Less Impact

6.11 Biological Resources

Biological impacts from the proposed Los Osos Wastewater Facilities project have been evaluated largely through project-specific field studies. Data from other studies which have been conducted within Los Osos has also been incorporated. This chapter includes site-specific species and habitat descriptions as well as impact analysis for the Tri-W and Broderson sites, as well as general information about the following alternative treatment locations: 1) Holland, 2) Pismo, 3) Morro Shores Southwest, 4) Andre and the following disposal locations: 1) Vista de Oro, 2) Monarch Grove, 3) LOVR/Pine Avenue, 4) Pismo and Santa Maria Avenues, and 5) Powell. This section uses the following terminology to describe locations: "project area" refers to much of the community of Los Osos, which will be served by the proposed facility, including the proposed treatment and disposal sites. "Morro Shores" refers to the property which includes the Tri-W site and Morro Shores Southwest, but is defined in whole by Ramona Avenue on the north, Palisades Drive on the east, Los Osos Valley Road on the south, and Broderson Drive on the west. Other more specific locations are identified as described above and in the project description.

Appendices referenced in this section include: (A) Wildlife, and (B) Flora. Interested parties are invited to refer to these appendices for further information.

Setting

Regional Setting

The project area is located in the Los Osos Valley, in the central portion of coastal San Luis Obispo County. The area is bounded on the west and northwest by Morro Bay and the Pacific Ocean, on the northeast by Park Ridge, and on the south by the Irish Hills. The project area occurs within the Central Coast subregion of the California Floristic Province. The climate within this subregion is strongly influenced by maritime conditions and typically consists of cool winters and mild summers, with fog and wind occurring frequently (Hickman, 1993). Land uses of the project area include residential, limited commercial, open space, and agriculture.

Topography of the project area ranges from steep slopes and rolling hills located to the south and adjacent to the Irish Hills, to broad floodplains, tidal flats and channels associated with Los Osos Creek and Morro Bay, respectively. The majority of the project area is overlain by a late-Pleistocene and Holocene Dune complex, with valley fill occurring adjacent to Los Osos Creek and its tributaries. Elevation ranges from approximately 400 feet above mean sea level (msl) in the southern portion of the project area to less than 10 feet msl in areas located adjacent to Los Osos Creek and Morro Bay.

Wildlife

Invertebrates. Invertebrates consist of insects, arthropods (spiders and allies), mollusks, crustaceans, and several other groups of animals. Invertebrates constitute the largest and most diverse group of animal life on earth and in the project area; however, no attempt was made to catalogue the invertebrate fauna. Invertebrate surveys were limited to those species considered to have special status.

Vertebrates. Vertebrate fauna consists of mammals, birds, reptiles and amphibians, and fish. Numerous wildlife species are known to occur at the project site, some of which were directly or indirectly observed during field surveys. A list of all vertebrate wildlife observed at the project sites and reported from the vicinity are included in Appendix F-Wildlife.

Plants

The flora of the project area is composed of a wide variety of plants found in both vascular and nonvascular groups. Those plant taxa observed during the site investigations of the project area and those reported in other literature are listed in Appendix G-Flora. This list includes each taxon's scientific name, common name, growth habit (annual, biennial, or perennial grass, herb, vine, or fern; shrub; or tree for vascular plants; and crustose, foliose, or frutiose for lichens), a family affiliation, and the project site in which it was observed, reported, or where suitable habitat is present.

Vascular Plants. The vascular plant flora of the Los Osos area is highly varied and consists of native, naturalized, and planted herbs, grasses, shrubs, vines, and native or introduced trees.

The majority of the Los Osos area contains primarily native vegetation dominated by shrubs and herbs such as California sagebrush (*Artemisia californica*), heather goldenbush (*Ericameria ericoides*), buckwheat (*Eriogonum* spp.), black sage (*Salvia mellifera*), horkelia (*Horkelia cuneata*), Morro manzanita (*Arctostaphylos morroensis*), wedgeleaf ceanothus, (*Ceanothus cuneatus*) dune almond (*Prunus fasciculata var. punctata*), and California croton (*Croton californicus* var. *californicus*). Wetland and riparian areas within the Los Osos area are mostly dominated by native species including arroyo willow (*Salix lasiolepis*), umbrella-sedge (*Cyperus eragrostis*), and various rushes (*Juncus* spp.). Smaller portions of the Los Osos area contain mostly vegetation characteristic of disturbed areas, and are dominated by naturalized species such as poison oak (*Toxicodendron diversilobum*) sweet fennel (*Foeniculum vulgare*), summer mustard (*Hirschfeldia incana*), black mustard (*Brassica nigra*), wild oat (*Avena fatua*), and bristly oxtongue (*Picris echioides*).

Various exotic plants occur throughout the Los Osos area and are typically found along the sides of roads, along the fringes of developed areas, and in areas that have been previously disturbed. Invasive exotic plants were observed in association with several plant communities of the project area and included such species as ice plant (*Carpobrotus chilensis*), Veldt grass (*Ehrharta calycina*), and Andean Pampas grass (*Cortaderia jubata*).

Nonvascular Plants. Nonvascular plants are lower plants that generally lack vascular tissues or structures, that is, specialized cells or tissues that conduct fluids from one part of the plant to another. Nonvascular plant groups include fungi (mushrooms and molds), bryophytes (mosses and liverworts), algae (marine and freshwater), and lichens. Lichen taxonomy follows Esslinger and Egan (1995). Some lichens are being considered for listing by the U.S. Fish & Wildlife Service (USFWS). A list of potentially rare mosses and lichens is being considered by the California Native Plant Society (CNPS) for inclusion in their plant inventory (D. Tibor, pers. comm.). To date, no species of nonvascular plants has been officially adopted or ranked by the CNPS.

Site-Specific Setting

This section provides a description of the biological resources of the treatment and disposal sites, as observed during field investigations conducted during 1999 and 2000 by Jones & Stokes, and from recent documentation. The presence and distribution of special-status plant and wildlife species that have potential or are known to occur at the project sites is discussed later in this chapter.

The vegetation classification follows Sawyer and Keeler-Wolf (1995) to the extent the classification covers local communities, and includes plant associations identified in the Los Osos/Baywood Park greenbelt conservation plan (Jones & Stokes 1997).

General

Nonnative tree stands. Within the project area, there are stands of Monterey cypress (*Cupressus macrocarpa*) and Tasmanian blue gum (*Eucalyptus globulus* ssp. *globulus*), commonly known as eucalyptus. The Monterey cypress, while native to California, was introduced to Morro Bay and elsewhere as a landscape plant. Eucalyptus were imported primarily from Australia, and were originally planted in groves throughout many areas of coastal California as a potential source of lumber and for their use as windbreaks. Usually, in areas where eucalyptus form dense stands, growth of native plants within the immediate vicinity is completely inhibited. A eucalyptus stand of about 40 trees exists on the Morro Shores site. Both Monterey cypress and eucalyptus exist on the Broderson site. Eucalyptus also exist on the Pismo site.

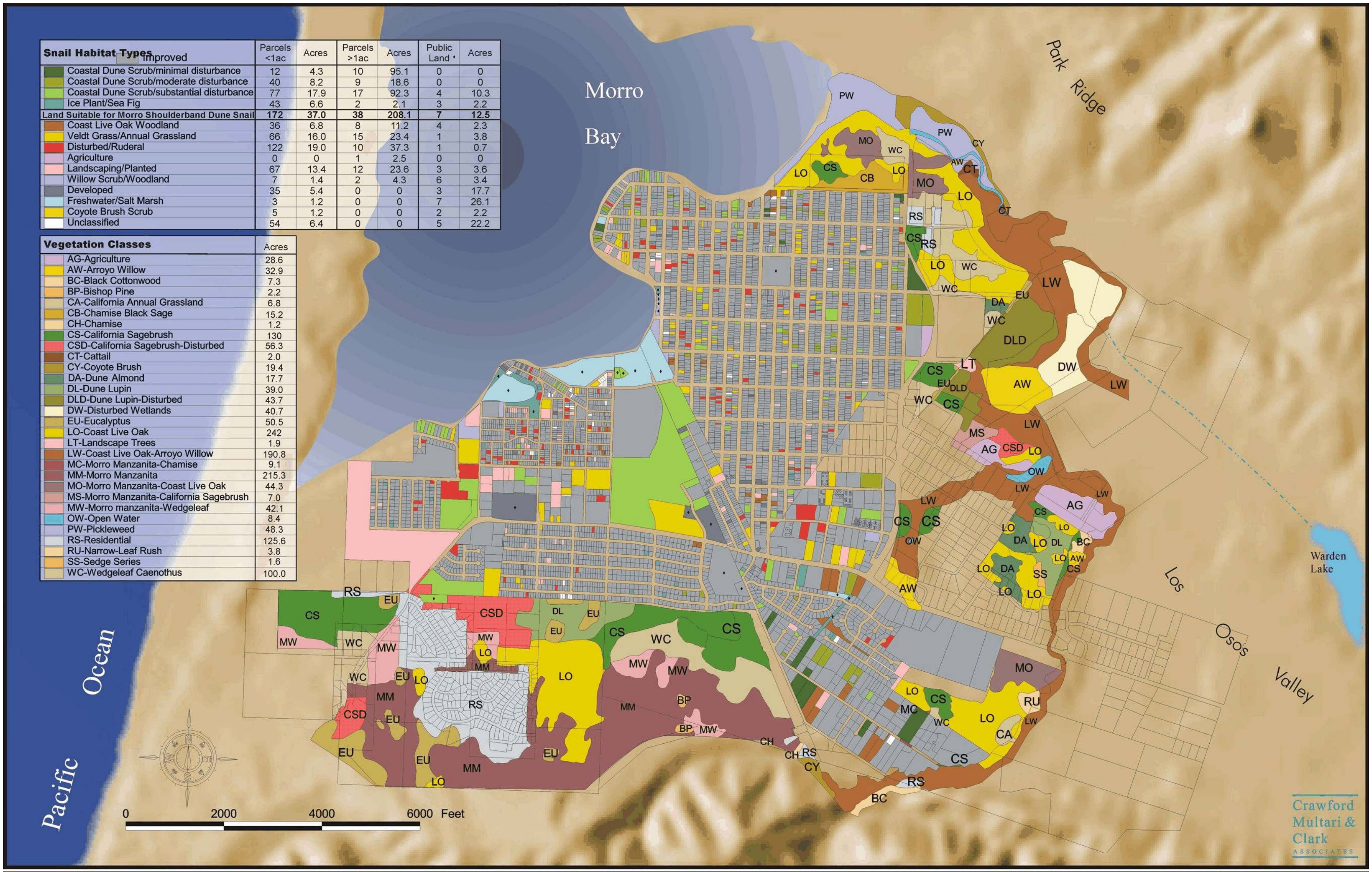
Collection

The collection system generally corresponds to the community of Los Osos; much of this area is developed with road systems and residential and commercial development. This development limits the extent of vegetation in this area; however, many small lots are undeveloped, and continue to exhibit characteristics associated with the following vegetative communities. The following plant communities are also depicted in Figure 6.11-1.

Freshwater/Salt marsh. Small undeveloped lots in the community support approximately 26.1 acres of fresh or saltwater marsh communities. These lots are generally found adjacent to the bay in the northwest portion of the community. Common plant species occurring in saltwater marsh communities include saltgrass (*Distichlis spicata*), pickleweeds (*Salicornia* spp.), fleshy jaumea (*Jaumea carnosa*), giant rush (*Juncus* spp.) and coastal silverweed (*Potentilla egedii*). Freshwater marshes support species such as sedges (*Carex* spp.), rushes (*Juncus* spp.), bulrushes (*Scirpus* spp.), watercress (*Nasturtium officinale*) and docks (*Rumex* spp.).

Willow scrub/woodland. Willow stands in the collection area are generally associated with parcels adjacent to the bay and creeks, with isolated occurrences in depressions and seeps. These communities are dominated by willow (*Salix* ssp.), and may support an understory including such species as wild blackberry (*Rubus ursinus*), and poison hemlock (*Conium maculatum*).

Coastal (Central) dune scrub. Central dune scrub communities are generally located inland from the open beach, on recent to ancient coastal sand dunes. Species composition is highly variable within these communities, but generally includes the following characteristic plants: mock heather (*Ericameria ericoides*), dune almond (*Prunus fasciculata var. punctata*), dune buckwheat (*eriogonum parvifolium*), coastal silver lupine (*Lupinus chamissonis*), black sage (*Salvia mellifera*), and California sagebrush (*Artemisia californica*). Characteristic understory species include California croton (*Croton californicus*) and wedgeleaf horkelia (*Horkelia cuneata ssp. cuneata*). In some locations, veldt grass (*Ehrharta calycina*)



Snail Habitat Types Improved	Parcels <1ac	Acres	Parcels >1ac	Acres	Public Land •	Acres
Coastal Dune Scrub/minimal disturbance	12	4.3	10	95.1	0	0
Coastal Dune Scrub/moderate disturbance	40	8.2	9	18.6	0	0
Coastal Dune Scrub/substantial disturbance	77	17.9	17	92.3	4	10.3
Ice Plant/Sea Fig	43	6.6	2	2.1	3	2.2
Land Suitable for Morro Shoulderband Dune Snail	**172**	**37.0**	**38**	**208.1**	**7**	**12.5**
Coast Live Oak Woodland	36	6.8	8	11.2	4	2.3
Veldt Grass/Annual Grassland	66	16.0	15	23.4	1	3.8
Disturbed/Ruderal	122	19.0	10	37.3	1	0.7
Agriculture	0	0	1	2.5	0	0
Landscaping/Planted	67	13.4	12	23.6	3	3.6
Willow Scrub/Woodland	7	1.4	2	4.3	6	3.4
Developed	35	5.4	0	0	3	17.7
Freshwater/Salt Marsh	3	1.2	0	0	7	26.1
Coyote Brush Scrub	5	1.2	0	0	2	2.2
Unclassified	54	6.4	0	0	5	22.2

Vegetation Classes	Acres
AG-Agriculture	28.6
AW-Arroyo Willow	32.9
BC-Black Cottonwood	7.3
BP-Bishop Pine	2.2
CA-California Annual Grassland	6.8
CB-Chamise Black Sage	15.2
CH-Chamise	1.2
CS-California Sagebrush	130
CSD-California Sagebrush-Disturbed	56.3
CT-Cattail	2.0
CY-Coyote Brush	19.4
DA-Dune Almond	17.7
DL-Dune Lupin	39.0
DLD-Dune Lupin-Disturbed	43.7
DW-Disturbed Wetlands	40.7
EU-Eucalyptus	50.5
LO-Coast Live Oak	242
LT-Landscape Trees	1.9
LW-Coast Live Oak-Arroyo Willow	190.8
MC-Morro Manzanita-Chamise	9.1
MM-Morro Manzanita	215.3
MO-Morro Manzanita-Coast Live Oak	44.3
MS-Morro Manzanita-California Sagebrush	7.0
MW-Morro manzanita-Wedgeleaf	42.1
OW-Open Water	8.4
PW-Pickleweed	48.3
RS-Residential	125.6
RU-Narrow-Leaf Rush	3.8
SS-Sedge Series	1.6
WC-Wedgeleaf Caenothus	100.0

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Figure 6.11-1
Vegetative Communities

has invaded and makes up a significant portion of the understory.

Coyote bush scrub. This plant community is a variation on Coastal sage scrub, where the dominant plant species is the native coyote bush (*Baccharis pilularis*). Coyote bush scrub is further detailed in the following section describing the Tri-W site.

Coast live oak woodland. Coast live oak woodlands occur in association with coastal scrub and annual grassland. Typical understory plant species include toyon (*Heteromeles arbutifolia*), poison oak (*Toxicodendron diversilobum*), bracken fern (*Pteridium aquilinum*), miner's lettuce (*Claytonia perfiolata*), bedstraw (*Galium apartine*), and coffeeberry (*Rhamnus californica*). Because coast live oak woodland integrates with other plant communities, the understory is highly variable.

Annual Grassland. The majority of annual grasslands found in California are dominated by species introduced from the Mediterranean region during Spanish colonization. The structure of the grass community varies in the collection area depending on land use practices. Non-native grasses, native wildflowers and weedy annual forbs (broadleaf plants) dominate grassland areas in the collection area. In addition, a few native species of grass may potentially occur infrequently as part of the non- native grassland association in the area. Typical non-native grass species occurring in the planning area include wild oat (*Avena* sp.), soft chess (*Bromus mollis*), red brome (*Bromus rubens*), Italian rye grass (*Lolium multiflorum*) and annual fescues (*Vulpia* spp.). Typical forbs associated with grassland communities in the project area include native wildflowers such as California poppy (*Eschscholzia californica*), goldfields *(Lasthenia californica*), lupine (*Lupinus* sp.), owl's clover (*Orthocarpus densiflorus*), popcorn flower (*Plagiobothrys* spp.), blue-eyed grass (*Sisyrinchium bellum*) and clarkia (*Clarkia* sp.). Non-native forbs include wild mustard (*Brassica* spp.), redstem filaree (*Erodium cicutarium*), long-beak filaree (*E. botrys*), and burclover (*Medicago hispida*). Native species of grass, which may occur in scattered locations, include purple needlegrass (*Stipa pulchra*) and slender needlegrass (*Stipa lepida*).

Ruderal/disturbed. Ruderal areas have been significantly disturbed by agriculture, construction, traffic, or other land-clearing activities. This community is found along roadways, in vacant lots, agricultural fields and golf courses. Characteristic species found in these areas include nonnative species such as wild mustard, wild radish (*Raphanus sativus*), Russian thistle (*Salsola iberica*), castor bean (*Ricinus communis*), wild oat, soft chess, red brome, ripgut grass (*Bromus diandrus*), sweet fennel (*Foeniculum vulgare*), Bermuda grass (*Cynodon dactylon*), and red stem filaree. The only native species common in the ruderal communities of the collection area is coyote brush.

Portions of the collection system are also characterized by a dominance of veldt grass or sea fig (iceplant).

Treatment (Tri-W)

This site is located immediately north of Los Osos Valley Road and south of Ramona Avenue. The site is approximately 11 acres in size. The site is dominated by Coastal sage scrub, interspersed with veldt and other annual grasses, and eucalyptus. A generalized depiction of vegetation at the Tri-W site is found in Figure 6.11-2.

Coastal Sage Scrub. Coastal sage scrub is a common, complex series of plant communities that are generally found within 10 miles of the California coast; some sage scrub plant communities, however,

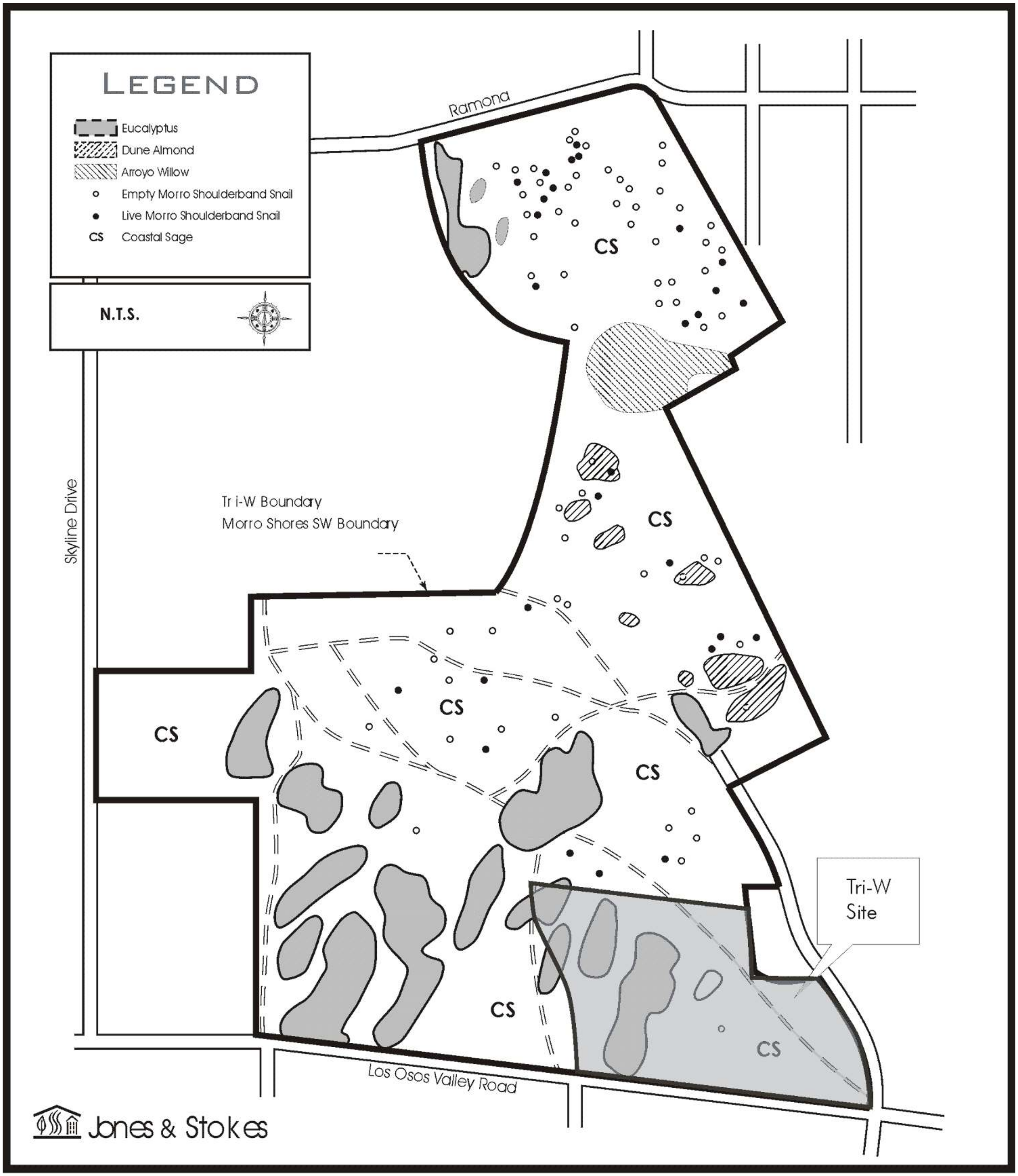

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Figure 6.11-2
General Habitat and Sensitive Species Map Morro Shores and Tri-W

are more widespread (Westman 1981). Two of the more common coastal sage scrub plant community series in the study area that are characterized in the CNPS Vegetation Manual (Sawyer and Keeler-Wolf 1995) include California sagebrush, co-dominant with the black sage series and coyote bush (*Baccharis pilularis* ssp. *consanguinea*) series. In addition, two plant community series, dune lupine (*Lupinus chamissonis*) co-dominant with goldenbush (*Ericameria ericoides*) and dune almond (*Prunus fasciculata* ssp. *punctata*) are found in the project area. The dune almond series was not previously recognized as a plant community series and, like the Morro manzanita series, is dominated by a rare plant species.

Two of the coastal sage scrub plant community series were further distinguished as disturbed habitats. Because of previous disturbance of the landscape, there are some areas where California sagebrush-black sage series and dune lupine-goldenbush series occur in disturbed condition, but the plant community series can be recognized based on the presence of the key shrub species. Coastal sage scrub covers approximately 70 percent of the Tri-W; however the community is degraded due to the presence of veldt grass over much of the site.

California Sagebrush/Black Sage. This dense to open low scrub community is dominated by California sagebrush and black sage. Associated species include deerweed, buckwheat, California croton, horkelia, dune lupine, goldenbush, and sticky monkey flower. The canopy is 2-5 feet tall. This plant community series is probably the most diverse and complex. Further detailed investigations of this community would distinguish at least 10 plant associations under this series. The variation observed within this community probably results from differing spans of time since the last major disturbance. Historical aerial photography indicates that much of the area mapped as California sagebrush-black sage series had been significantly disturbed by the clearing of the vegetation in the later 1940s. Since that time, patchy disturbance has occurred. This community is the predominant series growing on the younger sand dunes characterized by the Baywood fine sand soil series, and this plant community is the one that has had the greater loss of acreage over the past 50-80 years because of land use changes. This vegetation series also occurs at the Broderson and Pismo sites.

Dune Lupine/Goldenbush Series. This dense to open scrub community is dominated by dune lupine and goldenbush shrubs. Associated shrub species include California sagebrush, black sage, California croton, and dune almond. The canopy is 2-6 feet tall. This plant community appears in the younger dunes and is the community series that becomes established as an early successional stage, following disturbance of other plant community series such as the California sagebrush-black sage series. This vegetation series occurs on the Morro Shores site, north of Tri-W, and the Broderson and Pismo sites.

Coyote Brush Series. This dense to open scrub community is dominated by coyote brush (*Baccharis pilularis*) and associated with California sagebrush, buckwheat, and deerweed. The canopy is 3-6 feet tall. The coyote brush plant community series were mostly observed in areas of disturbance. This community should be considered to be early successional and invasive to areas of maritime chaparral following disturbance.

Dune Lupine/Goldenbush Disturbed. In this series, an open scrub habitat is formed of sparse shrub cover dominated by dune lupine and goldenbush. Other plant species include nonnative herbaceous plants such as veldt grass and ice plant. The canopy of herbs and shrubs is 1-5 feet tall. Dune lupine is a very common plant species that establishes very young sand dunes, but also rapidly invades sandy soils near the coast within a few years after substantial disturbance. In the Los Osos area, there are some sites where the vegetation has been cleared in attempts to farm the land, causing substantial disturbance of the very low nutrient sandy soils. In these areas, dune lupine is often the only invading shrub because of its ability to fix nitrogen in its roots. Dune lupine appears to grow well despite co-invasion from nonnative weedy plant species such as veldt grass, wild oat, and ice plant. Local areas of this vegetation series occur on the Morro Shores site north of Tri-W, and the Broderson and Pismo sites.

Disposal (Broderson)

The following section described plant communities found at the Broderson site. The communities are also depicted in Figure 6.11-3.

Morro Manzanita/California Sagebrush. In this series, a dense to partially open mixed scrub canopy is commonly formed of Morro manzanita and California sagebrush. Other shrubs that sometimes appear as co-dominants include black sage, wedgeleaf ceanothus, sticky monkey flower, buckwheat, and deerweed. The shrub canopy is 3-6 feet tall. This plant community series may be found under conditions noted in the following two areas:

- areas of denser stands of Morro manzanita where vegetation has been disturbed and removed, allowing the fast-growing California sagebrush and associated plants to become established in the openings; and

- areas where the soils are transitional from middle-aged dunes to older dunes and establishment of Morro manzanita is patchy.

This vegetation series occurs on the Broderson and Morro Shores (north of Tri-W) sites.

Maritime Chaparral. Maritime chaparral is a term generally used to described chaparral vegetation that is dominated by shrub species which grow primarily near the coast of California and are often specifically associated with older sand dune-derived soils. The vegetation in these areas is typically dominated by manzanita (*Arctostaphylos* spp.) and ceanothus (*Ceanothus* spp.). In the Los Osos/Baywood Park greenbelt study area, maritime chaparral was defined as vegetation with a dominance of Morro manzanita (*Arctostaphylos morroensis*), wedgeleaf ceanothus (*Ceanothus cuneatus*), and coast live oak (*Quercus agrifolia*) in a shrub form. Maritime chaparral is only present on the Broderson and Pismo sites.

Morro Manzanita Series. A dense canopy of Morro manzanita typically characterizes this plant community. Associated shrubs may include coast live oak, wedgeleaf ceanothus, sticky monkey flower, and black sage. Manzanita shrubs are between 4 and 12 feet tall. Areas of dense Morro manzanita are found on the older dune soils that correspond with the Oceano soil series. Based on the current distribution of Morro manzanita, the associated soils, angle of slopes, and exposure aspect, it appears that the Morro manzanita is restricted to the older middle-aged dunes and older dunes corresponding with Oceano and Garey soil series. Slopes varied from a few degree slopes to nearly 15^{o} slopes. Aspect varied from predominately north-facing to west-facing. Morro manzanita does not appear to become established on the younger dunes with less developed soil, which suggests that the higher moisture-holding capacity of the older dune soils is a requirement; however, further study would be needed to identify specific environmental constraints. This vegetation series occurs on the south end of the Broderson site.

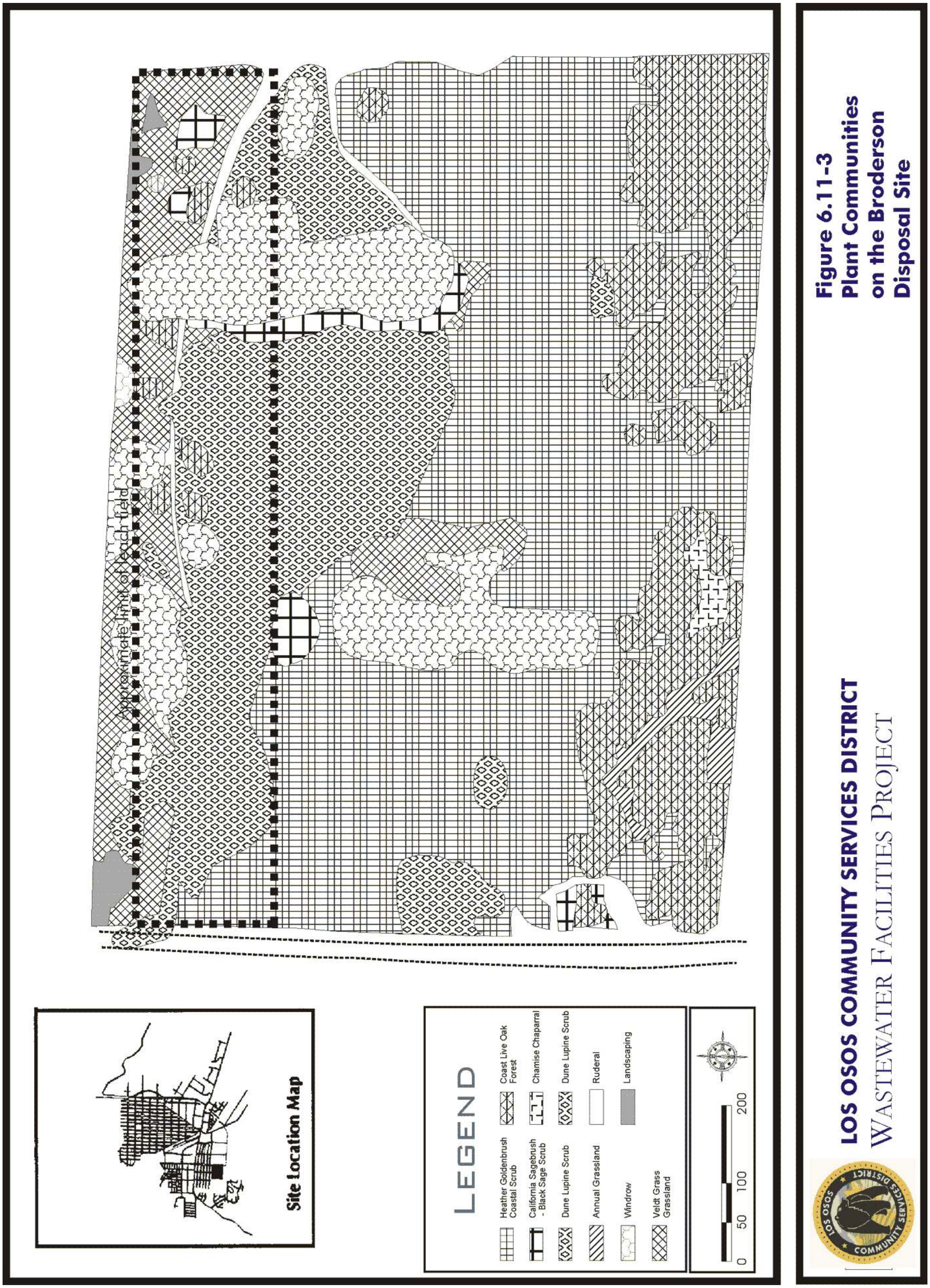


Figure 6.11-3
Plant Communities on the Broderson Disposal Site

Morro Manzanita/Wedgeleaf Ceanothus Series. In this series, a dense cover is formed with Morro manzanita and wedgeleaf ceanothus as the co-dominant shrubs. Other associated shrubs include California sage, black sage, and sticky monkey flower. The shrub canopy is 3-6 feet tall. This plant community series represents a distinct and broad community series separating coastal sage scrub series from the pure Morro manzanita series. This vegetation series occurs on the Broderson and Pismo sites.

Morro Manzanita/Coast Live Oak Series. A dense canopy is formed of Morro manzanita and coast live oak co-dominants or alternate patches of these species. The shrub canopy is 6-15 feet tall. The co-occurrence of Morro manzanita and coast live oak is very patchy, and both species can form very dense stands that have been mapped as separate plant communities when the patches were identifiable on aerial photographs. The coast live oaks in this series are shrub-like, possibly as a result of the steeper slopes where they grow, which is very different from the taller coast live oak woodlands found elsewhere in the project area. The patchy nature of these two species indicates that either a very localized soil or subsurface hydrological condition exists that controls their establishment, or a very long-term disturbance regime may be influencing their growth. This vegetation series occurs on the Broderson site.

Wedgeleaf Ceanothus. A dense to partially open canopy is formed by wedgeleaf ceanothus shrubs associated with black sage, Morro manzanita, California sagebrush, sticky monkey flower, buckwheat, and low-lying coast live oak. The canopy is 4-8 feet tall. This plant community series is found on the middle-age dunes and is transitional between coastal sage scrub community series on the younger dunes and Morro manzanita series on the older dunes. This vegetation series occurs on the Broderson and Pismo sites.

The Broderson site also supports California sagebrush/Black sagebrush scrub, Heather goldenbrush coastal scrub, and dune lupine scrub, which are described in the section for Tri-W, above.

Special-Status Species

Special-status species are plants and animals that are either listed as endangered or threatened under the Federal or California Endangered Species Acts, or rare under the California Native Plant Protection Act, or considered rare (but not formally listed) by resource agencies, professional organizations (e.g., Audubon Society, CNPS, The Wildlife Society), and the scientific community. For the purposes of this project, special-status species are as defined below.

Prior to conducting field surveys of the project site, database searches of the Natural Diversity Data Base (NDDB) (1999) and the California Native Plant Society (CNPS) electronic inventory (Skinner and Pavlik, 1994) were conducted. The CDFG uses the NDDB to document occurrences of special-status species. The NDDB also includes information on a number of plant species prepared by the CNPS. Several listed plants and animals were reported as occurring at or in the vicinity of the project area. In addition, the known ranges of several special-status plants were reported as including areas on and near the project area.

Special-status animals fall into the following categories:

- species listed or proposed for listing as threatened or endangered under the federal Endangered Species Act, 50 CFR 17.11 [listed animals], and various notices in the Federal Register (FR) [proposed species]);

- species that are candidates for possible future listing as threatened or endangered under the federal ESA (61 FR 7596-7613, February 28, 1996);

- species listed or candidates for listing by the State of California as threatened or endangered under the California Endangered Species Act (14 California Code of Regulations (CCR) 670.5);

- species that meet the definitions of rare, threatened or endangered under CEQA (State CEQA Guidelines, Section 15380);

- animal species of special concern to CDFG (Remsen 1978 [birds], Williams 1986 [mammals], and Jennings and Hayes 1994 [amphibians and reptiles]); and

- animals fully protected in California (California Fish and Game Code, Section 3511 [birds], 4700 [mammals], and 5050 [reptiles and amphibians]).

Special-Status Wildlife Species. Based on information obtained through the NDDB search and review of existing literature, a list was compiled of sensitive wildlife species with the potential to occur in the vicinity of the project site and that could occur at one or more of the alternative project sites. Special-status wildlife known to occur in the area are listed below in Table 6.11-1.

Table 6.11-1. Special-Status Species with the Potential to Occur in the Project Area

Common and Scientific Name	Status [a] Federal/State	California Distribution	Habitats	Reason for Decline	Occurrence in Project Area
Morro shoulderband (=banded dune snail) *Helminthoglypta walkeriana*	T/--	Restricted to Morro Bay and Montaña de Oro State Parks	Coastal dune scrub and sage scrub communities	Urban development within species limited range	High: Suitable habitat present in project area
Monarch butterfly (wintering sites) *Danaus plexippus*	–/--	Roost in coastal regions from San Francisco to Baja California	Groves of eucalyptus trees with herbaceous ground cover	Wintering sites are vulnerable to human disturbance	High: Suitable habitat present in project area
Morro Bay blue butterfly *Icaricia icarioides moroensis*	SC/--	Morro Bay, California	Coastal dune complexes consisting of dune lupine communities	Habitat loss from urban and agricultural development and changes in vegetation structure from gradual plant succession	Moderate: Suitable habitat present in project area
California red-legged frog *Rana aurora draytoni*	T/SSC	Found along the coast and coastal mountain ranges of California from Humboldt County to San Diego County; Sierra Nevada (midelevations [above 1,000 feet] from Butte County to Fresno County)	Permanent and semipermanent aquatic habitats, such as creeks and cold water ponds, with emergent and submergent vegetation and riparian species along the edges; may estivate in rodent burrows or cracks during dry periods	Alteration of stream and wetland habitats, overharvesting (historically), habitat destruction, competition and predation by fish and bullfrogs	None; No wetlands present in project area
Southwestern pond turtle *Clemmys marmorata pallida*	SC/SSC	Occurs along the central coast of California east to the Sierra Nevada and along the southern California coast inland to the Mojave and Sonora Deserts; range overlaps with that of the northwestern pond turtle throughout the Delta and in the Central Valley from Sacramento County to Tulare County	Woodlands, grasslands, and open forests; aquatic habitats, such as ponds, marshes, or streams, with rocky or muddy bottoms and vegetation for cover and food	Loss and alteration of aquatic and wetland habitats, habitat fragmentation	None; No wetlands present in project area
Black California legless lizard *Anniella pulchra nigra*	SC/SSC	Monterey Bay region	Coastal dunes with native vegetation or chaparral, pine-oak woodland, or riparian areas with loose soil for burrowing	Loss of coastal dune habitat to development, exclusion of native dune vegetation by non-native species such as African ice plant, and habitat fragmentation	None: Specific microhabitat conditions are not present in project area.
White-tailed kite *Elanus leucurus*	--/FP	Lowland areas west of Sierra Nevada from head of Sacramento Valley south, including coastal valleys and foothills to western San Diego County at the Mexico border	Low foothills or valley areas with valley or live oaks, riparian areas, and marshes near open grasslands for foraging	Loss of grassland and wetland habitats to agriculture and urban development	Moderate; Moderately suitable nesting and foraging habitat present in project area
Northern harrier *Circus cyaneus*	--/SSC	Throughout lowland California; has been recorded in fall at high elevations	Grasslands, meadows, marshes, and seasonal and agricultural wetlands providing tall cover	Loss of habitat to agricultural and urban development	Low: Unsuitable nesting habitat, moderately suitable foraging habitat
Sharp-shinned hawk *Accipiter striatus*	--/SSC	Permanent resident on the Sierra Nevada, Cascade, Klamath, and north Coast Ranges at midelevations and along the coast in Marin, San Francisco, San Mateo, Santa Cruz, and Monterey Counties; winters over the rest of the state except very high elevations	Dense canopy ponderosa pine or mixed-conifer forest and riparian habitats	Human disturbance at nest sites, pesticide contamination, timber harvesting near nesting sites	Moderate; Moderately suitable wintering habitat present in project area
Cooper's hawk *Accipiter cooperii*	--/SSC	Throughout California except high altitudes in the Sierra Nevada; winters in the Central Valley, southeastern desert regions, and plains east of the Cascade Range; permanent residents occupy the rest of the state	Nests primarily in riparian forests dominated by deciduous species; also nests in densely canopied forests from digger pine-oak woodland up to ponderosa pine; forages in open woodlands	Human disturbance at nest sites, loss of riparian habitats, especially in the Central Valley; pesticide contamination	Moderate; Moderately suitable nesting habitat present in project area
Ferruginous hawk	SC/SSC	Does not nest in California; winter	Open terrain in plains and foothills	Conversion of	Low: Suitable wintering

Common and Scientific Name	Status [a] Federal/State	California Distribution	Habitats	Reason for Decline	Occurrence in Project Area
Buteo regalis		visitor along the coast from Sonoma County to San Diego County, eastward to the Sierra Nevada foothills and southeastern deserts, the Inyo-White Mountains, the plains east of the Cascade Range, and Siskiyou County	where ground squirrels and other prey are available	grasslands for agriculture and urban development	and foraging habitat present in project area
Golden eagle *Aquila chrysaetos*	PR/SSC, FP	Foothills and mountains throughout California; uncommon nonbreeding visitor to lowlands such as the Central Valley	Cliffs and escarpments or tall trees for nesting; annual grasslands, chaparral, and oak woodlands with plentiful medium and large-sized mammals for prey	Habitat loss to urbanization; vulnerable to disturbance at nest sites	Low: No suitable nesting habitat present in project area
Merlin *Falco columbarius*	--/SSC	Does not nest in California; rare but widespread winter visitor to the Central Valley and coastal areas	Forages along coastlines, open grasslands, savannas, and woodlands; often forages near lakes and other wetlands	Unclear; possibly chemical contamination, illegal take of young	Low; May be a wintering visitor but presence is unlikely
Prairie falcon *Falco mexicanus*	--/SSC	Found as permanent resident on the south Coast, Transverse, Peninsular, and northern Cascade Ranges, the southeastern deserts, Inyo-White Mountains, Modoc, Lassen, and Plumas Counties, and the foothills surrounding the Central Valley; winters in the Central Valley, along the coast from Santa Barbara County to San Diego County, and in Marin, Sonoma, Humboldt, Del Norte, and Inyo Counties	Cliffs or escarpments for nesting; adjacent dry, open terrain or uplands, marshes, and seasonal marshes for foraging	Possibly pesticide contamination, robbing of eyries by falconers and illegal shooting, human disturbance at nest site	Low: Suitable foraging habitat present in project area
Black rail *Laterallus jamaicensis*	SC/T	Permanent resident in the San Francisco Bay and eastward through the Delta into Sacramento and San Joaquin Counties; small populations in Marin, Santa Cruz, San Luis Obispo, Orange, Riverside, and Imperial Counties	Tidal salt marshes associated with heavy growth of pickleweed; also occurs in brackish marshes or freshwater marshes at low elevations	Loss of wetland habitat	None; No wetlands present in project area
California clapper rail *Rallus longirostris obsoletus*	E/E	Marshes around the San Francisco Bay and east to Suisun Marsh	Restricted to salt marshes and tidal sloughs; usually associated with heavy growth of pickleweed; feeds on mollusks removed from the mud in sloughs	Loss of wetland habitat and predation by non-native predators, shooting	None; No wetlands present in project area
Western burrowing owl *Athene cunicularia hypugea*	SC/SSC	Lowlands throughout California, including the Central Valley, northeastern plateau, southeastern deserts, and coastal areas; rare along south coast	Rodent burrows in sparse grassland, desert, and agricultural habitats	Loss of habitat, human disturbance at nesting burrows	Moderate: Suitable nesting and foraging habitat present in project area
California spotted owl *Strix occidentalis occidentalis*	SC/SSC	Sierra Nevada from Lassen County south to northern Kern County; occurs in localized areas of the Transverse and Peninsular Ranges of southern California	Mature forest with permanent water and suitable nesting trees and snags; in southern California, nearly always associated with oak and oak-conifer habitats	Loss of nesting habitat	Low; Project area is outside known range
Willow flycatcher *Empidomax traillii*	SC/E	Summer range includes a narrow strip along the eastern Sierra Nevada from Shasta County to Kern County, another strip along the western Sierra Nevada from El Dorado County to Madera County; widespread in migration	Riparian areas and large, wet meadows with abundant willows for breeding; usually found in riparian habitats during migration	Loss of riparian breeding habitat, nest parasitism by brown-headed cowbirds	Low: Project area is outside known range
California yellow warbler *Dendroica petechia brewsteri*	--/SSC	Nests over all of California except the Central Valley, the Mojave Desert region, and high altitudes in the Sierra Nevada; winters along the Colorado River and in parts of Imperial and Riverside Counties; two small permanent populations in San Diego and Santa Barbara Counties	Nests in riparian areas dominated by willows, cottonwoods, sycamores, or alders or in mature chaparral; may also use oaks, conifers, and urban areas near streamcourses	Loss of riparian breeding habitats, nest parasitism by brown-headed cowbirds	Low: Project area is outside known range, no suitable habitat present in project area
Morro Bay kangaroo rat *Dipodomys heermanni morroensis*	E/E	Found only near Los Osos, San Luis Obispo County	Coastal scrub habitats on old sand dune soils	Loss of habitat to urban development, altered habitat from fire suppression	Moderate: Suitable habitat is present in project area

[a] Status definitions:

Common and Scientific Name	Status [a] Federal/State	California Distribution	Habitats	Reason for Decline	Occurrence in Project Area

Federal Status:
- E = listed as endangered under the Federal Endangered Species Act
- T = listed as threatened under the Federal Endangered Species Act
- PR = Federally protected under the Golden Eagle Protection Act
- C = Federal candidate species (formerly Category 1; maybe proposed for listing in the future)
- – = no designation

State Status:
- E = listed as endangered under the California Endangered Species Act
- T = listed as threatened under the California Endangered Species Act
- SSC = species of special concern
- FP = Fully protected under the Department of Fish and Game code
- – = no designation

Brief descriptions of the sensitive wildlife species are provided below.

California Brackishwater Snail. The California brackishwater snail historically occupied coastal lagoons and areas where creek mouths join tidal marsh, from San Diego to Sonoma County. Present populations are scattered throughout the former range; however, the Sonoma County populations are believed to be extinct. Populations have been reported from salt evaporation ponds in Alameda and Monterey Counties. The snail is considered rare or endangered under California Environmental Quality Act (CEQA) guidelines.

The species' decline is attributed to loss of habitat to development and from control of tidal influences in marsh, lagoon, and estuarine habitats. The snail inhabits brackish water generally at the confluence of estuaries and streams.

Within the Morro Bay area, the snail is found in Los Osos Creek Marsh on the east side of Morro Bay, near the intersection of South Bay Boulevard and Turri Road. This species and its habitat are not within the study sites at Morro Shores, and Broderson.

Morro Shoulderband Snail. The distribution of the Morro shoulderband snail is limited to the Morro Bay region. The draft recovery plan for the Morro shoulderband snail (U.S. Fish and Wildlife Service 1997) described the snail's distribution as "areas south of Morro Bay, west of Los Osos creek and north of Hazard Canyon." Historically, the species has also been reported near the City of San Luis Obispo and south of Cayucos Road.

The Morro shoulderband snail is a terrestrial snail that inhabits coastal dune scrub and sage scrub communities around Morro Bay. Throughout most of its range the snail is associated with mock heather (*Ericameria ericoides*), buckwheat (*Eriogonum parvifolium*), eriastrum (*Eriastrum densifolium*), chamisso lupine (*Lupinus chamissonis*), and dudleya (*Dudleya* sp.) (U.S. Fish and Wildlife Service 1997). Morro shoulderband snail was identified over about 50 percent of the Morro Shores site. Both living snails and empty shells were observed during USFWS protocol surveys conducted by Jones & Stokes biologists during February 2000. Areas on the site that did not have the snail included eucalyptus groves (Morro Shores Southwest, which supported a similar but common species of snail (*Helminthoglypta umbilicata*). Very few snails were observed in the area known as the Tri-W site. This species was found at the Morro Shores, Tri-W, Holland, and Broderson sites. The Morro Shores Southwest site contains adequate habitat, but no live snails were found there. Depictions of snail occurrence are found in Figure 6.11-4.

This species is considered threatened because of development that has occurred in its limited range, fragmentation and degradation of its habitat because of the invasion of nonnative plant species (e.g., veldt grass), structural senescence of dune vegetation, and recreational use of its habitat (e.g., off-road vehicle activity) (U.S. Fish and Wildlife Service 1997). Additional threats include competition for resources with the nonnative brown garden snail; predation by nonnative snails, such as decollate snails (*Rumina decollate*); and the use of snail and slug baits (U.S. Fish and Wildlife Service 1997).

Monarch Butterfly. The monarch butterfly is recognized as a California special resource (1988 Statutes, Chapter 540). During the fall and winter in California, monarchs roost near the coast from San Francisco to Ensenada, Baja California (Scott 1996). CDFG monitors roosting colonies and develops management recommendations for roost sites. Although the monarch butterfly is not threatened with extinction, its wintering sites are vulnerable to many human disturbances.

Monarchs migrate to warmer climates during winter to seek temporary (autumnal) roost sites (Brower 1985). At night during the fall, they typically cluster in small numbers in trees. As winter approaches, monarchs abandon most of the temporary roost areas and seek shelter in more protected "permanent" or overwintering sites (Jones & Stokes 1991). The most suitable roost sites are characterized by a grove of trees with relatively closed canopies rather than isolated or linear tree rows. There is a eucalyptus tree stand that extends from the Morro Shores Southwest site to the Tri-W site that constitutes potential habitat for this species. Field surveys conducted between February and June of 2000 did not observe butterflies. However, roosting or clustering monarchs would not be expected to be found in this area during this time of year (Frey, pers. comm). It is likely that butterflies would use this habitat during the fall and winter seasons, although it is unlikely that the Tri-W site provides significant overwintering habitat (Frey, pers. comm.). The CDFG does not list this site among its sensitive areas. The nearest neighboring habitats considered sensitive by CDFG include Sweet Springs (0.6 km north), between Rosina and Skyline Drive along Pecho Road (1.1 km west) and at the end of Monarch Lane (1.9 km southwest).

Morro Bay Blue Butterfly. The Morro Bay blue butterfly currently receives no statutory protection under the federal ESA but is listed as a species of concern by USFWS. The Morro Bay blue butterfly is endemic to the Morro Bay area and is a subspecies of the Icarioides blue butterfly.

The Morro Bay blue butterfly is found in coastal dune complexes and in habitats where their host plants, dune lupine (*Lupinus chamissonis*) grows. They are nonmigratory. The larvae feed on beach lupine, and adults nectar feed on a variety of plant species. The Morro Bay blue butterfly's flight period occurs during April through August (Garth and Tilden 1986). This species was observed (adults and larvae) at the Morro Shores site, in areas outside of the boundary of the Tri-W site. Dune lupine is also present at the Broderson site, but butterflies were not observed during field investigations.

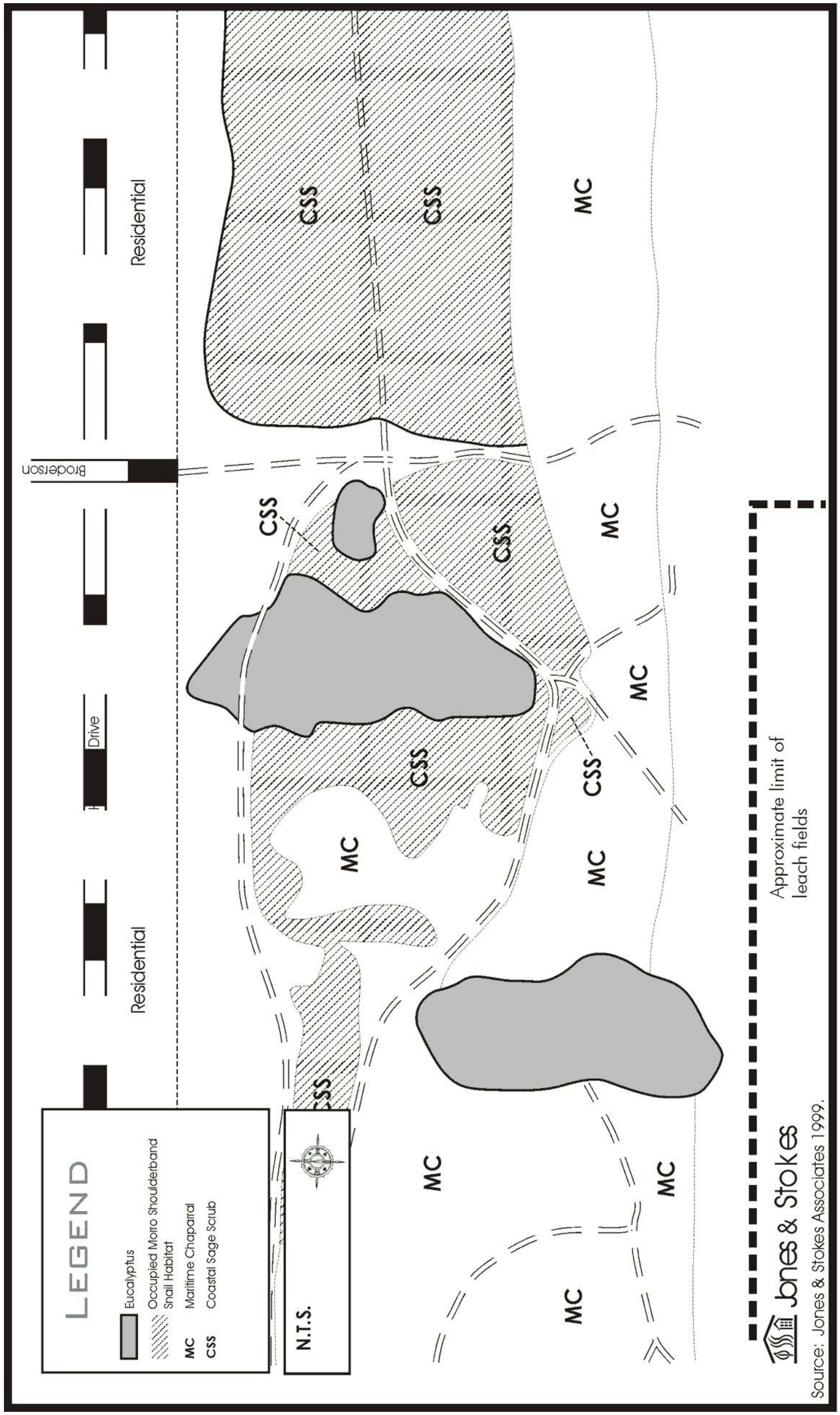
Factors associated with their decline include habitat loss from urban and agricultural development and changes in vegetation structure from gradual plant succession.

Black California Legless Lizard. The black legless lizard is considered a species of special concern by the CDFG and has been proposed for listing as endangered under the federal. The range of the black legless lizard is restricted to the Monterey Bay region; however, the species may occupy other areas along the California coast from the east side of San Francisco Bay to San Luis Obispo County, where they integrate with the silvery legless lizard.

Black legless lizards require specific microhabitat conditions within suitable habitat areas. Because legless lizards typically spend most of the year underground, they require loose sandy soils or thick duff or leaf litter that they can burrow through easily. Other necessary microhabitat conditions include moderate soil moisture, areas of shade and sun for thermoregulation, and abundant prey species such as insects, spiders, or other invertebrates (Miller 1994). Legless lizards are seldom found in areas of bare soil or open sand. There is little potential that this species could occur within the project area due to the absence of specific microhabitat conditions.

Black legless lizards are most abundant in dune habitats where native vegetation is present (Stebbins 1966). Although legless lizards have also been found along the edges of ice plant mats within dune ecosystems, the ice plant mat community is not considered suitable habitat for legless lizards (Papenfuss and Harris 1990). The dense root structures of ice plant and lack of leaf litter and duff produced by the species appear to provide poor burrowing conditions for the legless lizards.

Degradation or removal of native vegetation by urban or agricultural development, recreational activities, and introduction of nonnative species such as ice plant have made habitat conditions unsuitable for the black legless lizard in many areas (Bury 1985). Additionally, dispersal of the species by underground movement is limited by roads, trails, and cultivated fields.



LOS OSOS COMMUNITY SERVICES DISTRICT
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Figure 6.11-4
Morro Shoulderband Dune Snail Habitat on the Broderson Disposal Site

White-Tailed Kite. The white-tailed kite is a fully protected species under the California Fish and Game Code. This species can be found from the lowland areas west of the Sierra Nevada from Sacramento Valley south, including the coastal foothills to western San Diego County at the Mexico border.

White-tailed kites inhabit open lowland grassland, riparian woodland, marshes and scrub areas. Some large shrubs or trees are required for nesting. For prey, the white-tailed kites are dependent on small rodents. It is common for white-tailed kites to have communal night roosts in the winter season. There is moderately suitable nesting habitat for the white-tailed kite in the project area. Kites were not observed during field investigations.

Populations may be declining due to loss of habitat. Declines in the early part of the century were most likely due to habitat loss and shooting. The kite was, at one time, considered a pest species. In the past 25 years, habitat loss has been accelerated. Kite populations also fluctuate greatly with cycles of prey abundance. Such fluctuations can make determination of long term population trends difficult.

Northern Harrier. The northern harrier is designated as a state species of special concern by the CDFG. Northern harriers typically breed throughout California except in deserts, woodlands, and forested mountains. Breeding localities in California include the interior from Siskiyou County south to western riverside and San Bernardino Counties, and coastal regions from Marin County to San Diego County (Grinnell and Miller 1994).

The northern harrier uses tall grasses and forbs in wetlands and field borders for cover (Zeiner et al. 1990). It roosts on the ground in shrubby vegetation, often near the marsh edge (Brown and Amadon 1968). This species' breeding season is between April and September, with peak activity in June and July. The northern harrier feeds on small rodents, birds, reptiles, crustaceans and insects. There is little potential for the northern harrier to occur in the project area as there is no suitable nesting habitat and only moderately suitable foraging habitat present. Northern harriers were not observed during field investigations.

North American populations have declined during the 20th century with one of the major causes being the extensive draining of wetlands (MacWhirter and Bildstein 1996).

Prairie Falcon. The prairie falcon is a state species of special concern. This species is a permanent resident on the south Coast, Transverse, Peninsular and northern Cascade Ranges as well as the southeastern deserts, Inyo-White Mountains and the foothills surrounding the Central Valley. It occurs in Modoc, Lassen, and Plumas Counties. The prairie falcon's wintering range extends from the coast of Santa Barbara County to San Diego County and in Marin, Sonoma, Humboldt, del Norte, and Inyo Counties.

Prairie falcons typically nest on cliff escarpments. Foraging habitat consists of dry, open terrain or uplands, marshes and seasonal marshes. Though this species does not nest in the project area, there is open grassland present at the project site that may act as potential foraging habitat. Prairie falcons were not observed on the project sites during field investigations.

Pesticide contamination, robbing of eyries by falconers and illegal shooting, as well as human disturbance at nest sites, are the leading causes of decline for this species.

Sharp-Shinned Hawk. The sharp-shinned hawk is designated by CDFG as a species of special concern. This species breeds primarily in the mid- to high-elevation conifer forests and coastal forests of northern California. The sharp-shinned hawk winters throughout the state.

Sharp-shinned hawks usually nest in deciduous riparian habitat or in younger successional stands of even-aged conifers that are cool, well shaded, and have little ground cover (Moore and Henny 1983). Nests are usually situated on north-facing slopes and are often associated with a watercourse.

Sharp-shinned hawks may never have been abundant in California during the breeding season. Although a population decline has been noted since the early part of this century (Grinnell and Miller 1944), data are lacking that would clearly identify possible causes for the decline. The decline has been attributed, at least in part, to timber harvesting (Remsen 1978), but the extent to which this activity has affected statewide populations is undetermined. As described for the Cooper's hawk, pesticide contamination may have affected this species in the 1960's.

This hawk does not breed in the project area as it is out of the species breeding range, but may winter at the site.

Cooper's Hawk. The Cooper's hawk is designated by CDFG as a species of special concern. The Cooper's hawk breeds throughout most of California. The highest populations are found in areas of broken woodland, foothill riparian forests, and areas with abundant habitat edges. Historically, Cooper's hawks nested in lowland riparian woodlands in the Central Valley and coastal valleys. Population declines have been attributed primarily to the loss of lowland riparian forests in these areas (Remsen 1978). Pesticide contamination may have also contributed to declines. Since the 1960's, populations in the Sierra Nevada foothills have recovered (Robbins et al. 1986).

The Cooper's hawk most often nests in deciduous riparian forest, oak woodland, or young to mid-seral-stage, even aged conifer forests, usually near streams or other open water (Reynolds 1983). Nests are relatively small and inconspicuous and are built near the trunk of pole-sized trees. Cooper's hawks hunt for birds and small mammals in both wooded and open habitats. Their nests are usually located in patchy woodland areas with abundant habitat edges and open areas. There is moderately suitable nesting habitat present in the project area. A Cooper's hawk was observed just north of the Morro Shores site during field investigations in June 2000.

Ferruginous Hawk. The ferruginous hawk is a federal and state species of special concern. This species does not nest in California, but does winter in the region. The winter range of this species includes areas along the coast, from Sonoma County to San Diego County.

Ferruginous hawks are found in areas with open terrain in plains and foothills where ground squirrels and other prey are available. There is low potential for this species to occur in the project area as the species is only a winter visitor to the site. No Ferruginous hawks were observed during field investigations. Primary reasons for decline of this species include conversion of grasslands for agriculture and urban development.

Golden Eagle. The golden eagle is designated as a species of special concern by the CDFG, is a fully protected species under the California Department of Fish and Game Code, and is protected under the federal Bald and Golden Eagle Protection Act. The golden eagle has historically been found and is currently found through most of western North America (Udvardy 1998). The golden eagle is a permanent resident throughout most of California.

Golden eagles typically inhabit rolling foothills, mountainous areas, sage-juniper flats, and deserts (Zeiner et al. 1990). This species avoids dense coastal and montane coniferous forests (Small 1994). It breeds from late January through August, peaking from March through July, and nest on cliffs and in large trees near open areas. Golden eagles often maintain alternative nest sites and old nest sites are often reused (Zeiner et al. 1990). There is little potential for this species to nest in the project area. Golden eagles were not observed during field investigations.

The loss and alteration of grasslands, shooting, and human disturbance near nest sites have contributed to the decline of this species (Remsen 1978).

Western Burrowing Owl. The western burrowing owl is designated by CDFG as a species of special concern and is a federal species of special concern. Western burrowing owls were formerly common permanent residents throughout much of California, but population declines were noticeable by the 1940's and have continued to the present (Grinnell and Miller 1944, Remsen 1978). Ground squirrel control measures and the conversion of grasslands to agriculture are the primary factors responsible for the species' decline (Zarn 1974).

Western burrowing owls prefer open, dry, and nearly level grassland habitats where they feed on insects, small mammals, and reptiles (Zeiner et al. 1990a). They occupy burrows, typically abandoned ground squirrel burrows. The breeding season usually extends from late February through August. Western burrowing owls often nest in roadside embankments, on levees, and along irrigation canals. They are more diurnal than most owls and can often be observed during the say standing outside the entrances to their burrows.

There is potential for this species to occur in the project area where suitable habitat is present. Both the Morro Shores site and the Broderson site have suitable burrowing habitat for this species. However, no burrows or burrowing owls were observed during field investigations.

Morro Bay Kangaroo Rat. The Morro bay kangaroo rat is listed as endangered under the federal and state Endangered Species Acts. This kangaroo rat is a subspecies of the Heerman's kangaroo rat. The Morro Bay kangaroo rat is restricted to a small isolated area south and east of Morro Bay (Gambs and Holland 1988). There is potential for this species to occur in the project area as it is within its range and contains suitable habitat. Loss of habitat, changes in vegetation within occupied habitat, predation by domestic cats and dogs, and disturbance to burrows by livestock and vehicles have declined by approximately 80% over the last 20 years (Zeiner et al. 1990b). The Morro Bay kangaroo rat occupies early seral stages of soft chaparral plant communities where the soils are of a sandy loam type (Gambs and Holland 1998). Like most kangaroo rats, the Morro Bay kangaroo rat is most active at night and constructs burrows that are used to store food, rear young, and provide refuge during the daytime. Field surveys conducted during June 2000 did not find sign or tracks of this species at the Morro Shores or Broderson sites.

Special-Status Plant Taxa. Based on information obtained through the NDDB search and review of existing literature, a preliminary list was compiled of sensitive plant taxa, including vascular and nonvascular plants, that are known or have potential to occur in the Los Osos, Baywood Park, or Morro Bay region. Based on the absence of suitable habitat, including appropriate soil substrate, the following thirteen vascular plants, listed either by the NDDB or CNPS as occurring within the region, were determined to not likely occur within the project area: Osos manzanita (*Arctostaphylos osoensis*), Dacite manzanita (*Arctostaphylos tomentosa* ssp. *daciticola*), San Luis Mariposa lily (*Calochortus obispoensis*), San Luis Obispo Sedge (*Carex obispoensis*), dwarf soaproot (*Chlorogalum pomeridianum* var. *minus*), surf thistle (*Cirsium rhotophilum*), San Luis serpentine dudleya (*Dudleya abramsii* ssp. *bettinae*), Blochman's dudleya (*Dudleya blochmaniae* ssp. *blochmaniae*), Coulter goldfields (*Lasthenia glabrata* ssp. *coulteri*), Jones layia (*Layia jonesii*), San Luis Obispo monardella (*Monardella frutescens*), and adobe sanicle (*Sanicula maritima*).

Seven special-status plants were determined to potentially occur in the project area either through direct observations in the field or previous documented occurrences, or based on habitat requirements, distribution range, and habitat present within or adjacent to each project site. These special-status species are identified below along with the general habitat types in which the taxa occur. Specific habitat requirements and known distributions of these special-status plants are identified in Appendix G - Flora.

Special-Status Nonvascular Plants. One special-status nonvascular plant species has been identified as occurring in the area of the project area: the splitting yarn lichen (*Sulcaria isidiifera*).

Special-Status Plants

Special-status plant species known from in the project area are shown in Table 6.11-2. Short descriptions for each of these species are provided below. Unless noted, the following species were not found on the Morro Shores or Broderson sites.

Table 6.11-2. Special-Status Plant Species Known or with Potential to Occur in the Los Osos Area

Common name Scientific name	Status [a] (Federal/State/CNPS)	Habitat	Distribution	Flowering Period
Morro manzanita *Arctostaphylos morroensis*	FE/E/1B	Maritime chaparral, coastal dune scrub, coastal live oak woodland	San Luis Obispo County	January-March
Indian Knob mountainbalm *Eriodictyon altissimum*	E/E/1B	Maritime chaparral and coastal scrub	San Luis Obispo County	March-June
Splitting yarn lichen *Sulcaria isidifera*	--/SC/--	On trunks of coast live oaks, chamise and ceanothus	San Luis Obispo County	N/A
Suffrutescent wallflower *Erysimum insulare* ssp. *insulare*	--/--/4	Coastal dunes and bluffs	San Luis Obispo, Santa Barbara, Ventura and Los Angeles counties	January-June
Short-lobed broom-rape *Orobanche parishii* ssp. *brachyloba*	--/--/1B	Sandy soils near ocean	San Luis Obispo County to Baja California, Channel Islands	May-August
Dune almond *Prunus fasciculata* var. *punctata*	--/--/4	Sandy soil	San Luis Obispo, Santa Barbara counties	March-April
La Cruz manzanita *Arctostaphylos cruzensis* (hybrids with *A. morroensis*)	--/SC/1B	Sandy bluffs below 150 m elevation	Southern Monterey and northwestern San Luis Obispo County	December-March

[a] Status explanations:

Federal
- E = listed as endangered under the federal Endangered Species Act.
- PE = proposed for federal listing as endangered under the federal Endangered Species Act.
- -- = No status definition.

State
- E = listed as endangered under the California Endangered Species Act.
- SC = species of special concern in California.
- -- = No status definition.

California Native Plant Society
- 1B = List 1B species: rare, threatened, or endangered in California and elsewhere.
- 4 = List 4 species: plants of limited distribution.
- -- = No status definition.

Morro Manzanita. Morro manzanita (*Arctostaphylos morroensis*) is listed as endangered under the federal Endangered Species Act and is a candidate for listing as rare or endangered under the California Endangered Species Act. CNPS considers Morro manzanita rare and endangered in California and elsewhere, qualifying it for CNPS List 1B.

Morro manzanita is an erect perennial shrub of the Heath family (Ericaceae). Its height ranges from about 5 to 13 feet (1.5 to 4.0 meter [m]). Morro manzanita is characterized by red-brown or grey-brown rough, shready bark and branchlets that are covered with stiff, straight hairs. The leaves are grey-green to yellow-green, approximately 1.0-1.5 inches (2.5-4.0 centimeter [cm]) long, and are smooth to slightly hairy above and covered with dense hairs below. The species has white to pinkish bell-shaped flowers that hang as clusters among the upper leaves. Morro manzanita blooms from January to March. In the Elfin Forest Natural Area, Morro manzanita hybrids have been found with La Cruz manzanita (Mulroy 1990).

Morro manzanita lacks a basal burl. It relies on seed germination for reproduction and does not sprout from a basal burl as do some other manzanita species. The seed bank of Morro manzanita in its native habitat appears to be low, and breaking the dormancy of seeds is difficult (McGuire and Morey 1992, Tyler and Odion 1996).

Morro manzanita is endemic to San Luis Obispo County and is known from fewer than 20 occurrences in the Morro Bay area (Skinner and Pavlik 1994). The area occupied by Morro manzanita has been reduced to about half that historically known. Morro manzanita currently inhabits about 840 acres of the southeastern portion of the Morro Bay region from the area around Los Osos Creek in the north and east to just south of Spooner's Cove. Morro manzanita primarily grows on privately-owned land (59 FR 240, 1994). The plant is closely associated with Oceano and Garey soil series that formed on ancient sand dunes. It occurs in maritime chaparral (primarily in pure stands) and also in coastal dune scrub and coastal live oak (*Quercus agrifolia*) woodland habitats. Morro manzanita was observed on the southern portion of the Broderson site.

Morro manzanita's historic habitat has been reduced by land use changes (McGuire and Morey 1992). Coastal urban development is the current primary threat to the species. Other threats to Morro manzanita include competitive exclusion by invasive plant species, such as eucalyptus (*Eucalyptus* spp.), veldt grass (*Ehrharta calycina*), pampas grass (*Cortaderia selloana*), and ice plant (*Carpobrotus edulis*).

Indian Knob Mountainbalm. Indian Knob mountainbalm (*Eriodictyon altimissimum*) is listed as endangered under both the state and federal ESA. CNPS considers Indian Knob mountainbalm rare and endangered in California and elsewhere, qualifying it for their List 1B (Skinner and Pavlik 1994).

Indian Knob mountainbalm is an evergreen shrub of the waterleaf family (Hydrophyllaceae) (Wells 1962). The plant is tall and straggling, averaging 6 feet (2m) in height, but growing up to 12 feet (4m) tall. Its sticky leaves are long and narrow. Indian Knob mountainbalm has attractive lavender flowers about 0.5 inch (1.1-1.5 cm) long, and blooms from March to June.

There are six known occurrences of Indian Knob mountainbalm, all in the Irish Hills (between Morro Bay and Indian Knob). The current population estimate for the species is less than 600 individuals (Federal Register 59[240] 1994). The species inhabits maritime chaparral and coastal sage scrub habitats and sometimes co-occurs with another special-status plant, Morro manzanita (described above). It is typically found on ridgetops and steep slopes in open, disturbed areas with shallow, sandy soils. Indian Knob mountainbalm reproduces well by seed or suckers but is short-lived. Fire or physical disturbance may promote the growth of this species. The plant has medicinal properties and may have been dispersed by Indians, for a very similar species is found in the New York Mountains of California (The Nature Conservancy 1985).

Indian Knob mountainbalm is threatened by urbanization, energy development, and off-road vehicle activity (Skinner and Pavlik 1994). The mountainbalm has been recorded in the southern portions of the Broderson site (FWS, 1997) adjacent to Montana de Oro State Park.

Dune Almond. The dune almond (*Prunus fasciculata var. punctata*) is considered a plant of limited distribution and is on List 4 of the CNPS Inventory (Skinner and Pavlik 1994). It is a woody perennial in the rose family (Rosaceae) and is 1-3 feet tall (0.3-1 m). It flowers from March through April. This plant was observed in the project area during preliminary field visits.

The low stature of this plant prevents it from growing in taller, denser coastal sage scrub plant communities. It is primarily found in open sandy sites. Its distribution is near the coast in San Luis Obispo and Santa Barbara counties. In the project area, this species is associated with the California sagebrush, black sage and dune lupine, goldenbush plant communities, especially in open or disturbed areas. Dune almond plants can be locally dense and be the dominant woody perennial shrub, which leads to data supporting the recognition of a dune almond plant community series (see the dune almond plant community series description in this report). This plant and its habitat have experienced substantial loss of habitat. In the highly disturbed areas, habitat has been extensively invaded by the nonnative weedy veldt grass, which may negatively influence the dune almond plants. Dune almond is present in portions of Morro Shores outside of the boundary of the Tri-W site.

Splitting Yarn Lichen. The splitting yarn lichen (*Sulcaria isidiifera*) is a species of concern to USFWS. It has been observed on the trunks of coast live oak trees that inhabit stabilized sand dunes previously occupied by coastal sage scrub and maritime chaparral during the early stages of vegetative succession (Brodo 1986). It has also been observed on the branches of coast live oak, chamise (*Adenostoma fasciculatum*), and ceanothus (*Ceanothus* spp.). This plant was observed on live oak at Morro Shores, outside of the boundary of the Tri-W site and at the Broderson site.

The splitting yarn lichen is a recently discovered species, described in 1986 (Brodo 1986). Distinguishing characteristics include the production of protocetraric acid and its branching pattern and color. The lichen grows in a dense tuft and is about 1-2 inches long. It is dull yellowish-white, grading into light brown and reddish brown at the exposed tips. The branches are very brittle. The splitting yarn lichen appears to be extremely limited in distribution (Brodo 1986).

Suffrutescent Wallflower. Suffrutescent wallflower *(Erysimum insulare ssp. insulare*) is considered a plant of limited distribution by CNPS (List 4). Suffrutescent wallflower is a much-branched perennial herb of the Mustard family (Brassicaceae). It ranges from 0.5 to 2 feet (15-60 cm) in height. It has yellow to yellow-orange flowers and blooms from January to June. Approximately 2,400 plants of the wallflower were observed at the Morro Shores site, north of the Tri-W boundary. Less than 1,000 plants were observed at the Broderson site.

This species occupies coastal dune habitat and is also known to inhabit the coastal bluffs at Morro Rock. It is found in San Luis Obispo, Santa Barbara, Ventura, and Los Angeles counties (Skinner and Pavlik 1994). In the areas surrounding Los Osos, this species grows in coastal sage scrub plant communities, including California sagebrush-black sage, dune lupine-goldenbush, and Morro manzanita-California sagebrush series.

Short-Lobed Broom-Rape. Short-lobed broom-rape (*Orobanche parishii* ssp. *brachyloba)* is considered rare and endangered in California and elsewhere by CNPS, qualifying it for CNPS List 1B (Skinner and Pavlik 1994). It has recently been removed as a candidate for federal listing as threatened or endangered because information available did not support issuance of a proposed listing (Federal Register 61[40] 1996).

Short-lobed broom-rape is a parasitic, perennial shrub of the Broom-rape family (Orobanchaceae). It is a parasite on shrubs such as goldenbush (*Isocoma menziesii*), which grow on sandy soils near the ocean. The plant ranges from 2 to 10 inches in height and is yellowish-white. The flowers of this species are buff to pinkish in color. It blooms from May to August. The distributional range of short-lobed broom-rape extends from San Luis Obispo County to Baja California and includes several islands off California coast.

La Cruz Manzanita. La Cruz manzanita (*Arctostaphylos cruzensis*) is considered a species of concern by USFWS and rare and endangered in California and elsewhere by CNPS, qualifying it for CNPS List 1b (Skinner and Pavlik 1994).

La Cruz manzanita is an evergreen shrub of the Heath family (Ericaceae). Plants of this species are on average 0.3-3 feet (0.1-1m) tall. This manzanita does not have a basal burl. Its trunk and lower branch bark are reddish, rough, and somewhat peeling. The leaves of La Cruz manzanita are bright green and strongly overlap. La Cruz manzanita generally blooms from December to March.

Known from fewer than 20 locations, La Cruz manzanita only grows in southern Monterey and northwestern San Luis Obispo Counties. It inhabits sandy bluffs below 450 feet (150 m) elevation. The La Cruz manzanita primarily grows north of the Los Osos/Baywood Park greenbelt, but hybrids between it and Morro manzanita are found in the Elfin Forest in the north end of the greenbelt (Mullany 1990).

<u>*Sensitive Plant Communities.*</u> The project area is occupied by numerous plant communities that are considered sensitive by several federal and state regulatory agencies. The following plant communities are

considered sensitive habitats by CDFG: maritime chaparral, coastal sage scrub, oak woodland, and wetlands and riparian areas. Coastal sage scrub communities in Los Osos are the primary areas providing habitat for the endangered Morro Kangaroo rat and the Morro shoulderband snail. Maritime chaparral is the primary habitat for the endangered Morro manzanita.

Regulatory Setting

Federal and State Endangered Species Acts. The federal Endangered Species Act of 1973 (50 CFR 17) provides legal protection and requires definition of critical habitat and development of recovery plans for plant and animal species in danger of extinction. California has a parallel mandate embodied in the California Endangered Species Act of 1984 and the California Native Plant Protection Act of 1977 (NPPA). These laws regulate the listing and take of plant and animal species as endangered, threatened, or rare, in the case of plants, pursuant to the NPPA.

Species listed by the State are not necessarily protected by the federal protection statutes. Under the State laws, the CDFG is empowered to review projects for their potential impacts to listed species and their habitats.

In addition to formal endangered and threatened listings, the State of California also lists *Species of Special Concern* based on limited distribution, declining populations, diminishing habitat, or unusual scientific, recreational, or educational value. These species are not afforded the same legal protection as listed species, but may be added to official lists in the future. There are two general categories of species of special concern: those species that are candidates for official federal or state listing as threatened or endangered; and those species that are not candidates, but that have been unofficially identified as a species of special interest by private conservation organizations or local government agencies.

Federal candidate species are assigned to one of two categories depending on the current state of knowledge of the species and its biological appropriateness for listing. Federal Category 1 candidate species (FC1) include taxa for which the USFWS currently has compiled substantial information on biological vulnerability and potential threats in order to support the appropriateness of proposing to list the taxa as endangered or threatened species. Federal Category 2 candidate species (FC2) include taxa for which the USFWS does not have sufficient information on biological vulnerability to support proposing to list as endangered. The State of California also maintains lists for Candidate-Endangered Species (SCE) and Candidate-Threatened Species (SCT).

Local Coastal Program/Coastal Zone Land Use Ordinance. Several county-designated Sensitive Resource Areas (SRA) are listed in the Land Use Element (LUE) of the San Luis Obispo County General Plan for the Estero planning area. These areas are designated SRAs primarily due to the presence of sensitive plant and animal species. County-designated SRA located within the project area include Los Osos Creek, and the Los Osos Creek Estuary, Morro Bay Kangaroo Habitat, and the Coastal Zone.

The Coastal Zone Land Use Ordinance (CZLUO) policies include limitations on development within and near SRA wetlands, streams and associated riparian areas, terrestrial habitats, and other environmentally sensitive habitats.

Impact Analysis

Impact Methodology and Significance Thresholds

Biological resources of the project area and the alternative treatment plant sites were evaluated based on site investigations conducted by Jones & Stokes biologists, previous environmental documents prepared for the County of San Luis Obispo's proposed wastewater treatment facility (including the 1997 Final Supplemental

EIR and 1987 Final EIR), and biological data searches of the California Department of Fish and Game's (CDFG's) Natural Diversity Data Base (NDDB), using RareFind II from 1999 and the California Native Plant Society's (CNPS's) *Inventory of Rare and Endangered Vascular Plants of California* electronic inventory (Skinner and Pavlik, 1994). In addition, the Los Osos/Baywood Park Greenbelt Conservation plan (Jones & Stokes 1997) was used, as well as information from local and regional biological experts. This assessment of biological resources is intended to expand upon information provided through previous investigations conducted as part of earlier EIRs and update that information as necessary.

Impacts to biological resources at each of the project sites are assessed by determining the sensitivity, significance, or rarity of each resource that will be adversely affected by the proposed project and using thresholds of significance to determine if the impact constitutes a significant impact. The significance threshold may be different for each habitat or taxon and is based on the resource's rarity or sensitivity and the level of impact that would result from the proposed project.

The significance threshold is established for direct, indirect, and cumulative impacts associated with this project by assessing the current status of each sensitive biotic resource at global, statewide, county/region wide, and local levels. Federal, state, and local regulations and policies, as well as the intent of CEQA, are used in identifying regulated resources while scientific data on each biotic resource are used to establish rarity and sensitivity levels.

Guidance for determining significance thresholds is based on the *State CEQA Guidelines* and local/regional general plans and ordinances. Using these guidelines, the proposed project would have a significant impact on associated biological resources if it would:

- Conflict with adopted environmental plans and goals in the community where it is located;
- Substantially affect a rare or endangered species;
- Interfere substantially with the movement of any resident or migratory fish or wildlife species;
- Involve the use, production, or disposal of materials that pose a hazard to animal or plant populations in the area affected; or
- Involve the alteration or conversion of biological resources identified as significant within the county or region. These resources include:
- Locally important species; and
- Locally important communities.
- Plant or animal taxa are considered locally important if they meet any of the following criteria:
- Taxa (species, subspecies, or varieties) that are limited in distribution in the county or region, or are endemic (limited to a specific area) to the region;
- Taxa that are at the extremes of their range or are separated (disjunct) from the known range for the taxon;
- Taxa whose habitat requirements make them susceptible to local extinctions as a consequence of development, the introduction of barriers to movement, or accompanying increases in human activity;
- Populations of a particular species that exhibit unusual adaptation or are quality examples of the species; and
- Taxa that are considered sensitive by a recognized monitoring group (e.g., Audubon Society, CNPS, CDFG).

Based on these guidelines, as well as pertinent state and federal policies and regulations, the following thresholds of significance will apply to impacts to biotic resources.

- Loss of individuals or habitat for special-status species;
- Loss of sensitive vegetation/habitat types, including wetlands, Coastal Scrub, Chaparral, and Coast Live Oak Woodland;
- Introduction of invasive exotic species; or

- Disruption of wildlife migration or movement.

Area-wide or Regional Impacts

Operational Impacts

Impact BIO-1: Alteration of ground water levels associated with project implementation could result in the localized alteration of freshwater marsh and saltwater marsh habitats within Morro Bay. However, as no net loss of either habitat is anticipated, potential impacts are considered *less than significant (Class III).*

The *1987 Final Program EIR* indicated that project implementation could result in an overall expansion of freshwater marsh into saltwater marsh in the local area of Cuesta-by-the-Sea, and a more general, but less pronounced, encroachment of saltwater marsh into freshwater marsh along the remaining portions of the bay fringe adjacent to the project area. These alterations would occur due to localized changes in ground water discharge associated with the removal of septic systems. Although local alterations of habitats may occur, the location and extent of these potential alterations cannot be predicted due to the complex nature of the Morro Bay hydrologic interface. While such alterations may occur locally, no net loss of either habitat is anticipated. Therefore, potential impacts are considered less than significant.

Collection System

Construction Related Impacts

Impact BIO-2: Construction of the collection system will largely take place in existing road rights-of way, and is not likely to impact sensitive plants or animals. Impacts are less than significant (Class III). Where construction will impact sensitive biota, such as in undeveloped lots, pre-construction surveys will take place to minimize impacts. This impact is significant, but mitigable (Class II).

Operational Impacts

Impact BIO-3: Operation of the collection system is not expected to result in adverse impacts to area biota. There is no impact.

Treatment System (Tri-W)

Construction Related Impacts

Impact BIO-4: Loss of habitat for the Morro shoulderband dune snail. Impacts to the Morro shoulderband snail from construction of the treatment system are considered a significant, unavoidable, adverse impact (Class I).

Shells and live snails have been documented at this site. Approximately 11 acres of land with poor to moderate quality habitat will be used for the development of the treatment plant. Mitigation for this loss is recommended to take place offsite, within the area proposed as critical habitat for the snail. However, development of this site will result in a net decrease in the acreage of suitable habitat for the snail. Impacts are therefore significant, and unavoidable (Class I).

Impact BIO-5: Potential Loss of Wintering Monarch Butterfly Roost Sites. Monarch butterflies use eucalyptus trees as winter roost sites. Although this species is not listed, the removal of roosting sites is considered to be a significant, but mitigable impact (Class II).

Development of the treatment plant would result in disturbance and removal of Windrow habitat (Eucalyptus groves) located within the central and western portions of the project site. Monarch butterfly typically uses Windrow habitat for overwintering purposes. Monarch butterfly has been documented by the NDDB and other existing literature, as using Windrow habitats in the vicinity of the project site. Eucalyptus groves located within the planned location of the treatment plant are scattered, but are considered suitable overwintering habitat for this species and disturbance of disturbance of these habitats located at the site will result in adverse impacts, considered significant but mitigable (Class II).

Impact BIO-6: Morro Bay blue butterfly. The proposed project will not impact areas of suitable habitat for the butterfly (namely dune lupine scrub). Impacts are less than significant (Class III).

Impact BIO-7: Potential Loss of or Disturbance to Raptors. Impacts are significant, but mitigable (Class II).

Eucalyptus stands, in the absence of other tall trees, are used by raptors for nesting purposes. Raptors such as the white-tailed kite, sharp-shinned hawk, Cooper's hawk, and potentially the golden eagle may utilize eucalyptus as nesting habitat. In addition, species such as the red-shouldered hawk and the red-tailed hawk may utilize these groves for nesting habitat. The groves may also be potential wintering habitat for species such as the prairie falcon and sharp-shinned hawk. Impacts are significant, but mitigable (Class II).

Impact BIO-8: Potential Destruction of Morro Bay Kangaroo Rat Habitat. Loss of this habitat is considered a significant, unavoidable impact (Class I).

The Morro Bay kangaroo rat is a federally and state listed endangered species. The Morro Bay kangaroo rat has not been observed on the Morro Shores site previously. Recent surveys (June 2000) did not find tracks or sign. Dr. Michael O'Farrell has determined that additional surveys using trapping protocol at Morro Shores and Broderson would not be fruitful. Mitigation for the loss of this site will take place within offsite areas containing suitable habitat. However, the development of this site would result in a net loss in acres of suitable habitat for the kangaroo rat. Impacts are therefore significant and unavoidable (Class I).

Impact BIO-9. Suffrutescent wallflower and Dune almond. Suffrutescent wallflower is considered a plant of limited distribution by CNPS (List 4). The dune almond is considered a plant of limited distribution and is on List 4 on the CNPS Inventory. Both of these plants occur in the Morro Shores site, however, neither will be impacted by the proposed treatment plant. There is no impact.

Impact BIO-10. Splitting Yarn Lichen. The splitting yarn lichen is a species of concern to USFWS. This lichen is present in the Morro Shores site, but is not expected within the boundaries of the Tri-W site. Regardless, there are sufficient numbers of this species and habitat for this species in the Broderson site to compensate for any losses. There is no impact.

Operational Impacts

Impact BIO-11. Operation of the treatment system will not result in long-term adverse impacts to biological resources. Impacts are less than significant (Class III).

TREATMENT SITE ALTERNATIVES

Morro Shores Southwest. The biological setting for the Morro Shores Southwest site is similar to the setting for the proposed treatment site, described in previous sections. Vegetation in this area generally consists of disturbed veldt grassland, coastal sage scrub, and eucalyptus groves ranging from one to eight mature trees. This site provides less suitable habitat for the Morro Shoulderband snail due in large part to the presence of eucalyptus, but provides better quality habitat for Monarch butterfly, and nesting raptors. This portion of the site does not provide habitat for sensitive plant species. Impacts are similar to the proposed project. The generalized habitat of this site is depicted in Figure 6.11-2.

Holland. The Holland site consists of 19.4 acres located north of Los Osos Valley Road, south of the Sea Pines Golf Course and west of Pecho Road. The site is vacant and currently grazed. The southern half of the site contains moderate quality coastal sage scrub habitat and the northern half contains disturbed annual grassland. Eucalyptus trees on site provide habitat for nesting birds and a resting place for Monarch butterflies, while the low-lying vegetation provides marginally suitable habitat for the Morro shoulderband snail. Preliminary surveys of the site have revealed the presence of snail shells; further surveys and mitigation would be required to determine the relative impact to sensitive animal species. This site does not support sensitive plant species and would therefore have similar impacts to the proposed project. The generalized vegetation of this site is depicted in Figure 6.11-5.

Pismo. The Pismo Site is located just east of the junction of South Bay Boulevard and Pismo Street, and south of Los Osos Junior High School. The site slopes primarily from the southwest to the northeast, and ranges in elevation from 98 feet above MSL on the western side of the site to 53 feet above MSL on the eastern side of the site. The site supports three primary communities considered sensitive by CDFG: Coastal Scrub, Chaparral, and Coast Live Oak Woodland. In addition, ruderal habitat occurs along the northern project site boundary, adjacent to the parking lot and roadway. Vegetation of the Pismo site is depicted in Figure 6.11-6.

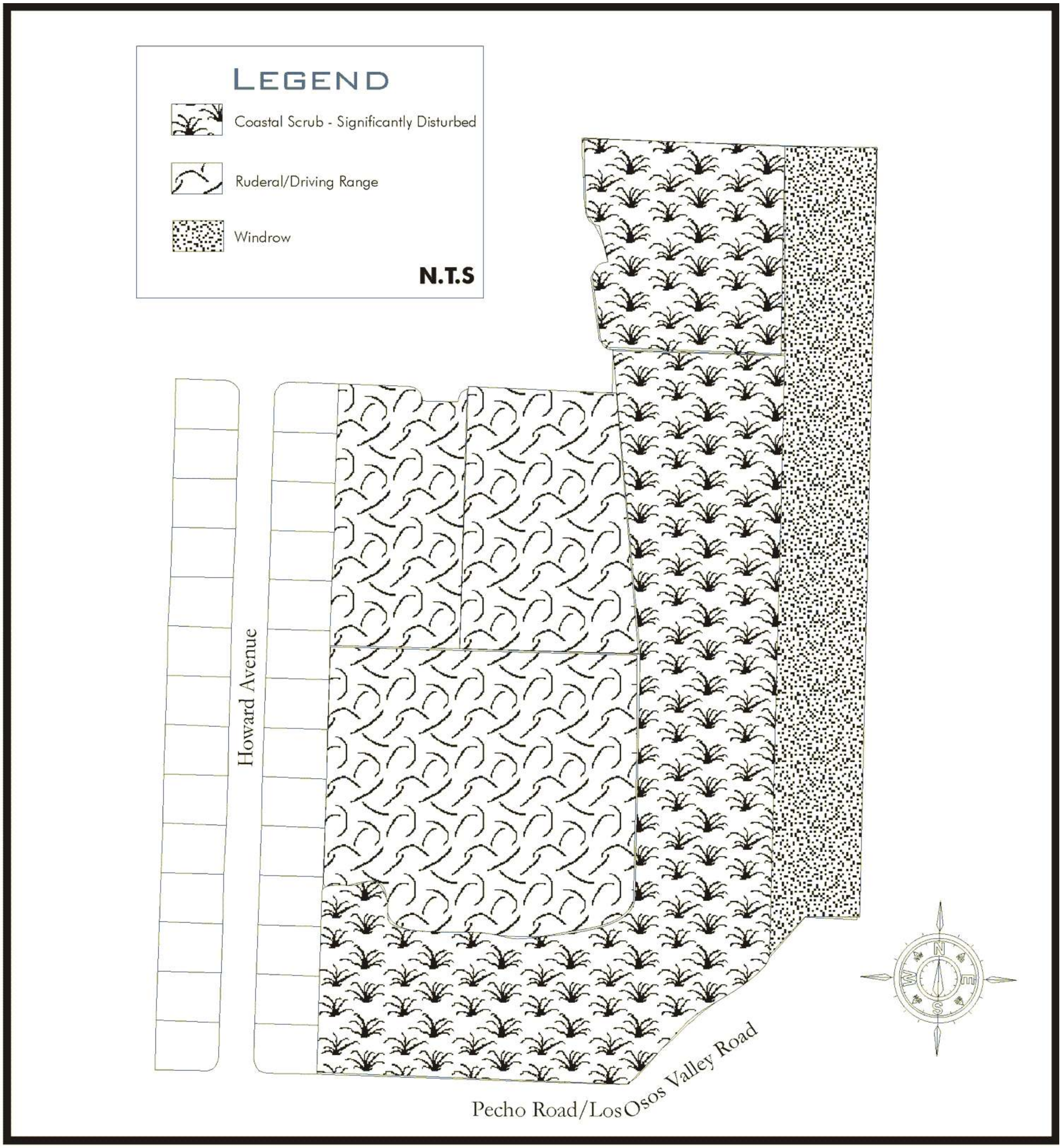
Vegetative Communities. Coastal Scrub communities, consisting primarily of Dune Lupine Scrub occupies the largest portion of the Pismo Site. Dune Lupine Scrub occupies approximately the central one-third of the site. This habitat type intergrades with Heather Goldenbush Coastal Scrub to the south, Windrow and Coast Live Oak Woodland to the east and northeast, and Veldt Grass Grassland to the west. Chaparral communities, represented by Chamise - Wedgeleaf Ceanothus, occupy the southwestern portion of the project site.

Flora. The flora of the Pismo Site consists of 54 vascular plant taxa, of which 47 (87 percent) are native and 7 are nonnative (13 percent), and 28 nonvascular plant taxa (primarily lichens), all of which are native to the Los Osos region. Additional species of vascular and nonvascular plants are expected to occur at the Pismo Site, primarily annual herb and grass and crustose lichen species.

Special-Status Plant Species. Coastal Scrub and Chaparral communities of the Pismo Site provide suitable habitat for a variety of special-status vascular plants including Hoover bentgrass, Arroyo de la Cruz manzanita, Morro manzanita, Wells manzanita, Monterey spineflower, Blochman's leafy daisy, Saints daisy, Indian knob mountainbalm, San Luis Obispo wallflower, Curly leaf monardella, and Dune almond. Of these twelve species identified as potentially occurring at the site based on the presence of suitable habitat, only Monterey spineflower and Dune almond were observed during the field surveys conducted for the 1997 Final Supplemental EIR by Fugro West, Inc. Dune almond was observed throughout a large portion of the western one-half of the project site. Although Blochman's leafy daisy was not observed during the field survey, it has been documented previously as occurring in the vicinity and is assumed to occur at the project site. As previously indicated, field surveys were conducted outside of the normal flowering periods for most of the identified special-status plants. Several special status nonvascular plants were observed throughout the Pismo Site as well. The reader is invited to refer to the 1997 EIR for more information.

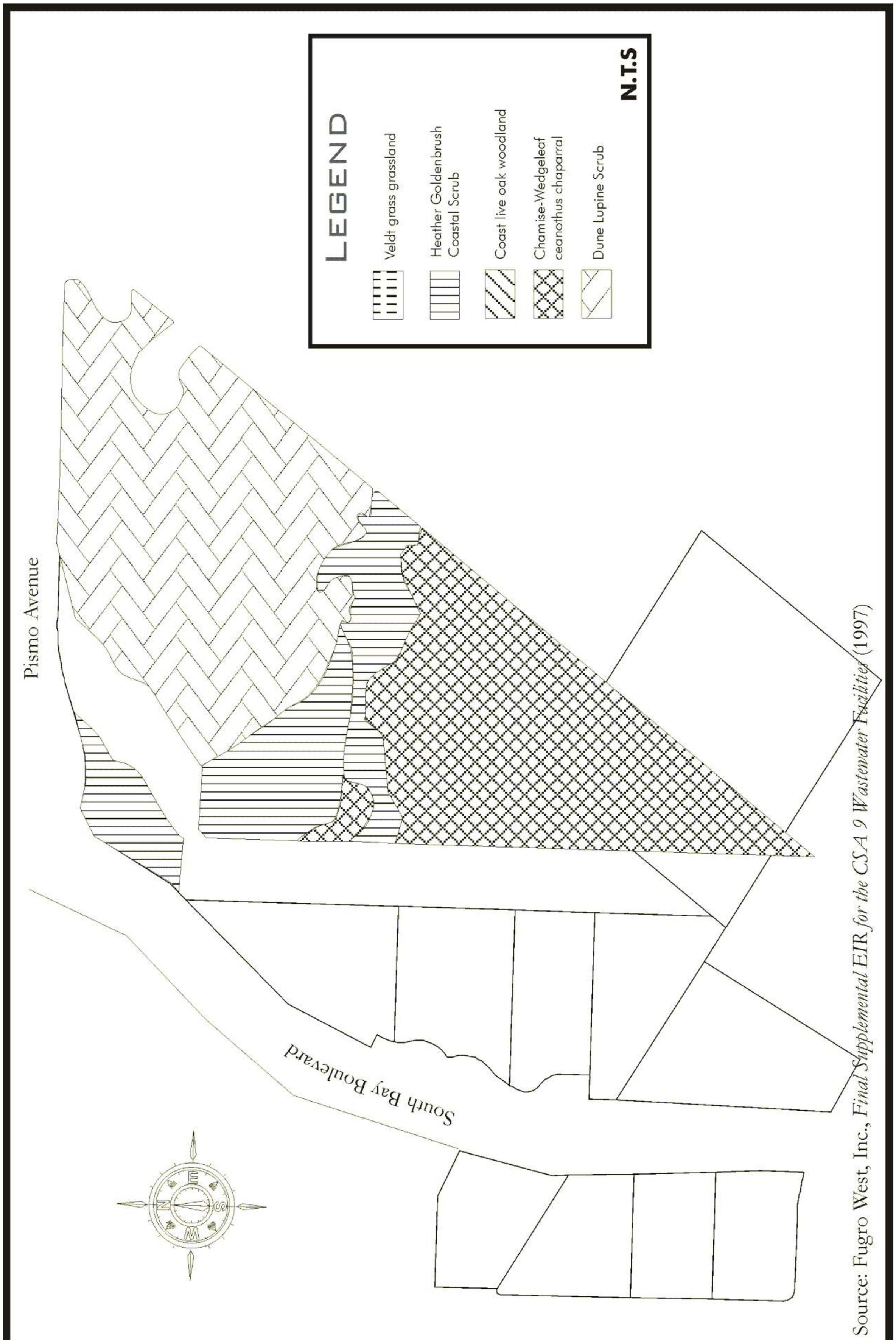
Fauna. This site contains Coastal Scrub habitat and Monterey cypress and Monterey pine trees in a windrow. The Pismo site has suitable habitat for Morro Bay kangaroo rat, Morro blue butterfly, Black legless lizard, and Monarch butterfly.

This site presents a greater likelihood of adverse impact to sensitive plant species, communities, and animal species than the proposed project.



LOS OSOS COMMUNITY SERVICES DISTRICT
WASTEWATER FACILITIES PROJECT

Figure 6.11-5
Vegetation - Holland Site



Source: Fugro West, Inc., *Final Supplemental EIR for the CSA 9 Wastewater Facilities* (1997)

LOS OSOS COMMUNITY SERVICES DISTRICT
WASTEWATER FACILITIES PROJECT

Figure 6.11-6
Vegetation - Pismo Site

Andre. The Andre property has been significantly disturbed through ongoing agricultural operations. The site exhibits extremely low potential for Morro Shoulderband snail and other sensitive animal species. The high frequency and intensity of disturbance also limits the potential for sensitive plant species. This site would present fewer impacts to biological resources than the proposed project.

Disposal System (Broderson & Powell)

Construction Related Impacts

Approximately eight acres of land will be disturbed in order to install effluent disposal leach lines, four inches in diameter, at a depth of five to six feet, and laid at least four feet on center.

Impact BIO-12: Construction of the leach fields will result in disturbance of vegetation considered sensitive by CDFG. Impacts are significant, and adverse (Class I).

Installation of the leach fields will require the complete removal of existing vegetation that occurs at the sites to be occupied by the leach lines. Therefore, development within the southern portion of the project site could result in the direct removal of Coastal Scrub habitats, Coast Live Oak Woodland habitats, and Chaparral habitats. Disturbed habitats would primarily consist of Heather Goldenbrush Scrub. Development of the percolation ponds would also result in the direct removal of individual Coast Live Oak trees, located primarily along the southern portion of the project site. Because Coastal Scrub, Coast Live Oak Woodlands, and Chaparral communities located at the project site are considered sensitive habitats by CDFG, direct impacts to these habitats resulting from project implementation would be considered adverse and significant (Class I).

Activities associated with the construction phase of the proposed leach fields could result in the disturbance of sensitive habitats located adjacent to the perimeter of the facilities. Although construction activities are temporary, impacts to sensitive habitats including Heather Goldenbush Coastal Scrub, Morro Manzanita Chaparral, and Coast Live Oak Woodland habitats could be long-term. Disturbance of these habitats could result in long-term changes in species composition through further introduction of invasive exotic plant species such as Veldt Grass. Remaining individual Coast Live Oaks that occur along the southern fringes of the proposed location of the rapid infiltration ponds could be impacted by direct or indirect disturbance during construction activities. As indicated in the *1987 Final Program EIR*, construction-related activities occurring around the perimeter of the proposed site could result in adverse impacts due to damage of the canopies or roots of existing plants and disruption of the soil-surface in the surrounding area. Pygmy Coast Live Oak, and Morro Manzanita are subject to various parasites if their root systems are damaged. These indirect impacts are also adverse and significant (Class I).

This habitat area supports a number of rare or endangered plants and animals described in the impacts below.

Impact BIO-13: Destruction of proposed critical habitat for the Morro shoulderband dune snail. The development of eight acres of leach field will result in the degradation or loss of habitat in this area. This is a significant, unmitigable impact (Class I).

Development of the leach fields would result in a permanent loss of habitat considered suitable for the Morro Shoulderband Dune Snail. Although the Morro Shoulderband Dune Snail has not been documented as occurring in the vicinity of the site, Coastal Scrub habitats located at the site may be considered suitable for this species due to the presence of its host plant, Heather Goldenbush. Within the leach fields site, this plant species occurs as a dominant within Heather Goldenbush Coastal Scrub, the habitat type primarily affected by development of the leach fields. Disturbance of any portion of this habitat type at the site will result in a reduction in the amount of potential habitat currently available to the Morro Shoulderband Dune Snail, both at the site and within the region. A reduction in habitat potentially used by this special-status species would therefore be considered a significant but mitigable impact (Class II).

Impact BIO-14: Potential Destruction of Wintering Monarch Butterfly Roost Sites. Monarch butterflies use eucalyptus trees as winter roost sites. Although this species is not listed, the removal of roosting sites is considered to be a significant impact. This impact is considered significant, but mitigable (Class II).

The leach fields will be situated immediately south of the easternmost windrows located on the Broderson site. The main location of the leach fields will avoid the windrows, however approximately one and one half acres of the windrow in the center of the site will be removed. Mitigation measures dealing with construction timing will reduce the impact to roosting species in the trees to a less than significant level. Furthermore, as part of the restoration plan for the Broderson site, it may be recommended that the windrows be removed altogether in order to increase the habitat for endangered species. Future management of the site will determine the outcome of these competing interests.

The construction of the proposed access road and the use of the proposed access road may create noise disturbance that could affect the roosting sites of the monarch butterfly. Construction and operation of the proposed disposal sites may cause loss of habitat and increase the noise disturbance to the monarch butterfly roosting sites as well.

Impact BIO-15: Potential Disturbance to the Morro Bay Blue Butterfly. The Morro bay blue butterfly is a federal species of concern. This species is found in coastal sage scrub habitats. Implementation of the proposed project will result in the removal and/or destruction of coastal sage scrub acreage in the Broderson site. This is a significant, but mitigable impact (Class II).

Project implementation would result in the permanent loss of habitat considered suitable for the Morro Blue Butterfly. This subspecies has not been documented as occurring at the rapid infiltration pond site but is known to occur in the region. Since the Morro Blue Butterfly's host plant, the Dune Lupine, occurs as a dominant throughout a large portion of the site, portions of the site provide suitable habitat for the species. Within the site, suitable Morro Blue Butterfly habitat is associated with Dune Lupine Scrub. Loss of habitat potentially used by Morro Blue Butterfly as a result of development of the percolation ponds would be considered significant but mitigable (Class II).

Impact BIO-16: Potential Loss or Disturbance to Raptors. Eucalyptus stands, in the absence of other tall trees, are used by raptors for nesting purposes. This is considered a significant, but mitigable impact (Class II).

Raptors such as the white-tailed kite, sharp-shinned hawk, Cooper’s hawk, and potentially the golden eagle may utilize eucalyptus as nesting habitat. In addition, species such as the red-shouldered hawk and the red-tailed hawk may utilize these groves for nesting habitat. The groves may also be potential wintering habitat for species such as the prairie falcon and sharp-shinned hawk. Pre-construction surveys may demonstrate the need for construction timing mitigation.

Impact BIO-17: Potential Destruction of Morro Bay Kangaroo Rat Habitat. The Morro Bay kangaroo rat is a federally and state listed endangered species. Though the Morro Bay kangaroo rat has not been seen in the project area during previous site visits, there is potential for this species to occur. This is considered a significant, unmitigable impact (Class I).

Development of the leach fields would result in the permanent loss of suitable Morro Bay Kangaroo Rat habitat. Although individuals of this subspecies were captured in areas located directly east of the project site during surveys conducted in 1984 through 1986, no Morro Bay Kangaroo Rats were captured at the site during surveys conducted by Gambs in 1986. Gambs (1986) indicated that although habitat conditions present in the area located west of Broderson Avenue may be more favorable to other small mammals, such as pocket mice, brush mice, and Dusky-footed Woodrat rather than Morro Bay Kangaroo Rat, these findings do not necessarily preclude its occurrence from the site. Due to the close proximity of the leach fields site to USWFS designated - Morro Bay Kangaroo Rat Essential Habitat, located directly to the east, previous documented occurrences of this subspecies within adjacent areas, and the presence of habitat considered suitable for this subspecies, portions of the leach fields site are expected to provide suitable habitat for Morro Bay Kangaroo Rat. This suitable habit primarily consists of Coastal Scrub and open Chaparral communities. Therefore, disturbance or loss of existing Coastal Scrub and portions of Chaparral habitats that contain an open canopy is expected to result in significant adverse impacts (Class I) to suitable habitat for Morro Bay Kangaroo Rat.

Impact BIO-18. Disturbance of Suffrutescent Wallflower and Dune Almond. Suffrutescent wallflower is considered a plant of limited distribution by CNPS (List 4). The dune almond is considered a plant of limited distribution and is on List 4 on the CNPS Inventory. Both of these plants occur in the Broderson site. Impact to these plants is not considered significant due to their distribution in the area (Class III)

Powell or Eto

Construction Related Impacts

An additional 4 acres of leach fields is proposed for the Powell property located immediately to the east of the middle school, on the east side of South Bay Boulevard or the Eto property. The project involves the placement of leach lines buried five to six feet on at least four foot centers.

Impact BIO-19: Destruction of proposed critical habitat for the Morro shoulderband dune snail. The development of four acres of leach field will result in the degradation or loss of habitat in this area. This is a significant, unmitigable impact (Class I).

Impact BIO-20: Potential Destruction of Morro Bay Kangaroo Rat Habitat. The Morro Bay kangaroo rat is a federally and state listed endangered species. Though the Morro Bay kangaroo rat has not been seen in the project area during previous site visits, there is potential for this species to occur. This is a significant, unmitigable impact (Class I).

Until 1998, the portion of the Powell property proposed for leach fields was mostly dune lupin in a disturbed condition from prior cultivation. In late 1998, the 30 acre parcel was planted in peas. The soil type, however, remains largely as it was, and will support the re-colonization of the dune lupine habitat. Mitigation for the site includes purchase of additional habitat and restoration activities.

Operational Impacts

Impact BIO-21: Long-term operation of leach fields could result in the disturbance of Coastal Scrub habitats from increased groundwater elevations. However, ground water modeling conducted by Metcalf and Eddy (1996) indicate that operation of the disposal system would not significantly affect ground water levels within the root zone below the site. However, plants growing directly above the leach lines may encounter higher soil moisture content. Therefore, this impact is considered *significant but mitigable (Class II).*

As indicated in the *1987 Final Program EIR*, development of the disposal system is expected to result in an increase in groundwater elevations within the immediate area, due to groundwater recharge associated with operation of the effluent disposal system. Increased soil moisture in areas located in the immediate vicinity and downslope may stimulate growth of root-rotting fungi, particularly if moisture is present during the summer (Morro Group, 1987). Species subject to fungal root-rot infections may die out downslope from the rapid infiltration ponds, and growth of other species may be stimulated due to the presence of moisture. Therefore, species composition of Coastal Scrub communities located in the immediate vicinity and downslope of the leach fields could be altered over time. Ground water modeling conducted by Metcalf and Eddy (1996) indicate that ground water levels within the root zone immediately downslope of the disposal area would not be altered.

The leach lines will be buried five to six feet below ground surface. Plants growing immediately above the leach field may encounter higher moisture content in the soils as their roots find deeper ground. For this reason, the restoration of the land above the leach fields is not considered adequate mitigation, and additional habitat preservation is included in the project description to mitigate this potential loss of habitat. Therefore, potential impacts are considered significant, but mitigable (Class II).

A related issue is the effect of sub-surface disposal east of the fault on water levels in Los Osos Creek. At present, most of the wastewater returned to the basin from septic systems east of the fault flows toward Morro Bay. However, a sizeable portion flows east toward Los Osos Creek due primarily to the pronounced “mound” of groundwater that has been mapped in the vicinity of Pismo Avenue and 14th Street (see Figure 6.2-2: Groundwater Elevations). Generally, the higher groundwater causes areas east of 15th Street to flow toward the Creek where the freshwater helps support riparian and wetland vegetation in that area. The Wastewater Facilities Project proposes to eliminate septic system replenishment in favor of sub-surface leach fields in selected locations (see Figure 3-7). The disposal locations were chosen in part to help ensure that existing problems related to shallow groundwater and ponding are not worsened. The quantity of treated wastewater reintroduced to the basin is expected to maintain balance between the east and west sides of the fault.

Note that the Powell disposal site located at the east end of El Moro Avenue is estimated to have a disposal capacity of about 175,000 gallons per day. Assuming 300 gallons per day of wastewater per single family residence, this is roughly equivalent to 583 dwelling units which is slightly less than the number of units east of 15th Street and south of El Moro Avenue. This suggests that disposal in the vicinity of the Powell property will more or less maintain existing subsurface flows toward Los Osos Creek, albeit in a more concentrated area.

DISPOSAL SITE ALTERNATIVES

Vista de Oro. The parcel at Vista de Oro currently exhibits disturbed/ruderal habitat; it is unlikely to provide habitat for sensitive animal or plant species. This site is currently being used for stormwater retention and leach fields.

Monarch Grove. The location at Monarch Grove elementary school is currently used as a play field and is dominated by introduced turf grasses; the potential for sensitive plant or animal species is low.

LOVR/Pine Avenue. This location is in an existing road right-of-way, significantly disturbed by weed abatement activities. Vegetation in this area consists mainly of veldt grass-dominated ruderal grassland.

Pismo Avenue and Santa Maria Avenue. Both of these sites are within existing road rights-of-way and are not expected to provide habitat for sensitive plants or animals.

Indirect and Cumulative Impacts

The community of Los Osos is located on an ancient sand dune complex known as the Baywood fines sands. This soil supports many unique species, several of which are endemic, and a few that are rare and endangered. This complex extends from Morro Bay on the west, to the hillsides on the south, and Los Osos Creek on the east and north sides of Los Osos. The area surrounding three sides of the community is the only remaining relatively unfragmented portion of this habitat and is known as the Los Osos Greenbelt. Portions of this greenbelt have been proposed as "critical habitat" for the Morro shoulderband dune snail. The greenbelt was described in "Los Osos/Baywood Park Conservation Plan and Greenbelt," prepared by Jones & Stokes Associates for the Land Conservancy of San Luis Obispo County.

Indirect impacts would occur to biological resources as a result of new construction that would occur within the prohibition zone after the project is complete. Completion of the wastewater facility is intended to result in the lifting of the moratorium. This would allow the issuance of building permits within the prohibition zone. Many of the undeveloped parcels within the prohibition zone contain habitat for rare and endangered species, most significantly the Morro Bay kangaroo rat and Morro shoulderband dune snail. Figure 6.11-1 illustrates the habitats found in and near the prohibition zone.
Cumulative impacts would occur with the development that is allowed to proceed in the area outside the prohibition zone, but upon the Baywood fines sand complex. This development could occur prior to the lifting of the prohibition. Because the total habitat area associated with the ancient dunes is so small, the cumulative development is considered a significant impact.

To mitigate for the indirect and cumulative impacts associated with the project, the LOCSD is preparing a Habitat Conservation Plan in consultation with the United States Fish and Wildlife Service. This ongoing effort involves numerous agencies, including the California Department of Fish and Game, the Coastal Commission, MEGA, the County of San Luis Obispo and others. The plan will have a program managed by the LOCSD which will provide mitigation for the loss of habitat resulting from the development of parcels within the prohibition zone. It will also include programs for the LOCSD to coordinate with the County of San Luis Obispo for areas outside of the district boundary. Figure 6.11-1 shows acreage of habitat within the Los Osos area.

Cumulative impacts of the project are being addressed by the County in its update of the Estero Area Plan of the San Luis Obispo General Plan and Local Coastal Plan. Planning Area Standards proposed will include the reduction of density, clustering away from sensitive areas, transfer of development credits away from sensitive areas, and restoration of disturbed areas. While these efforts are not within the control of the project proponent, the district is working cooperatively on the update.

In addition to government agency efforts to protect the habitat of endangered species, a number of private conservation organizations are working to conserve the greenbelt. MEGA, the Morro Estuary Greenbelt Alliance, The Trust for Public Lands, BLM, State Parks and the Bay Foundation with others are working cooperatively with landowners to purchase or otherwise ensure the protection of properties.

Most recently, 204 acres located on the southern hillsides of Los Osos were put under permanent protection. The 40 acre Powell property east of the middle school is under agreement with the Trust for Public Lands. Additional land has been purchased in the northeast portion of the greenbelt. Efforts are underway to protect several other properties as well. Private and public partnerships for conservation will be the most important component of the greenbelt preservation effort.

Mitigation Measures

Mitigation BIO-1. Where construction will necessitate disturbance in undeveloped lots, wetlands and other potentially sensitive areas, a pre-construction survey will be conducted to assess and minimize any potential impacts. (Impact BIO-2)

Mitigation BIO-2. Loss of Wintering Monarch Butterfly Roost Sites. The project proponent shall avoid habitat where feasible. A qualified monarch butterfly specialist will conduct preconstruction surveys for the monarch butterfly during the months of October to February. Potential roost sites that could be affected during construction will be fenced. (Impact BIO-5, BIO-14)

Mitigation BIO-3. Loss of Raptor Habitat. The project proponent will conduct a preconstruction survey for nesting raptors. Depending on the timing of construction, the project proponent will conduct a preconstruction survey during spring or early summer (April to early July) to determine whether nesting raptors or species protected by State and/or Federal law are present on or within the project area. Winter surveys are also recommended and should be done by a qualified wildlife biologist. If the survey results indicate that nesting raptors or protected species are present on or within the project area, the nest tree or area will be fenced or otherwise demarcated and a 500-foot no-disturbance buffer will be established until the nesting activity is completed and the young have fledged. The distance and placement of the buffer area will be determined in consultation with the CDFG. Only after nesting activities have ceased will construction be allowed to continue. All potentially suitable nesting trees will be removed prior to the breeding season. (Impact BIO-7, BIO-16)

Mitigation BIO-4 Mitigate for Loss of Coastal Scrub Habitat. Agency Consultation/Permitting. Project implementation would result in direct or indirect disturbance or potential take of several federal and state listed species. Project implementation would require authorization for this disturbance or potential take from both the U.S. Fish and Wildlife Service (USFWS) and the California Department of Fish and Game (CDFG). Authorization requirements are outlined below:

A. USFWS. Authorization for take by USFWS would require formal consultation with USFWS pursuant to section 7 of the Endangered Species Act.

B. CDFG. Authorization for take by CDFG would require a Memorandum of Understanding (MOU) and Management Authorization (MA) pursuant to Section 2050 et seq. of the California Fish and Game Code. Development of a MOU/MA would be based upon the Section 7 USFWS consultation discussed above.

C. Acquire Additional Habitat. As part of the consultation efforts described above, the District will acquire additional habitat sufficient to compensate for the loss of habitat of the Morro shoulderband snail, Morro Bay kangaroo rat, Morro Bay blue butterfly, and other species dependent upon the coastal scrub habitat due to the direct impacts of the project. The land acquired should have the following qualities:

- The preferred site for mitigation is the northerly Broderson parcels, subject to the eight acres of leach fields. This habitat mitigation is for all direct impacts except from any leach fields constructed on the east side of the inferred fault.

- The land should be habitat in or contiguous to the proposed critical habitat area as designated by the USFWS. Ideal land that meets this criteria is located around the community of Los Osos in the area studied for the greenbelt program by the Land Conservancy.

- Any disturbed portion of the land should be capable of restoration to a native habitat. This would mean that the soils have not been removed or fill placed on the site that are unsuitable for the native plantings (other than small amounts). The land should be free of structures or debris, or capable of being cleared of any structures.

- The land should have primarily aeolian sand deposits; be in a stabilized condition (not mobile); have an open canopy; be of the appropriate aspect and other meteorological conditions.

- The land should be granted to an appropriate agency or conservation organization in perpetuity with deeded guarantees of non-development or transfer (unless to another like organization). The protection of the land may allow for some passive public activities, such as hiking, scientific investigation, and low-impact education.

D. Restoration. After securing the land, the District should restore the land so that it functions as suitable habitat for many of the local species of plants and wildlife described in this EIR whose existence is endangered or of concern. One of the benefits of this mitigation approach is that a single program will mitigate the impacts to all or most of the species described in the setting section. Restoration of the land should include the following:

  - Removal of invasive exotic plant species. This may mean removal of all plants by grading, or a program of hand labor, depending upon the condition of the land. If the amount of invasives is relatively small, the work should leave as much of the existing native vegetation intact.

  - Removal of structures or debris.

  - Regrading of any unnatural mounds, holes or berms previously created on the site.

  - A planting program of a mixture of indigenous plant species that serve to restore the site *and* serve multiple species' needs, especially the Morro shoulderband snail, Morro Bay blue butterfly, Black legless lizard, and potential future re-introduction of the Morro Bay Kangaroo Rat. This will include Dune Lupine for the Morro Bay blue butterfly. The final planting program should be developed in consultation with CNPS, CDFG and USFWS.

  - An ongoing maintenance and observation program.

(Impact BIO-4, BIO-6, BIO-8, BIO-12, BIO-17, BIO-19, BIO-20)

Mitigation BIO-5 Minimize Disturbance of Coastal Scrub, Chaparral, and Coast Live Oak Woodland Habitats Located Around the Perimeter of the Leach Field Sites During Construction. Minimize, to the extent feasible, the amount of disturbance of land beyond the actual area of development. This can be accomplished by identifying minimum activity area required, and establishing a physical construction limit beyond which equipment and storage of material would not extend.

- Clearly identify and mark the perimeter of the proposed leachfield construction zone prior to and during construction onsite with highly visible temporary fencing.

- Restrict the use of all heavy equipment and vehicles to areas located inside of the identified construction zone throughout the duration of construction.

- Clearly identify and mark the proposed access route to the construction zone of the leachfield, and limit all construction traffic to areas located within the identified access route.

- Leave areas of undisturbed habitat between portions of the leachfield, rather than clearing a single, contiguous area.

(Impacts BIO-12, BIO-13, BIO-14, BIO-15, BIO-16, BIO-17, BIO-18))

Mitigation BIO-6 Relocate Sensitive Species. Qualified biologists should remove as many Morro shoulderband snails as practicable from any area of proposed disturbance. These should be relocated nearby to suitable habitat. (Impact BIO-4, BIO-13, BIO-19))

Mitigation BIO-7 Restore Sensitive Habitats Disturbed During the Construction Phase of the Leach Fields. Following completion of construction of the proposed leach fields, revegetate all areas located within or around the area that previously contained native vegetation and that were disturbed during construction.

- Revegetate only with appropriate indigenous native vegetation. At a minimum, the structure and composition of habitats restored should reflect pre-project site conditions or better.
- All exotics that escape cultivation should be removed on a regular basis.
- All plantings should be grown from native parent stock collected onsite, and will be propagated by a native plant nursery specialist. In addition, the health and maintenance of all replacement vegetation should be monitored for a sufficient duration and frequency to ensure successful establishment of the vegetation.

(Impacts BIO-12, BIO-13, BIO-14, BIO-15, BIO-16, BIO-17, BIO-18, BIO-19, BIO-20)

Mitigation BIO-8 Control Introduction of Invasive Exotic Plants. To control introduction of invasive exotic plants on site, implement the following measures during construction and incorporate into the design guidelines of the proposed leach fields, as appropriate.

- Use only clean fill material (free of weed seeds) within the construction zone of the proposed project.

- Thoroughly clean all construction equipment prior to being moved onto and used at the site.

- Prohibit planting or seeding of disturbed areas with nonnative plant species;

- Control the establishment of invasive exotic weeds in all disturbed areas.

(Impacts BIO-12, BIO-13, BIO-14, BIO-15, BIO-16, BIO-17, BIO-18, BIO-19, BIO-20)

Mitigation BIO-9 Avoid or Minimize Disturbance of Special-Status Plants Located Within and Adjacent to the Perimeter of the Project Site Construction Zone. Implement the following measures prior to and during construction to avoid or minimize unnecessary disturbance of special-status plants occupying the vicinity of the project site.

- Retain a qualified botanist to conduct focused surveys for special-status plant species during the appropriate flowering periods for the various species that are known to occur or have potential to occur within the construction zone of the project site, based on the presence of suitable habitat.

- Clearly map and identify each individual or groups of special- status plants observed during the focused survey with highly visible flagging. Morro Manzanita located in the southern portion of the Broderson site should be marked with highly visible flagging and completely avoided.

- Provide instruction to construction personnel on avoiding unnecessary disturbance of areas marked with flagging and identify the locations of all groups of special-status plants.

- Transplant Individual Special-Status Plants Located With the Construction Zone of the Leach Fields. Individual special-status plants that are identified as occurring within the proposed construction zone should be identified. If it is determined that avoidance or disturbance of the identified plants is not feasible, implement transplanting operations for the identified species. It should be noted that the success of transplanting is highly dependent on the specific taxon. Transplanting of some species currently occupying the site may not be as successful as for others, or may fail entirely. Therefore, prior to implementing these operations, previous case studies should be researched to determine which plants are expected to have reasonable opportunities for survival following transplantation, and determine which techniques have been successful previously. If transplanting is then determined to be a viable option for some identified special-status plants, implement the following measures:

  1. Avoid disturbance of the root system of each plant during transplanting.
  2. A plant should only be moved to a habitat that contains site conditions similar to the location previously occupied by each plant.
  3. Closely monitor the success of transplanted species.

  (Impacts BIO-12, BIO-13, BIO-14, BIO-15, BIO-16, BIO-17)

Mitigation BIO-10. Avoid or Compensate for Loss of Morro Bay Kangaroo Rat Habitat. Due to the limited and localized distribution of the Morro Bay kangaroo rat, the project proponent will make every effort to avoid the loss of suitable Morro Bay kangaroo rat habitat. Preconstruction surveys will be conducted by a qualified wildlife biologist. These surveys may include a combination of techniques. The project proponent will work with CDFG and USFWS to determine the best means of surveying for the kangaroo rat. The project proponent will compensate for loss of habitat in an area within the limited range of the Morro bay kangaroo rat and of equal or better quality than the habitat that will be impacted (see Mitigation BIO-4). The project proponent shall ensure that the site is not adversely affected by human disturbance, domestic animal disturbance, or the use of substances toxic to the Morro Bay kangaroo rat.

(Impacts BIO-8, BIO-17)

Mitigation BIO-11. Avoid the Loss of Wintering Monarch Butterfly Roost Sites. The project proponent shall avoid habitat. A qualified monarch butterfly specialist will conduct preconstruction surveys for the monarch butterfly within 0.5 miles of the proposed access road and groundwater injection sites. Potential roost sites that could be affected during construction will be fenced. (Impact BIO-5, BIO-14)

Mitigation BIO-12. Avoid or Compensate for Loss of Morro Bay blue Butterfly Habitat. Where feasible, the project proponent will avoid Morro Bay blue butterfly habitat. Surveys for Morro Bay blue butterfly presence will be conducted by a qualified wildlife biologist in late April or early May. If the habitat is likely to be disturbed during construction, fencing will be placed around areas of suitable habitat. Where avoidance is not feasible, the project proponent, will compensate for the loss of potential Morro Bay blue butterfly habitat by setting aside an area of equal or better quality than the habitat to be impacted (see Mitigation BIO-4). The project proponent will ensure that the compensation area is not adversely affected by human disturbance, vandalism, off-road vehicle use, or pesticide application. Selection of a specific compensation site will be made by mutual agreement between the project proponent, the California Department of Fish and Game, the United State Fish and Wildlife Service, and the agency or entity responsible for managing the compensation site. (Impacts BIO-6, BIO-15)

Mitigation BIO-13. Avoid Loss of Nesting Raptor Habitat. The project proponent will conduct a preconstruction survey for nesting raptors. Depending on the timing of construction, the project proponent will conduct a preconstruction survey during spring or early summer (April to early July) to determine whether nesting raptors or species protected by State and/or Federal law are present on or within the project area. Winter surveys are also recommended. If the survey results indicate that nesting raptors or protected species are present on or within the project area, the nest tree or area will be fenced or otherwise demarcated and a 500-foot no-disturbance buffer will be established until the nesting activity is completed and the young have fledged. The distance and placement of the buffer area will be determined in consultation with the CDFG. Only after nesting activities have ceased will construction be allowed to continue. Nesting habitat will be marked and avoided during construction and operation activities of the proposed project. (Impacts BIO-7, BIO-16)

Mitigation BIO-14. Avoid or Compensate for Loss of Morro Bay Kangaroo Rat Habitat. Due to the limited and localized distribution of the Morro Bay kangaroo rat, the project proponent will make every effort to avoid the loss of suitable Morro Bay kangaroo rat habitat. Preconstruction surveys will be conducted by a qualified wildlife biologist. The project proponent will work with CDFG and USFWS to determine the best method of survey for this species. Where avoidance is not feasible, the project proponent will compensate for loss of habitat in an area within the limited range of the Morro bay kangaroo rat and of equal or better quality than the habitat that will be impacted. (See Mitigation BIO-4) The project proponent shall ensure that the site is not adversely affected by human disturbance, domestic animal disturbance, or the use of substances toxic to the Morro Bay kangaroo rat. Selection of a compensation site will be made by mutual agreement of the project proponent, CDFG, USFWS, and the entity or agency responsible for managing the compensation site. (Impacts BIO-8, BIO-17)

Mitigation BIO-15 Compensate for loss of habitat at the Powell or Eto leach field site. The proponent shall acquire land between one to two as much taken for the designed area of the leach fields. The approach to this mitigation will be the same as described in BIO-4. (Impacts BIO-19, BIO-20)

Mitigation BIO-15 The LOCSD, in conjunction with the California Department of Fish and Game (CDFG), the US Fish and Wildlife Service (USF&WS), San Luis Obispo County and the California Coastal Commission shall prepare and implement a Habitat Conservation Plan (HCP) or Natural Community Conservation Plan (NCCP) for the long-term preservation of habitat remaining within the Los Osos Greenbelt, including habitat remaining on individual vacant lots. The HCP/NCCP shall identify the habitat resources and the quality of those resources on the remaining vacant properties within the Greenbelt. The range of potential conservation programs to be considered in the HCP/NCCP shall include, but not be limited to the following:

- The identification of policies and programs to be incorporated into the Estero Area Plan aimed at the long-term preservation of sensitive biological resources in the Los Osos area; such policies and programs may include:

  – Transfer of development credits
  – Clustering
  – Avoidance of sensitive resources in site design
  – Changes in density and land use
  – Incorporation of open space into the design of new development

- Programs aimed at facilitating coordination among agencies and organizations involved in management and conservation/preservation of sensitive resources, including USF&WS, CDFG, California Coastal Commission, San Luis Obispo County, the LOCSD, MEGA, NEP, Land Conservancy of San Luis Obispo County, and others;

- The creation of a landbank program to facilitate the purchase of properties with high quality habitat within the Greenbelt, to be repaid over time from fees on new building permits;

- Programs for the acquisition of properties within the Greenbelt with significant habitat resources;

Residual Impacts

Because the project will result in the disturbance and loss of critical habitat for endangered species, the residual impacts to biological resources are significant (Class I).

Biological Resources - Comparison of Alternatives

Project Impacts		STEP/STEG	Alternative Treatment Sites			
			Holland	Morro Shores SW	Pismo	Andre
Impact BIO-1	Alteration of ground water levels associated with project implementation could result in the localized alteration of freshwater marsh and saltwater marsh habitats within Morro Bay. However, as no net loss of either habitat is anticipated, potential impacts are considered *less than significant (Class III).*	Comparable	Comparable	Comparable	Comparable	Comparable
Impact BIO-2	Construction of the collection system will largely take place in existing road rights-of way, and is not likely to impact sensitive plants or animals. Impacts are less than significant (Class III). Where construction will impact sensitive biota, such as in undeveloped lots, pre-construction surveys will take place to minimize impacts. This impact is significant, but mitigable (Class II).	Slightly less	N/A	N/A	N/A	N/A
Impact BIO-3	Operation of the collection system is not expected to result in adverse impacts to area biota. There is no impact.	Comparable	N/A	N/A	N/A	N/A
Impact BIO-4	Loss of coastal scrub habitat of Morro shoulderband snail (Class I).	Comparable	Less impact	Slightly less	More impact	Less impact
Impact BIO-5	Potential Loss of Wintering Monarch Butterfly Roost Sites. Monarch butterflies use eucalyptus trees as winter roost sites. Although this species is not listed, the removal of roosting sites is considered to be a significant, but mitigable impact (Class II).	N/A	Comparable	Comparable	Less impact	Less impact
Impact BIO-6	Morro Bay blue butterfly. The proposed project will not impact areas of suitable habitat for the butterfly (namely dune lupine scrub). Impacts are less than significant (Class III).	N/A	Comparable	Comparable	More impact	Comparable
Impact BIO-7	Potential Loss of or Disturbance to Raptors. Eucalyptus stands, in the absence of other tall trees, are used by raptors for nesting purposes. Raptors such as the white-tailed kite, sharp-shinned hawk, Cooper's hawk, and potentially the golden eagle may utilize eucalyptus as nesting habitat. In addition, species such as the red-shouldered hawk and the red-tailed hawk may utilize these groves for nesting habitat. The groves may also be potential wintering habitat for species such as the prairie falcon and sharp-shinned hawk (Class II).	N/A	Comparable	Comparable	Less impact	Less impact

Project Impacts		STEP/STEG	Alternative Treatment Sites			
			Holland	Morro Shores SW	Pismo	Andre
Impact BIO-8	Potential Destruction of Morro Bay Kangaroo Rat Habitat. The Morro Bay kangaroo rat is a federally and state listed endangered species. The Morro Bay kangaroo rat has not been seen observed on the Morro Shores or Broderson sites previously. Recent surveys (June 2000) did not find tracks or sign. Dr. Michael O'Farrell has determined that additional surveys using trapping protocol at Morro Shores and Broderson would not be fruitful (Class I).	N/A	Comparable	Comparable	More impact	Less impact
Impact BIO-9	Suffrutescent wallflower and Dune almond. Suffrutescent wallflower is considered a plant of limited distribution by CNPS (List 4). The dune almond is considered a plant of limited distribution and is on List 4 on the CNPS Inventory. Both of these plants occur in the Morro Shores site, however, neither will be impacted by the proposed project.	N/A	Less impact	Comparable	More impact	Less impact
Impact BIO-10	Splitting Yam Lichen. The splitting yarn lichen is a species of concern to USFWS. This lichen is present in the Morro Shores site, but is not expected within the boundaries of the Tri-W site. Regardless, there are sufficient numbers of this species and habitat for this species in the Broderson site to compensate for any losses.	N/A	Less impact	Comparable	More impact	Less impact
Impact BIO-11	Operation of the treatment system will not result in long-term adverse impacts to biological resources. Impacts are less than significant (Class III).	N/A	N/A	N/A	N/A	N/A
Impact BIO-12	Construction of the leach fields will result in disturbance of vegetation considered sensitive by CDFG. Impacts are significant, and adverse (Class I).	N/A	N/A	N/A	N/A	N/A
Impact BIO-13	Destruction of proposed critical habitat for the Morro shoulderband dune snail. The development of eight acres of leach field will result in the degradation or loss of habitat in this area. This is a significant, unmitigable impact (Class I).	N/A	N/A	N/A	N/A	N/A

Project Impacts		STEP/STEG	Alternative Treatment Sites			
			Holland	Morro Shores SW	Pismo	Andre
Impact BIO-14	Potential Destruction of Wintering Monarch Butterfly Roost Sites. Monarch butterflies use eucalyptus trees as winter roost sites. Although this species is not listed, the removal of roosting sites is considered to be a significant impact. The construction of the proposed access road and the use of the proposed access road may create noise disturbance that could affect the roosting sites of the monarch butterfly. Construction and operation of the proposed disposal sites may cause loss of habitat and increase the noise disturbance to the monarch butterfly roosting sites as well (Class II).	N/A	Comparable	Comparable	Less impact	Less impact
Impact BIO-15	Potential Disturbance to the Morro Bay Blue Butterfly. The Morro bay blue butterfly is a federal species of concern. This species is found in coastal sage scrub habitats. Implementation of the proposed project will result in the removal and/or destruction of coastal sage scrub acreage in the Broderson site (Class II).	N/A	Comparable	Comparable	Less impact	Less impact
Impact BIO-16	Potential Loss or Disturbance to Raptors. Eucalyptus stands, in the absence of other tall trees, are used by raptors for nesting purposes. Raptors such as the white-tailed kite, sharp-shinned hawk, Cooper's hawk, and potentially the golden eagle may utilize eucalyptus as nesting habitat. In addition, species such as the red-shouldered hawk and the red-tailed hawk may utilize these groves for nesting habitat. The groves may also be potential wintering habitat for species such as the prairie falcon and sharp-shinned hawk (Class II).	N/A	Comparable	Comparable	Less impact	Less impact
Impact BIO-17	Potential Destruction of Morro Bay Kangaroo Rat Habitat. The Morro Bay kangaroo rat is a federally and state listed endangered species. Though the Morro Bay kangaroo rat has not been seen in the project area during previous site visits, there is potential for this species to occur (Class I).	N/A	Comparable	Comparable	Comparable	Less impact

Project Impacts		STEP/STEG	Alternative Treatment Sites			
			Holland	Morro Shores SW	Pismo	Andre
Impact BIO-18	Disturbance of Suffrutescent Wallflower and Dune Almond. Suffrutescent wallflower is considered a plant of limited distribution by CNPS (List 4). The dune almond is considered a plant of limited distribution and is on List 4 on the CNPS Inventory. Both of these plants occur in the Broderson site. Impact to these plants is not considered significant due to their distribution in the area (Class III).	N/A	N/A	N/A	N/A	N/A
Impact BIO-19	Destruction of proposed critical habitat for the Morro shoulderband dune snail. The development of four acres of leach field will result in the degradation or loss of habitat in this area. This is a significant, unmitigable impact (Class I).	N/A	N/A	N/A	N/A	N/A
Impact BIO-20	Potential Destruction of Morro Bay Kangaroo Rat Habitat. The Morro Bay kangaroo rat is a federally and state listed endangered species. Though the Morro Bay kangaroo rat has not been seen in the project area during previous site visits, there is potential for this species to occur. This is a significant, unmitigable impact (Class I).	N/A	N/A	N/A	N/A	N/A
Impact BIO-21	Long-term operation of leach fields could result in the disturbance of Coastal Scrub habitats from increased groundwater elevations. However, ground water modeling conducted by Metcalf and Eddy (1996) indicate that operation of the disposal system would not significantly affect ground water levels within the root zone below the site. However, plants growing directly above the leach lines may encounter higher soil moisture content. Therefore, this impact is considered *significant but mitigable (Class II).*	N/A	N/A	N/A	N/A	N/A
Overall		Slightly Less Impact	Slightly Less Impact	Slightly Less Impact	Greater Impact	Less Impact

7. Cumulative and Growth Inducing Impacts

Cumulative Impacts

State CEQA Guidelines Section 15355 defines cumulative impacts as

> *"two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts".* Further, *"the cumulative impact from several projects is the change in the environment which results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time"*.

The Guidelines require the discussion of cumulative impacts to reflect the severity of the impacts and their likelihood of occurrence. However, the discussion need not be as detailed as the analysis of impacts associated with the project, and should be guided by the rule of reason.

Cumulative impacts associated with construction and operation of the Wastewater Facilities Project are discussed in the topical analysis sections provided in Section 6 of this DEIR. Significant cumulative impacts associated with the project include:

- Cumulative air quality impacts associated with construction and operation of the treatment facility. These impacts are considered unavoidable and adverse.
- Cumulative loss of biological resources, including habitat for special status plant and animal species. These impacts are considered unavoidable and adverse.
- Cumulative secondary impacts associated with the continued development of the community of Los Osos in accordance with the Estero Area Plan. These impacts include increased traffic; water demand; wastewater generation; demand for police and fire protection; impacts to schools and other public services; increase noise; and the potential loss or destruction of cultural resources. Implementing the policies and programs of the Estero Area Plan are expected to reduce these impacts to a less than significant level.

Growth-Inducing Impacts

Section 15126(g) of the State CEQA Guidelines requires that an EIR assess a project's potential to induce additional economic or population growth or the construction of additional infrastructure or housing beyond that anticipated for the project itself. The Guidelines state that a project will have a significant growth-inducing impact if:

- It directly or indirectly fosters economic or population growth or additional housing; or,
- It removes obstacles to growth; or,
- It taxes community services facilities; or,
- It encourages or facilitates other activities that cause significant environmental effects.

The Guidelines define a growth-inducing impact as:

> *"the way in which the proposed project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment. Included in this are [public works] projects which would remove obstacles to population growth. Growth is not assumed to be necessarily beneficial, detrimental, or of little significance to the environment."*

Construction and operation of the Wastewater Facilities Project will be growth inducing in that it will lead to the removal of the Cease and Desist Order from the RWQCB which will allow continued development in the community consistent with the Estero Area Plan. It should be noted that the project is designed to accommodate a year 2020 buildout population which is less than that accommodated by the Estero Area Plan (see Section 6.5, Consistency with Adopted Plans and Policies). In this sense the project is consistent with the Area Plan and will not foster additional growth beyond that planned for by applicable adopted plans and policies. Impacts associated with continued development of the community in accordance with the Estero Area Plan have been evaluated by a certified Final Environmental Impact Report. No additional growth-inducing impacts beyond those anticipated by the Estero Area Plan are expected.

The environmental review guidelines for State Revolving Fund projects requires an EIR to address the extent to which a project could encourage or accommodate growth directly or indirectly in the following areas:

- Economy (e.g., building facilities that will create favorable conditions to attract business); and

- Population - (e.g., increasing capacity to allow faster population growth such as increasing the supply of water available for population growth by replacing the use of existing water supplies with the use of reclaimed wastewater).

The building moratorium affecting Los Osos has been in place for almost 13 years. Moreover, new businesses wishing to relocate to Los Osos have been limited by the wastewater limitations associated with existing septic systems. Thus, to the extent that new development contributes to economic development, the Wastewater Facilities Project will have a beneficial impact by removing these limitations. The economic development objectives of the Estero Area Plan that call for a greater balance between employment and housing can only be accomplished if the moratorium is removed.

A number of factors will serve to minimize the project's growth inducing impacts. First, the treatment plant, collection and disposal systems have been designed to accommodate a smaller buildout population than current land use plans would allow. This is due, in part, to the Wastewater Project itself which will use 51 acres designated for urban development (11 acres at Tri-W, 40 acres on Broderson). The amount of developable land within the community will also diminish over time as a result of the ongoing efforts by conservation organizations and federal and state agencies to purchase and conserve the resources on the remaining vacant land. Expanding the treatment plant capacity would require additional environmental review and could only be accomplished with considerable additional expense to the community.

8. Alternatives

Section 15126 of the State CEQA Guidelines requires that an EIR consider a range of reasonable alternatives (or alternative locations) to the project site that are capable of avoiding or substantially reducing its associated significant effects. The range of alternatives considered in an EIR must be capable of achieving the basic objectives of the project, and guided by the "rule of reason" which requires that an EIR analyze only those alternatives necessary to permit a reasoned choice. However, the discussion of alternatives must focus on those that are capable of avoiding or lessening the significant environmental effects of the proposed project, even if the alternative could impede to some degree the attainment of all of the project objectives or would be more costly (Section 15126.6(b). Likewise, alternatives that are remote, or speculative, or the effects of which cannot be reasonably predicted, need not be considered. The discussion of alternatives must also explain why alternatives other than the proposed project were considered and then rejected.

The selection of alternatives for consideration in this DEIR was guided in part by previous environmental work conducted by San Luis Obispo County. The *1987 Final Program EIR* prepared for the initial treatment and collection project contained an extensive analysis of alternative treatment plant locations, as well as different collection and treatment technologies. The *Final Supplemental EIR for the CSA9 Wastewater Treatment Facilities* prepared in 1997 (Fugro West, Inc.) also included an extensive discussion of alternative treatment plant sites and techniques.

The Process of Selecting Alternatives

The process of screening and selecting a reasonable range of alternatives is described in detail in Chapter 5: Alternatives Screening Analysis. To summarize, the alternatives chosen for analysis in the topical sections of this DEIR are those that were found to achieve most of the fundamental objectives of the project while minimizing significant environmental effects.

Description and Analysis of Alternatives

For purposes of comparing alternatives, the Wastewater Facilities Project can be divided into its constituent components: collection system, treatment system and disposal system.

Alternative I – No Project/No Action

The No Project/No Action Alternative is required by Section 15126.6(e) of the State CEQA Guidelines and NEPA Section 1502.14(d) . In this case, the No Project/No Action alternative refers to the potential environmental consequences of not implementing a Wastewater Facilities Project for Los Osos to alleviate nitrate contamination of groundwater.

Implementation of the No Project/No Action Alternative would result in the continued discharge of septic system effluent to ground water within the Los Osos area, thereby continuing the degradation of groundwater quality. Since the community derives all of its domestic water supply from groundwater resources, continued degradation is considered a significant unavoidable impact associated with the No Project/No Action Alternative. Additionally, the No Project/No Action Alternative would not achieve the basic objectives of the proposed project and would result in non-compliance with the RWQCB Cease and Desist Order No. 83-13. The LOCSD is legally bound by provisions of the California Water Code to comply with Orders issued by the RWQCB. Therefore, noncompliance is considered a significant unavoidable adverse impact associated with the No Project/No Action alternative. Lastly, the No Project alternative would not fulfill a fundamental objective of the wastewater Facilities Project which is to achieve and maintain a sustainable water supply for the community.

Implementation of the No Project/No Action Alternative would result in the proposed treatment plant not being constructed on the Tri-W site (or any other site). Therefore, significant impacts related to the permanent loss of habitat for endangered species; construction noise and air quality impacts; impacts to visual resources, and cultural resources would not occur.

Collection System Alternative

Collection Alternative I – STEP/STEG Collection System

With a STEP/STEG collection system, liquid effluent from individual septic systems within the Collection Area (see Figure 3-2) would be collected utilizing either a Septic Tank Effluent Pumping (STEP) and/or Septic Tank Effluent Gravity (STEG) system, in which liquid effluent is either pumped or gravity fed into small diameter pipes and conveyed to the treatment plant for treatment. The existing septic tank infrastructure currently in place would be retained (except those septic tanks installed prior to the establishment of the County septic tank standards and requirements) to be used as the primary collector and the primary reactor for the anaerobic breakdown of sewage solids. Septic tank solids would be collected directly from individual septic tanks on a regular basis and hauled to the treatment plant for treatment and disposal.

A STEP/STEG collection system would be designed in two ways. Most of the area would be served with small diameter septic tank effluent gravity (or STEG) sewers. This type of sewer uses a septic tank at each home, so only septic tank effluent is conveyed to the sewer main, relatively free of grit, grease, and other matter that may be troublesome to transport. The septic tank removes about 90% of the grease, 70%-90% of the suspended solids, and 50%-80% of the particulate biochemical oxygen demand (BOD). The partially treated domestic sewage then flows to a pump vault within the septic tank where a submersible pump conveys the effluent to the collection system or flows by gravity from the septic tank into the collection system mains, which in turn convey the effluent to the Wastewater Treatment Facility. The mains have comparatively small diameters (as small as three inches) and are more shallowly buried than conventional sewers because they can be placed on flatter slopes.

Where gravity flow is not effective, pump stations will be used similar to conventional sewerage practice. As an alternative to the use of mainline pump stations, some areas may be served by septic tank effluent pump (STEP) pressure sewers. As with STEG, STEP systems also use shallowly buried, small diameter PVC pipelines.

This alternative offers certain environmental advantages over a conventional gravity system because it may be installed using trenchless technology that minimizes construction related impacts. However, it also requires each septic tank within the collection area to remain in place and to provide partial treatment of wastewater.

Another option is to use a STEP/STEG system in which areas not readily served by a gravity system, such as areas of shallow groundwater, and a conventional gravity system to collect the remaining portions of the Collection Area.

Table 8-1: Comparison of Alternative Collection Systems

Attributes	Impacts of Alternatives Compared With Preferred Project	
	STEP/STEG	Hybrid
Impact Assessment		
Geology	Less	Slightly Less
Hydrology and Groundwater	Slightly Less	Slightly Less
Drainage	Less	Slightly Less
Cultural Resources	Slightly Less	Comparable
Consistency With Adopted Plans	Comparable	Comparable
Traffic	Greater	Comparable
Air Quality	Less	Slightly Less
Noise	Slightly Less	Comparable
Public Health and Safety	Comparable	Comparable
Visual Resources	Comparable	Comparable
Biological Resources	Slightly Less	Comparable
Overall	Less Impacts	Slightly Less Impacts

Analysis: The STEP/STEG and hybrid collection systems offer certain environmental advantages when compared with a conventional gravity system.

Geology. STEP/STEG has the potential to be installed using trenchless technology which reduces construction related impacts associated with the excavation of open trenches. Trenchless installation has a lower potential for impacts associated with erosion and does not require trench stabilization or de-watering.

Cultural Resources. A STEP/STEG system can be installed at a shallower depth using a drill instead of a trench. The smaller pipe and shallower installation depth would be expected to result in less disturbance to cultural resources than a conventional trench.

Traffic. Trenchless installation would generate slightly less construction traffic and would be less disruptive to traffic patterns in the community. However, once installed, each of the 7,000 septic systems would require periodic maintenance which would generate truck trips to and from the treatment plant site.

Noise, Air Quality and Biological Resources. The less disruptive nature of trenchless STEP/STEG installation would generate less noise, require fewer internal combustion engines and would disrupt biological resources slightly less than installation of a conventional system.

A STEP/STEG system or STEP/STEG hybrid offers certain environmental advantages over a conventional gravity system, especially with regard to construction related impacts. It should be noted that the overall life-cycle costs associated with a STEP/STEG system are much greater than that of a gravity system. The greater cost may not be consistent with the affordability objectives of the wastewater project.

Wastewater Treatment Alternatives

The primary goal of a wastewater treatment facility is to remove components (pollutants) that have accumulated in domestic water as a result of human or commercial/industrial use and processes. Treated water must satisfy certain minimum standards established by the federal and State governments before it may be discharged back into the environment, or used for some other purpose. The most commonly used treatment systems in the United States involve primary, secondary and tertiary treatment schemes.

Primary Treatment. Primary treatment involves grit removal, screening, grinding, sedimentation, flocculation and skimming. Chemicals are sometimes added to speed up the sedimentation process. Flocculation is the agitation of wastewater by mechanical stirring, air injection, or chemicals to cause small suspended solids to collide and form larger particles (flocs) that can settle out more rapidly. Primary treatment removes about 60 percent of the solid materials in wastewater and about one-third of the oxygen-demanding wastes.

Secondary Treatment. Secondary treatment involves the use of biological methods, primarily trickling filters or activated sludge, that approximate natural degradation processes. Secondary treatment plants sometimes include chlorination to accomplish chemical oxidation and disinfection. In the activated sludge process, which is slightly more common, sewage is aerated with pure oxygen to increase bacteria degradation and then passed through a sedimentation tank where the sludge, rich in growing organisms, settles out. Part of the sludge is used to seed the next batch of wastes, the remainder is removed and may be dried and disposed of in a landfill. Primary plus secondary treatment still leaves 10 to 15 percent of the oxygen demanding wastes, 10 percent of the suspended solids, 50 percent of the nitrogen (mostly nitrates), 70 percent of the phosphorus, 95 percent of the dissolved salts and heavy metals, and any persistent organic materials such as pesticides.

Tertiary Treatment. Tertiary treatment refers to a series of specialized processes that reduce the concentration of one or more of the pollutants remaining after primary and secondary treatment. The pollutants to be removed depend on the characteristics of the wastewater and the area in which the treatment facility is located, and the intended use of the treated water. Some commonly used tertiary treatment methods include precipitation, adsorption, electrolysis or reverse osmosis, and the use of disinfectants such as ultraviolet light.

Wastewater Treatment Alternative I – Extended Aeration (above ground and without odor scrubbing)

Extended aeration is the preferred method of wastewater treatment as determined by the Los Osos Community Services District. As described in Chapter 3 of this DEIR/EIS, extended aeration treatment systems have been in use in America and elsewhere for many years and have a demonstrated track record of removing nitrates from wastewater to meet the water quality standards established for Los Osos by the RWQCB. The preferred configuration of the extended aeration proposed for Los Osos is considered a "hybrid" because it would be constructed underground and would fully odor scrubbed. A more conventional extended aeration system, however, incorporates neither of these features if they are located away from sensitive receptors such as those associated with more urban setting. Accordingly, a conventional system results in greater nuisance impacts associated with noise and odors and would be more visible.

An Extended Aeration system employs a pair of aeration basins, 160 ft. square and 15 ft deep in the secondary treatment train which would be aerated with submerged fine bubble diffuser or surface aerators and the contents of the basins would be activated sludge.

Wastewater Treatment Alternative II – Sequencing Batch Reactor (SBR)

A Sequencing Batch Reactor (SBR) system is a common type of secondary treatment in which wastewater is passed through bacteria suspended in a mixture of activated sludge to remove constituent pollutants. The typical components of an SBR system are described in Chapter 5: Alternatives Screening Analysis.

An SBR system would fulfill the primary goal of the project which is to treat wastewater generated within the SWRCB Prohibition Zone and satisfy discharge requirements of the Regional Board. It may not meet other project objectives such as the provision of open space.

Treatment Technologies That Were Considered but Rejected

Activated Ponds

Activated pond treatment systems rely on natural biochemical processes to treat collected wastewater. Pond systems treat wastewater aerobically using solar energy via algae growth, aerated mechanically to provide the needed oxygen for treatment. A by-product of this system is the production of bio-solids in the form of algal material.

Pond systems by their nature are land intensive. A typical activated pond system can require as much as 20 - 30 acres of land.

The fundamental criteria used to screen alternative treatment technologies was its ability to achieve the water quality standards established by the RWQCB for Los Osos. Three of the alternative treatment technologies analyzed, including the preferred project, satisfied the screening criteria for further consideration. The Activated Ponds treatment technology was eliminated from further consideration because:

- A lack of sufficient data which demonstrates their ability to remove nitrogen to achieve the standards established by the RWQCB.

- Pond systems are land intensive when compared with conventional systems. For this reason, pond systems would not reduce potential impacts associated with the loss of habitat for special status plant and animal species, when compared with the preferred project, or the loss of productive agricultural lands. Likewise, the land intensive nature of pond systems would have a greater likelihood to disturb archaeological resources and would result in greater air quality impacts from construction grading.

- Pond systems are more expensive to construct, primarily because of land costs.

Table 8-2: Comparison of Alternative Treatment Technologies

Attributes	Alternatives	
	Sequencing Batch Reactor	Conventional Extended Aeration
Impact Assessment		
Geology	Comparable	Comparable
Hydrology and Groundwater	Comparable	Comparable
Drainage	Comparable	Comparable
Cultural Resources	Comparable	Comparable
Consistency With Adopted Plans	Comparable	Comparable
Traffic	Comparable	Comparable
Air Quality	Greater Impact	Greater Impact
Noise	Greater Impact	Greater Impact
Public Health and Safety	Comparable	Comparable
Visual Resources	Comparable	Comparable
Biological Resources	Comparable	Comparable
Overall	Greater Impacts	Greater Impacts

Analysis: Other treatment technologies do not offer significant environmental advantages when compared with the Hybrid Extended Aeration system primarily due to the increased opportunity for odor impacts to surrounding sensitive receptors. A conventional above ground system would not be odor scrubbed or underground where noise and odors could be more easily contained.

Air Quality. Certain components of above ground SBR or EA plants can be odor scrubbed but not as effectively as an underground installation. Thus, the potential for odor impacts for each type of plant is greater than an AE hybrid.

Noise. Likewise, an above ground installation provides a greater opportunity for noises to escape the site to surrounding land uses when compared with a below ground installation.

Overall, although each treatment technology would satisfy most of the goals of the project and would be mostly comparable to the EA hybrid, they have a greater potential for odor and noise impacts.

Alternative Wastewater Treatment Locations

CEQA requires the consideration of alternative locations for a project when they provide an opportunity to avoid or lessen one or more significant environmental. The other factors relating to feasibility must also be weighed for these sites (whether it meets overall project objectives, economically feasible, etc.). In addition, the ownership or control of the alternative site is another factor in determining feasibility.

In order to meet the project objectives, the entire RWQCB Prohibition Area must be served. Therefore, the collection system location will be the same for all alternatives and alternative sites are available. The discussion of alternative locations will necessarily focus on sites for the treatment plant and for disposal.

Alternative treatment plant sites are shown on Figure 5-3. (page 78)

Alternative Treatment Site I – Holland

The Holland site consists of 19.4 acres located north of Los Osos Valley Road, south of the Sea Pines Golf Course and west of Pecho Road (location map). The site is vacant and currently used as a driving range for the nearby Sea Pines golf course. No significant stands of vegetation or other physical characteristics are present. The site slopes gently north to south and is rectangular in shape. Surrounding land uses include single family residences to the west and north, the golf course to the south and vacant land designated for residential development to the east. Monarch Grove Elementary school is 0.1 miles to the east along Los Osos Valley Road.

This site is not large enough to support development of an activated pond system but could accommodate an SBR or EA system.

Alternative Treatment Site II – Morro Shores Southwest

The Morro Shores Southwest site consists of an 11 acre portion of the 55 acre Morro Shores property located west of Palisades Drive and north of Los Osos Valley Road adjacent to the Morro Shores mobile home park (location map). The site is vacant and consists of gently sloping terrain with coastal scrub vegetation and several large eucalyptus trees. Surrounding land uses include vacant land to the east (the Tri-W site) along with the County library and community center, single family residential to the south and west.

This site is not large enough to accommodate development of an Activated Pond system but could accommodate an SBR or EA system.

Alternative Treatment Site III – Pismo

The Pismo site consists of an 11 acre parcel located east of South Bay Boulevard and immediately south and east of the Los Osos Middle School. The site is relatively flat and contains chaparral, oak woodland and coastal scrub vegetation communities. This was the preferred location for a conventional treatment system discussed in the 1997 Final Supplemental Environmental Impact Report (Fugro West, Inc.).

This site is not large enough to support development of an activated pond system but could accommodate an SBR or EA system. It may not meet other more specific project objectives such as the provision of open space within the urban core.

Alternative Treatment Site IV – Andre

The Andre property consists of two contiguous properties totaling 32 acres located at the north east corner of Los Osos Valley Road and Clark Valley Road, immediately east of the Los Osos Memorial Park cemetery (location map). The site is currently largely vacant; a single family residence is located about one-half mile from Los Osos Valley Road.

The Andre site is uncultivated agricultural land considered Locally Productive by the State Important Farmlands Mapping Program. The site slopes gently downward to the north away from Los Osos Valley Road; the northerly property boundary adjoins Warden Lake, a locally significant wetland. High voltage transmission lines cross the west side of the site from south to north emanating from Diablo Canyon Nuclear Power Plant.

Alternative Sites Considered but Rejected From Further Consideration

Resource Park

Resource Park is the name given to about 66 vacant acres bounded by Los Osos Valley Road on the south, Skyline Drive to the west, Palisades Drive on the east and Ramona Avenue to the north, and west of the County Park, the Community Center, and the County library. Resource Park consists of two contiguous properties: the 55 acre Morro Shores property and the 11 acre Tri-W site.

The Resource Park site was chosen as the only feasible site within the community of sufficient size to accommodate development of an activated pond wastewater treatment system. The type of system originally considered for the site was an activated pond system. However, it is large enough to support development of an SBR or an EA plant.

The Resource Park site has been eliminated from further consideration because the treatment technology that required this site (activated ponds) was eliminated from further consideration because of insufficient data to demonstrate nitrogen removal to the levels required by the RWQCB.

Turri Road

The Turri Road is located on the south side of Turri Road about one mile east of South Bay Boulevard and consists of a ten acre portion of a 84 acre site formerly used as a landfill and gravel pit. The level area most capable of supporting a wastewater treatment plant is composed of prime agricultural soils; the entire 84 acres is encumbered by a Land Conservation Act contract. The upper (southerly) portion of the site contains an abandoned landfill formerly operated by San Luis Obispo County. The RWQCB has determined that petrochemicals leaching from the landfill are polluting surface and subsurface water bodies. As a result, remediation efforts have been undertaken to correct the problem.

This site was also considered in previous environmental documents. The site is currently undeveloped and vegetated with annual grasses. Two unnamed drainage courses tributary to Los Osos Creek run adjacent to the site; one such drainage divides the site nearly in two in a north-south direction. Surrounding land uses consist primarily of grazing and open space.

This site is not large enough to accommodate an activated pond system unless contiguous parcels are included. The site is large enough to support any one of several conventional treatment systems, including SBR, and EA.

The Turri Road site was eliminated from further consideration because:

- It is encumbered by an active Land Conservation Act contract;
- It lies within a flood plain for an unnamed creek;
- Potential liability and cost issues associated with the existing landfill on the site;
- Shallow groundwater would make sub-surface construction difficult and expensive;

Eto

The Eto site consists of 43.3 acres located east of South Bay Boulevard and south of Los Osos Middle School. The site is relatively flat and contains chaparral, oak woodland and coastal scrub vegetation communities. Surrounding land uses include open space and grazing to the east, single family residences on large lots to the south and west, and Los Osos Creek to the east.

This site is large enough to accommodate an activated pond system and would accommodate any number of conventional treatment facilities, including SBR, EA, MLE and others.

The Eto property was eliminated from further consideration because:

- It offers no environmental advantages when compared to the preferred project site with regard to environmental resources such as habitat for sensitive plant and animal species;
- Construction and operation traffic would be conveyed through an existing residential neighborhood;
- The site is not centrally located resulting in higher costs for collection and disposal systems;
- The site contains productive agricultural land;
- The site would not provide an opportunity to provide park/open space amenities centrally located to serve the community.

Table 8-3: Comparison of Alternative Treatment Sites

Attributes	Alternatives			
	Morro Shores Southwest	Holland	Pismo	Andre
Total Acres	+/- 11	19.4	11	32
Acres for Treatment Plant	11	15.8	4	4
Location	LOVR west of Palisades	East of county tract, north of LOVR, west of Pecho Road	East of South Bay Boulevard immediately south and east of Los Osos Middle School	LOVR at Clark Valley Road
General Plan Designation	Single family residential	Single-family residential	Residential suburban	Agriculture
Cost of Construction	$17.9 million	$19.9 million	$15.9 million	$18.7 million
Impact Assessment				
Geology	Comparable	Comparable	Comparable	Slightly Less
Hydrology and Groundwater	Comparable	Comparable	Comparable	Comparable
Drainage	Comparable	Comparable	Comparable	Less Impact
Cultural Resources	Comparable	Comparable	Greater Impact	Comparable
Consistency With Adopted Plans	Comparable	Comparable	Comparable	Less Impact
Traffic	Comparable	Comparable	Comparable	Slightly Less
Air Quality	Comparable	Comparable	Slightly Less	Slightly Less
Noise	Comparable	Comparable	Less	Less Impact
Public Health and Safety	Comparable	Comparable	Slightly Less	Slightly Less
Visual Resources	Comparable	Comparable	Less Impact	Less Impact
Biological Resources	Slightly Less	Less Impact	Greater	Less Impact
Overall	Comparable	Less Impact	Greater Impact	Less Impact

Conclusion: The chief differences distinguishing the alternative sites relate to biological resources, nuisance impacts related to noise and odors, and consistency with relevant Coastal Act policies.

Morro Shores Southwest. This site is most comparable to the project site with regard to biological resources (slightly lower quality habitat), nuisance impacts related to noise and odors, and consistency with applicable plans. The site is further from the inferred Los Osos fault and affords comparable views to the ocean from Los Osos Valley Road. Overall, this site offers no significant environmental advantage to the project site.

Holland. The Holland site also is not affected by the Los Osos fault and affords comparable consistency with adopted plans and policies. The site does provide some degraded habitat for the Morro Shoulderband Dune snail, but the lowest quality habitat among the sites containing such resources. In addition, the Holland site is located adjacent to residential neighborhoods where the potential for odor and noise impacts is greatest. An elementary school is located about 100 meters to the east. Overall, the Holland site affords a slight environmental advantage to the project site with regard to protecting sensitive biological resources. However, when weighed against other impacts related to noise, odors and potential safety concerns with the nearby school, the advantage is not as clear.

Pismo. The Pismo site contains high quality habitat for the Morro Shoulderband Dune snail as well as a number of other special status species. The loss of this high quality habitat would conflict with Coastal Act policies that favor protection of these resources when a feasible alternative exists. In addition, the site contains two known archaeological sites. This site is, however, more removed from surrounding sensitive land uses and would offer fewer potential impacts relating to odors and noise. The site is located adjacent to the Los Osos Middle School play field which is a heavily-used recreation amenity; comparable traffic related impacts would be expected. Overall, development of the Pismo site would result in greater impacts than that of the project site.

Andre. The Andre site offers the least environmental constraints of the alternatives. It provides no habitat for special status plants or animals and contains no known archaeological resources. The size of the site (32 acres) provides sufficient separation from surrounding land uses which include a cemetery and agricultural lands. The Andre property does contain agricultural soils of Local Importance; a portion of this soil would be permanently lost to production if a wastewater treatment plant were constructed there. Likewise, it would not meet other objectives of the wastewater project which aim to provide parks and recreation amenities accessible to the community. Crossing Los Osos Creek with the collection and disposal pipes, however, could result in temporary impacts to riparian resources. However, the pipes could be hung from the existing bridge, not trenched, thereby minimizing impacts. Soils at the Andre site, although considered productive for agricultural, are more stable than the dune sands underlying the other sites which may minimize construction costs.

Impacts relating to air quality during construction would remain significant and adverse for all four sites.

Disposal Alternatives

Surface Disposal

Surface disposal to the Bay or open ocean offers certain environmental advantages to the leach field/surface recycling option, but raises many more concerns. Impact resulting to construction would be less due to fewer trenches and lengths of pipe being installed. However, disposal of wastewater into the ocean does not readily recycle the water supply and can be considered an out of basin transfer that would worsen the overdraft condition in the Paso Robles formation if no supplemental source of water were provided. Coastal Act policies favor water management strategies that maintain a sustainable supply of groundwater. Surface disposal would seem to conflict with this policy. Lastly, introducing treated wastewater into the Bay or ocean could raise nitrogen levels, resulting in algae blooms that rob the water of dissolved oxygen and potentially harming marine life.

Use of Existing Leach Fields

As discussed in Chapter 5: Alternatives Screening Analysis, the use of existing septic leach fields presents a number of potential environmental problems, which include:

- *Uncertainty regarding the capacity of existing leach fields.*
- *Using individual leach fields would limit the use of properties.*
- *Replacement and periodic maintenance of existing septic leach fields.*
- *Impacts associated with connecting to individual existing leach fields.*
- *Impacts associated with installation of the distribution system.*
- *Higher costs.*

All of these factors must be weighed against the potential loss of up to eight acres of habitat for the endangered Morro Shoulderband Dune Snail that would occur through the use of sub-surface leach fields on the Broderson site.

Other Disposal Options

Other disposal options investigated by the LOCSD include infiltration basins, injection wells and aquifer storage and harvesting wells. (see Hydrologic Investigation of the Broderson Site, Cleath, June, 2000, Appendix C). As discussed in Chapter 5, each of these alternatives was consider and rejected because they were found to be infeasible.

Alternative Bio-Solids Recycling Site Alternatives

A key consideration in the location of bio-solids recycling is the separation of the facility from nearby sensitive receptors to odors. For this reason the Woods Humane Society and Low properties were eliminated from further consideration because of its proximity to sensitive receptors to the east and west. The other sites offer comparable environmental impacts.

Environmentally Superior Alternative

CEQA requires that an EIR identify the environmentally superior alternative from among the range of alternatives considered. Based on the analysis provided above and in the topical sections of this DEIR, the environmentally superior alternatives are as summarized in Table 8-4.

Table 8-4
Ranking of Alternatives
(Environmentally Superior Alternatives in Bold)

Project Component	Alternative
Collection	STEP/STEG
	STEP/STEG Hybrid
	Gravity (proposed)
Treatment	Extended Aeration Hybrid (proposed
	Extended Aeration
	Sequencing Batch Reactor
Treatment Sites	Andre
	Holland
	Morro Shores Southwest
	Tri-W (proposed)
	Pismo
Disposal	Subsurface Leach Fields (proposed)
Bio-solids	Hauling

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Appendix

Appendix A: Notice of Preparation and Responses to Notice
Appendix B: CFS Geotechnical Consultants, Inc. Liquefaction Analysis
Appendix C: Cleath & Associates, Hydrogeologic Analysis of Broderson
Appendix D: Letter of Consultation With Native American Sacred Lands Inventory
Appendix E: Emission Calculations
Appendix F: Wildlife Species
Appendix G: Flora