Appendix Q:
Preferred Project Environmental Evaluation

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Appendix Q: Preferred Project Environmental Evaluation

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Q.1 - INTRODUCTION

This Preferred Project Environmental Evaluation has been prepared to provide additional environmental information for the Final Environmental Impact Report (Final EIR) for the Los Osos Wastewater Project (LOWWP). Based on Section 15088.5 of the California Environmental Quality Act (CEQA) Guidelines, this new information is not considered "significant" because there are no new significant environmental impacts or mitigation measures that have been added with the evaluation of the Preferred Project. In addition, the new information does not result in a substantial increase in the severity of an environmental impact that was discussed in the Draft EIR. Furthermore, the Preferred Project is not an alternative that is considerably different from the Proposed Projects that were evaluated in the Draft EIR.

To address the project purpose of developing a wastewater collection, treatment and disposal system for the community of Los Osos, the Draft EIR identified and evaluated four proposed projects. The Draft EIR also stated that a different combination of elements from the four proposed projects could be selected as the Preferred Project for design and construction. The draft environmental impact report (Draft EIR) for the LOWWP was released for public and agency review and comment on November 19, 2008. The Draft EIR document, the Response to Comments document, and this Appendix Q: Preferred Project Environmental Evaluation, together constitute the Final Environmental Impact Report (Final EIR) and should be reviewed together for a comprehensive understanding of the potential environmental impacts and recommended mitigation measures associated with the Los Osos Wastewater Project. A summary of the Preferred Project Environmental Evaluation is provided in Section Q.2.

Based on the findings of the Draft EIR and the ongoing technical analysis, the County selected a revised Environmentally Superior Alternative as the Preferred Project by combining project components for wastewater collection, conveyance, treatment process and site selection, wet weather effluent storage, and effluent and biosolids disposal. The Preferred Project evaluated in this document is a modification of Proposed Project 4, which included a wastewater treatment plant and treated effluent storage and disposal located at the Tonini site, water conservation, the Broderson leachfield and a gravity wastewater collection system. The primary change that improves the environmentally superior characteristics is that an extended aeration treatment process (e.g., oxidation ditch or Biolac®) has replaced the facultative ponds from Proposed Project 4.

The Preferred Project description is provided in Section Q.3. As the LOWWP preliminary design has continued towards the final design and Design/Build process, the County and its engineering, architectural and environmental consultants have refined the project conceptual design. These refinements are within the scope of the Draft EIR project design parameters, and are discussed in Section Q.3 to clarify the Preferred Project components and to facilitate environmental analysis of the Preferred Project.

Because a Design/Build process will be used to complete the final design, subject to County approval, there may be some changes from what is described in this Final EIR. If any Design/Build changes differ significantly from the proposed projects covered by this EIR, supplemental environmental documentation may be required to evaluate some aspects of the final design, provide adequate public review of the proposed project's environmental impacts, and to support the permitting process.

Section Q.4 summarizes changes to the known environmental setting. The sites selected for the various Preferred Project components are the same as the Proposed Project 4 sites. The gravity sewer collection system area is unchanged, although there have been a few pump station, force main, conveyance system and sprayfield design refinements as described in the Preferred Project Description in Sections Q.3 and later in Section Q.5.

Section Q.5 begins with a comparison of the Preferred Project with Proposed Project 4 from the Draft EIR. The majority of Section Q.5 is a comparative evaluation of the Preferred Project's potential environmental impacts that are different from the Proposed Project 4 impacts addressed in the Draft EIR.

Since the Draft EIR was prepared, the County's LOWWP team has conducted additional geotechnical, biological and cultural resource field studies at the Tonini site as well as a site specific hydrology study. These reports are incorporated as:

- Section Q.6 - Sprayfield Evapotranspiration at Tonini Ranch
- Section Q.7 - Geotechnical Report
- Section Q.8 - Biological Report
- Section Q.9 - Cultural Resources Report

The Biological Assessment has been prepared by County staff with assistance by the environmental consultant and sent directly to State Water Resources Control Board, and then to U.S. EPA. This started the Section 7 consultation process referenced in the Draft EIR for "CEQA Plus" requirements.

Q.2 - SUMMARY

Q.2.1 - Project Location

The sites selected for the various Preferred Project components are the same as the Proposed Project 4 sites that were evaluated in the Draft EIR. The gravity sewer collection system area is unchanged, although there have been a few design refinements to pump stations and force mains. The raw sewage conveyance pipeline from the Mid-town Pump Station to the proposed wastewater treatment plant and the treated effluent conveyance pipeline from the Tonini wastewater treatment plant site to the Broderson leachfield will be located within the shoulders of Los Osos Valley Road.

At the Tonini site, the Preferred Project replaces the facultative ponds included in Proposed Project 4 with an extended aeration treatment plant. Biolac® and oxidation ditches are two types of extended aeration treatment plants that the Design/Build contractor could propose during the Design/Build process. Although a Biolac® facility typically costs somewhat less to construct than an oxidation ditch, a Biolac® facility requires more acreage. Both the Biolac® and oxidation ditch layouts provide a 100-foot buffer between the treatment plant facilities and the existing nearby drainage channel to the east.

Effluent disposal for the Preferred Project, like Proposed Project 4, will be provided by a combination of 160 acre-feet per year (AFY) for water conservation measures, about 842 AFY at the Tonini sprayfields and 448 AFY at the Broderson leachfield.

Q.2.2 - Project Characteristics

The Preferred Project characteristics are similar to Proposed Project 4 on the Tonini site except for substituting the extended aeration treatment plant described for Proposed Projects 2 and 3 for the facultative ponds. In addition, the LOWWP engineering team has developed several preliminary design refinements since the Draft EIR was completed. These refinements are within the scope of the Draft EIR project design parameters, and they are described in Section Q.3. Because a Design/Build contractor will complete the LOWWP final design, the final design details, with the County's approval, will be subject to change. If any Design/Build changes differ significantly from the proposed projects covered by this EIR, supplemental environmental documentation may be required to evaluate some aspects of the final design, provide adequate public review of the proposed project's environmental impacts, and to support the permitting process.

Since the Draft EIR was prepared, the County's LOWWP team conducted additional geotechnical, biological, and cultural resource field studies at the Tonini site. The layout of the Tonini site has been refined as the engineering design has continued from conceptual design to prepare for the Design/Build process and to prepare the LOWWP Coastal Development Permit Application. Design refinements have been made in response to issues such as site constraints and operational requirements. A detailed discussion of the design refinements is provided in Section Q.3, and Table Q.5-1 provides a listing of the differences between the Preferred Project and Proposed Project 4.

Q.2.3 - Summary of Environmental Impacts and Mitigation Measures

Table Q.2-1 summarizes the potential environmental effects of the Preferred Project and Proposed Project 4 as well as identifies the recommended mitigation measures and level of significance after mitigation. Impacts that are noted in the summary, as "PSU" (potentially significant and unavoidable) will require the adoption of a statement of overriding considerations, if the project is approved as proposed (CEQA Section 15093). Impacts of the Preferred Project and Proposed Project 4 are classified as (1) NI, no impact; (2) LTS, less than significant impact and no mitigation measures are required; (3) PSM, potentially significant but mitigated; and (4) PSU, potentially significant and unavoidable. The mitigation measure numbers are listed for those impacts that are PSM and PSU, and the narratives of each of the mitigation measures are provided in Table Q.2-2.

Table Q.2-1: Summary of Environmental Impacts and Mitigation Measures

Impact	Project 4		Preferred Project	
	Combined Effect	Cumulative	Combined Effect	Cumulative
Section 5.1 - Land Use				
5.1-A: The project would not physically divide an established community	NI	NI	NI	NI
5.1-B: The project would not conflict with applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect.	NI	NI	NI	NI
Section 5.2 - Groundwater Quality and Water Supply				
5.2-A: The proposed project would not substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted.	LTS	NI	LTS	NI
5.2-B: The proposed project would not degrade groundwater quality.	LTS	NI	LTS	NI
5.2-C: The proposed project would not conflict with local programs or policies related to groundwater quality or water supply?	NI	NI	NI	NI
7Section 5.3 - Drainage and Surface Water Quality				
5.3-A: The proposed projects would not violate any water quality standards or waste discharge requirements.	LTS	NI	LTS	NI

Impact	Project 4		Preferred Project	
	Combined Effect	Cumulative	Combined Effect	Cumulative
5.3-B: The proposed projects would not substantially alter the existing drainage pattern or area, including 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.	LTS	NI	LTS	NI
5.3-C: The proposed projects would not substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site.	LTS	NI	LTS	NI
5.3-D: The proposed projects would not 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.	LTS	NI	LTS	NI
5.3-E: The proposed projects would not otherwise substantially degrade water quality.	LTS	NI	LTS	NI
5.3-F: The proposed projects would not 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.	NI	NI	NI	NI
5.3-G: The proposed projects would not place within a 100-year flood hazard area structures which would impede or redirect flood flows.	LTS	NI	LTS	NI
5.3-H: The proposed projects would not 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.	NI	NI	NI	NI

Impact	Project 4		Preferred Project	
	Combined Effect	Cumulative	Combined Effect	Cumulative
5.3-I: The proposed projects would be subject to inundation by seiche, tsunami, or mudflow.	LTS	NI	LTS	NI
5.3-J: The proposed projects would not exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board.	NI	NI	NI	NI
5.3-K: The proposed projects would require or result in the construction of minor new storm water drainage facilities or expansion of existing facilities. The construction of this minor facility would not cause significant environmental effects.	LTS	NI	LTS	NI
5.3-L: The proposed projects would not conflict with federal laws or local goals and policies relating to hydrology and water quality.	NI	NI	NI	NI
Section 5.4 - Geology				
5.4-A: The project would not expose people or structures to potential substantial adverse effects, including the risk of loss, injury or death involving a rupture of a known earthquake fault as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist.	NI	NI	NI	NI
5.4-B: The project could expose people or structures to potential substantial adverse effects, including the risk of loss, injury or death involving a strong seismic ground-shaking.	PSM 5.4-B1	NI	PSM Q5.4-B1	NI
5.4-C: The project may expose people or structures to potential substantial adverse effects, including the risk of loss, injury or death involving seismic-related ground failure, including liquefaction.	PSM 5.7.B-1, 5.4-C1 and 5.4-C2	PSM 5.7.B-1, 5.4-C1 and 5.4-C2	PSM Q5.7.B-1, Q5.4-C1 and Q5.4-C2	PSM Q5.7.B-1, Q5.4-C1 and Q5.4-C2
5.4-D: The project would not expose people or structures to potential substantial adverse effects, including the risk of loss, injury or death involving landslides.	NI	NI	NI	NI

Impact	Project 4		Preferred Project	
	Combined Effect	Cumulative	Combined Effect	Cumulative
5.4-E: The project could result in substantial soil erosion or the loss of topsoil.	PSM 5.4-E1 through 5.4-E3	PSM 5.4-E1 through 5.4-E3	PSM Q5.4-E1 through Q5.4-E3	PSM Q5.4-E1 through Q5.4-E3
5.4-F: The project could be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse.	PSM 5.4-F1	PSM 5.4-F1	PSM Q5.4-F1	PSM Q5.4-F1
5.4-G: The projects would be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property.	PSM 5.4-G1	PSM 5.4-G1	PSM Q5.4-G1	PSM Q5.4-G1
5.4-H: The project would not have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater.	NI	NI	NI	NI
Section 5.5 - Biological Resources				
5.5-A: The project would have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service.	PSM 5.5-A1 through 5.5-A16, and 5.5-C1 through 5.5-C3	LTS	PSM Q5.5-A1, Q5.5-A3 through Q5.5-A6, Q5.5-A8 through Q5.5-A16, and Q5.5-C1 through Q5.5-C3	LTS
5.5-B: The project would have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service.	PSM 5.5-C1 through 5.5-C3, and 5.5-A7	LTS	PSM Q5.5-C1 through Q5.5-C3, Q5.5-A6, Q5.5-A8, Q5.5-A15 and A5.5-A16	LTS

Impact	Project 4		Preferred Project	
	Combined Effect	Cumulative	Combined Effect	Cumulative
5.5-C: The project would have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.	PSM 5.5-C1 through 5.5-C3, and 5.5-A7	LTS	PSM Q5.5-C1 through Q5.5-C3, and Q5.5-A7	LTS
5.5-D: The project would interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of wildlife nursery sites.	PSM 5.5-A6 through 5.5-A8 and 5.5-C1 through 5.5-C3	LTS	PSM Q5.5-A1, Q5.5-A3, Q5.5-A6, Q5.5-A8 and Q5.5-C1 through Q5.5-C3	LTS
5.5-E: The project would conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.	PSM 5.5-A1 through 5.5-A16, and 5.5-C1 through 5.5-C3	LTS	PSM Q5.5-A1, Q5.5-A3 through Q5.5-A6, Q5.5-A8 through Q5.5-A16, and Q5.5-C1 through Q5.5-C3	LTS
5.5-F: The project would not conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.	NI	NI	NI	NI
Section 5.6 - Cultural Resources				
5.6-A: The project would not cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5.	LTS	LTS	LTS	LTS
5.6-B: The project would cause a substantial adverse change in the significance of an archaeological resource pursuant to section 15064.5.	PSM 5.6-B1 through 5.6-B8	PSM 5.6-B1 through 5.6-B8	PSM Q5.6-B1, Q5.6-B2, and Q5.6-B6 through Q5.6-B8	PSM Q5.6-B1, Q5.6-B2, and Q5.6-B6 through Q5.6-B8

Impact	Project 4		Preferred Project	
	Combined Effect	Cumulative	Combined Effect	Cumulative
5.6-C: The project would not directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.	PSM 5.6-C1	NI	PSM Q5.6-C1	NI
5.6-D: The project would disturb human remains, including those interred outside of formal cemeteries.	PSM 5.6-D1 through 5.6-D3	PSM 5.6-D1 through 5.6-D3	PSM Q5.6-B1, Q5.6-B2, and Q5.6-B6 through Q5.6-B8	PSM Q5.6-B1, Q5.6-B2, and Q5.6-B6 through Q5.6-B8
5.6-E: The project would conflict with the California Coastal Act of 1976, Section 30244.	PSM 5.6-B1 through 5.6-B8	PSM 5.6-B1 through 5.6-B8	PSM Q5.6-B1, Q5.6-B2, and Q5.6-B6 through Q5.6-B8	PSM Q5.6-B1, Q5.6-B2, and Q5.6-B6 through Q5.6-B8
Section 5.7 - Public Health and Safety				
5.7-A: The proposed project could result in exposing residents, visitors, and construction personnel to health hazards from the routine transport, use, or disposal of hazardous materials during construction activities.	PSM 5.7-A1	NI	PSM Q5.7-A1	NI
5.7-B: The proposed wastewater facilities could result in exposing offsite residents and visitors to health hazards from the routine transport, use, or disposal of hazardous materials.	PSM 5.7-B1	NI	PSM Q5.7-B1	NI
5.7-C: The project could create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the hazardous materials into the environment.	PSM 5.7-B1	NI	PSM Q5.7-B1	NI
5.7-D: The project may create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions.	PSM 5.7-D1	NI	PSM Q5.7-D1	NI
5.7-E: The project could emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school.	PSM 5.7-B1	NI	PSM Q5.7-B1	NI

Impact	Project 4		Preferred Project	
	Combined Effect	Cumulative	Combined Effect	Cumulative
5.7-F: The project would not be located on a site that is included on a list of hazardous materials site compiled pursuant to Government Code Section 65962.5 and, as a result, would not create a significant hazard to the pubic or the environment.	NI	NI	NI	NI
5.7-G: For a project located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, the project would not result in a safety hazard for people residing or working the project area.	NI	NI	NI	NI
5.7-H: For a project within the vicinity of a private airstrip, the project would not result in a safety hazard for people residing or working in the project area.	NI	NI	NI	NI
5.7-I: The project would not impair the implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.	NI	NI	NI	NI
5.7-J: The project would not expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands.	LTS	NI	LTS	NI
5.7-K: The proposed projects would not conflict with local goals and policies relating to public health and safety.	NI	NI	NI	NI
Section 5.8 - Traffic and Circulation				
5.8-A: The Proposed Project would cause an increase in traffic, which is substantial in relation to the existing traffic load and capacity of the street system or either individually or cumulatively exceed a level of service standard established by the county congestion management agency for designated roads or highways.	PSM 5.8-A1	LTS	PSM Q5.8-A1	LTS

Impact	Project 4		Preferred Project	
	Combined Effect	Cumulative	Combined Effect	Cumulative
5.8-B: The project would result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks.	NI	NI	NI	NI
5.8-C: The project may substantially increase hazards due to a design feature (e.g. sharp curves or dangerous intersections) or incompatible uses (e.g. farm equipment).	PSM 5.8-A1	NI	PSM Q5.8-A1	NI
5.8-D: The project would result in adequate emergency access.	LTS	NI	LTS	NI
5.8-E: The project would result in adequate parking capacity.	NI	NI	NI	NI
5.8-F: The project would conflict with adopted policies, plans, or programs supporting alternative transportation (e.g. bus turnouts, bicycle racks)?	PSM 5.8-A1	NI	PSM Q5.8-A1	NI
5.8-G: The project would not conflict with local goals and policies relating to traffic and transportation.	PSM 5.8-A1	NI	PSM Q5.8-A1	NI
Section 5.9 - Air Quality				
5.9-A: The project would not conflict with or obstruct implementation of the applicable air quality plan.	NI	NI	NI	NI
5.9-B: The project would not violate any air quality standard or contribute substantially to an existing or projected air quality violation.	LTS	LTS	LTS	LTS
5.9-C: The project may result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or State ambient air quality standard (including releasing emissions, which exceed quantitative thresholds for ozone precursors).	PSM 5.9-C1 through 5.9-C5	PSM 5.9-C1 through 5.9-C5	PSM Q5.9-C1 through Q5.9-C5	PSM Q5.9-C1 through Q5.9-C5

Impact	Project 4		Preferred Project	
	Combined Effect	Cumulative	Combined Effect	Cumulative
5.9-D: The project may expose sensitive receptors to substantial pollutant concentrations.	PSM 5.9-C1, 5.9-C2 and 5.9-C4	LTS	LTS	LTS
5.9-E: The project would not create objectionable odors affecting a substantial number of people.	LTS	NI	LTS	NI
5.9-F: The project would not result in an increase in greenhouse gas emissions that would significantly hinder or delay the State's ability to meet the reduction targets contained in AB 32.	LTS	LTS	LTS	LTS
5.9-G: The project would not conflict with local goals and policies relating to air quality.	NI	NI	NI	NI
Section 5.10 - Noise				
5.10-A: The project would result in exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies and result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project.	PSM 5.10-A2 and 5.10-A3	LTS	PSM Q5.10-A2 and Q5.10-A3	LTS
5.10-B: The project would expose people to or generation of excess groundborne vibration or groundborne noise levels.	PSM 5.10-B1	LTS	PSM Q5.10-B1	LTS
5.10-C: The project would result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.	PSM 5.10-C1 and 5.10-C2	NI	PSM Q5.10-C1 and Q5.10-C2	NI
5.10-D: For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, the project would not expose people residing or working in the project area to excessive noise levels.	NI	NI	NI	NI

Impact	Project 4		Preferred Project	
	Combined Effect	Cumulative	Combined Effect	Cumulative
5.10-E: For a project within the vicinity of a private airstrip, the project would not expose people residing or working in the project area to excessive noise levels.	NI	NI	NI	NI
5.10-F: The project would be consistent with the General Plan goals and policies.	PSM 5.10-A1 through 5.10-A3	NI	PSM Q5.10-A1 through Q5.10-A3	NI
Section 5.11 - Agricultural Resources				
5.11-A: The project would convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance, as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use, and pursuant to standards established by the California Coastal Commission.	PSU 5.11-A1	PSU 5.11-A1	PSU Q5.11-A1	PSU Q5.11-A1
5.11-B: The project would not conflict with existing zoning for agricultural use, or a Williamson Act contract.	PSU 5.11-B1	PSU 5.11-B1	PSU Q5.11-B1	PSU Q5.11-B1
5.11-C: The project would not involve other changes in the existing environment, which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use.	NI	NI	NI	NI
5.11-D: The proposed project would not conflict with the local goals and policies protecting agricultural resources.	NI	NI	NI	NI
Section 5.12 - Visual Resources				
5.12-A: The project would not have a substantial adverse effect on a scenic vista.	LTS	NI	LTS	NI
5.12-B: The project would not substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway.	NI	NI	NI	NI

Impact	Project 4		Preferred Project	
	Combined Effect	Cumulative	Combined Effect	Cumulative
5.12-C: The project would substantially degrade the existing visual character or quality of the site and its surroundings.	PSM 5.12-C1 through 5.12-C3	NI	PSM Q5.12-C1 through Q5.12-C3	NI
5.12-D: The project would create a new source of substantial light or glare which would adversely affect day or nighttime views in the area.	PSM 5.12-D1	NI	PSM Q5.12-D1	NI
5.12-E: The project would not affect designation of LOVR as a County Scenic Corridor Design Area.	LTS	NI	LTS	NI
5.12-F: The project would locate structures that would disrupt views of Ag zoned parcels from LOVR.	PSM 5.12-F1 through 5.12-F3	NI	PSM Q5.12-F1 through Q5.12-F3	NI
5.12-G: The proposed projects would not conflict with local goals, policies and ordinances relating to visual resources.	NI	NI	NI	NI
Section 5.13 - Environmental Justice				
5.13-A: The proposed project would not have adverse environmental impacts that are appreciably more severe in magnitude or predominately borne by households with low-income or minority populations.	NI	NI	NI	NI
5.13-B: The proposed project would not conflict with any applicable environmental justice goals and policies of an agency with jurisdiction over the project.	NI	NI	NI	NI

Table Q.2-2: Mitigation Measures Summary Table

Mitigation Number	Mitigation Measure
Section 5.4: Geology	
Q5.4-B1	Prior to the approval of building plans for each proposed facility, the design of each facility shall be based on a facility-specific geotechnical report prepared by a California registered geotechnical engineer and professional geologist. The geotechnical report shall provide seismic data for use with at least the minimum requirements of the California Building Code (2007), as adopted by the County of San Luis Obispo.
Q5.4-C1	Prior to approval of the improvement plans for the proposed facilities that are part of the collection system and at the treatment plant site, a geotechnical report that addresses liquefaction hazards shall be prepared and approved by the County of San Luis Obispo. The geotechnical report shall state the recommended actions for the collection system and treatment plant site so that potential impacts from seismically-induced liquefaction would be reduced to less than significant.
Q5.4-C2	Prior to approval of improvement plans, an Emergency Response Plan (ERP) shall be prepared as part of the operation and maintenance plan for the proposed collection system. The ERP shall recognize the potential for liquefaction, seismic hazards and ground lurching, to impact the pipeline or other proposed facilities, and specific high hazard areas shall be inspected for damage following an earthquake. "Soft Fixes" shall be incorporated in the ERP. Soft fixes typically consist of having a plan in-place to address the hazards, such as can be achieved by storing supplies and equipment for repair.
Q5.4-E1	Prior to the approval of grading plans for each facility, erosion control measures shall be incorporated into the grading plans to minimize the potential for erosion or loss of top soil during grading to the satisfaction of the County of San Luis Obispo.
Q5.4-E2	Prior to the approval of grading plans for each facility, vegetation/landscaping shall be provided on the graded cut and fill slopes to reduce the long-term potential for soil erosion or loss of topsoil to the satisfaction of the County of San Luis Obispo.
Q5.4-E3	Prior to the approval of grading plans for each facility, the plans shall provide for the control of surface water away from slopes to the satisfaction of the County of San Luis Obispo.
Q5.4-F1	Prior to approval of the improvement plans for the proposed facilities, a geotechnical report that addresses the potential for lateral spreading, ground subsidence, and ground lurching and provides measures to reduce potential impacts to less than significant shall be prepared and approved by the County of San Luis Obispo.
Q5.4-G1	Prior to approval of improvement and building plans for the proposed collection system facilities, facilities at the treatment plant site, and facilities at Broderson, a design-level geotechnical report shall be prepared that addresses and reduces potential expansive soil impacts to less than significant. The expansive soil data shall be used with the requirements of the California Building Code (2007), as adopted by the County of San Luis Obispo.
Section 5.5: Biological Resources	
Q5.5-A1	The proposed project may affect federally-listed species (including Morro shoulderband snail and California red-legged frog) and as such, the EPA shall initiate formal consultation with USFWS pursuant to Section 7(a)(2) of the federal ESA. All mandatory terms and conditions, and reasonable and prudent measures pertaining to incidental take prescribed within the Biological Opinion and Nationwide Permit for the project the shall be fulfilled and implemented.
Q5.5-A2	No longer required.
Q5.5-A3	A worker education program and clearly defined operations procedures shall be prepared prior to project construction. The worker education program and operations procedures shall be implemented by the County throughout the duration of construction. A biologist approved by the USFWS shall be retained to provide construction personnel specific instruction on general detection and avoidance of sensitive resources during construction. The worker education program shall include: descriptions and

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	pictures of listed species; the provisions of the Endangered Species Act; those specific measures being implemented to conserve listed species as they relate to the project; and the project boundaries within which the work will occur.
Q5.5-A4	Prior to construction, a biologist authorized by the USWFS shall conduct intensive surveys to identify and relocate all Morro shoulderband snails within the proposed impact area on the Broderson and Mid-town properties, and all suitable habitat areas within the proposed collection system. Only USFWS authorized biologists shall survey for, monitor, handle, or relocate Morro shoulderband snails. A biologist authorized by the USFWS shall be retained to monitor all construction activities that will take place within suitable habitat for the Morro shoulderband snail. Monitoring activities shall be required daily until completion of initial disturbance at each construction area. The monitoring biologist shall be granted full authority to stop work at his or her discretion. The monitoring biologist shall be responsible for implementing avoidance and minimization measures during construction. The monitoring biologist shall stop work if project-related activities occur outside the demarcated boundaries of the construction footprint. The monitoring biologist shall stop work if any Morro shoulderband snails are detected within the proposed construction footprint, and shall implement measures to relocate them to suitable habitat out of harms way prior to construction activities resuming. If no suitable habitat opportunities are available in the immediate vicinity of the construction footprint, salvaged and relocated specimens may also be transported to an offsite location approved by the USFWS. The County shall provide a written report to USFWS within 90 days following the completion of the proposed project. The report must document the number of Morro shoulderband snails removed and relocated from project areas, the locations of all Morro shoulderband snail relocations, and the number of Morro shoulderband snails known to be killed or injured. The report shall contain a brief discussion of any problems encountered in implementing minimization measures, results of biological surveys, observations, and any other pertinent information such as the acreages affected and restored, or undergoing restoration, of each habitat type.
Q5.5-A5	The County shall provide funding for on-going recovery activities for the Morro Bay kangaroo rat conducted by California Polytechnic State University San Luis Obispo and the USFWS (through recovery permit holder Dr. Francis Villablanca) to ensure avoidance of the species during project construction and operation. Recovery activities on the Tonini property shall include only protocol-level surveys and trapping according methodologies approved by the USFWS and CDFG within all suitable habitat areas considered for sprayfields for the Preferred Project. If the species is determined to be present, the County shall adjust the sprayfield boundaries to avoid the habitat in accordance with a "no take agreement". Prior to construction, the County shall formalize a "no take agreement" with the CDFG for the Morro Bay kangaroo rat. The "no take agreement" shall detail measures to avoid the species through sprayfield redesign, exclusion fencing, and other measures as necessary dependant upon the results of the protocol-level surveys and trapping conducted on the Tonini property. The "no take agreement' shall also outline a monitoring and contingency plan for the Broderson leachfield, as on-going maintenance of the leachfield may create suitable Morro Bay kangaroo rat habitat.
Q5.5-A6	All construction activities across Los Osos Creek shall be restricted to low-flow periods of June 15 through November 1. If the channel is dry, construction can occur as early as June 1. Restricting construction activities to this work window will minimize impacts to migrating adult and smolt steelhead, if present. Prior to construction, the County shall retain a qualified biological monitor to be on site during all stream crossing activities associate with Los Osos Creek. The biological monitor will be authorized to halt construction if impacts to steelhead are evident. Prior to construction, a spill prevention plan for potentially hazardous materials shall be prepared and implemented. The plan shall include the proper handling and storage of all potentially hazardous materials, as well as the proper procedures for cleaning up and reporting of any spills. If necessary, containment berms shall be constructed to prevent spilled materials from reaching the creek channel.

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	Prior to construction, silt fencing shall be installed in all areas where construction occurs within 100 feet of known or potential steelhead habitat. All silt fencing, erosion control and landscaping specifications shall only include natural-fiber, biodegradable products for meshes and coir rolls to minimize impacts to species and the environment during use. During construction, spoil sites shall be restricted to upland locations so they do not drain directly into Los Osos Creek. If a spoil site drains into a water body, catch basins shall be constructed to intercept sediment before it reaches the channels. If required, spoil sites shall be graded to reduce the potential for erosion. During construction, equipment and materials shall be stored at least 50 feet from Los Osos Creek. No debris such as trash and spoils shall be deposited within 100 feet of waterways. Staging and storage areas for equipment, materials, fuels, lubricants and solvents, shall be restricted to locations outside of the stream channel and banks. Stationary equipment such as motors, pumps, generators, compressors and welders, located within or adjacent to the stream shall be positioned over drip pans at all times. Any equipment or vehicles driven and/or operated within or adjacent to the stream shall be checked and maintained daily to prevent leaks of materials that if introduced to water could be deleterious to aquatic life. Vehicles shall be moved away from the stream prior to refueling and lubrication. During construction, proper and timely maintenance for all vehicles and equipment used shall be provided to reduce the potential for mechanical breakdowns leading to a spill of materials into or around the creek. Maintenance and fueling shall be restricted to safe areas away from Los Osos Creek that meet the criteria set forth in the spill prevention plan. Immediately following construction, all construction work areas shall be restored to pre-construction channel conditions, including streambed composition, compaction, and gradient. If required, channel banks shall be returned to original grade slope and appropriate bank stabilization techniques shall be implemented to reduce the potential for erosion and sedimentation. A plan describing pre-project conditions and restoration methods shall be prepared prior to construction. Immediately following construction, all appropriate construction work areas will be revegetated with an appropriate assemblage of native upland vegetation, and if necessary, riparian vegetation, suitable for the area. A plan describing pre-project conditions, restoration and monitoring success criteria shall be prepared prior to construction.
Q5.5-A7	No longer required.
Q5.5-A8	Prior to project construction, the County shall retain a qualified biologist to conduct pre-construction surveys for the California red-legged frog according to protocol approved by the USFWS. Surveys shall be conducted within all areas that at are determined to contain suitable habitat for this species and that occur within 100 feet of proposed construction, or at a distance determined through USFWS consultation. To avoid potential timing conflicts with the California red-legged frog breeding period, construction activities in the vicinity of California red-legged frog habitat shall be completed between April 1 and November 1. This measure shall apply to construction activities on the Tonini property, at the Turri Road bridge and Warden Creek crossing, at the Los Osos Valley Road bridge and Los Osos Creek crossing, and all other areas determined during pre-construction surveys to contain suitable habitat for the species, including areas that occur within 100 feet of proposed construction, or at a distance determined through USFWS consultation. Prior to construction, the County shall retain a USFWS-approved biologist to permanently remove any individuals of exotic species, such as bullfrogs, crayfish, and centrarchid fishes from the project area, to the maximum extent possible. The USFWS-approved biologist will be responsible for ensuring his or her activities are in compliance with the California Fish and Game Code. Prior to construction, the County shall retain a USFWS–approved biologist to conduct a training session for all construction personnel. At a minimum, the training shall include a description of the California red-legged frog and its habitat, the importance of the California red-legged frog and its habitat, the general measures that are being implemented to conserve the California red-legged frog as they relate to the project, and the boundaries within which the project may be accomplished.

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	Prior to construction, the County shall retain a USFWS-approved biologist responsible for monitoring construction activities. Ground disturbance shall not be authorized to begin until written approval is received from the USFWS that the biologist is qualified to conduct the work. Only USFWS-approved biologists will participate in activities associated with the capture, handling, and monitoring of California red-legged frog. To ensure that diseases are not conveyed between work sites by the USFWS-approved biologist, the fieldwork code of practice developed by the Declining Amphibian Populations Task Force shall be followed at all times. A USFWS-approved biologist shall be present at the active work sites until such time that the initial survey for California red-legged frogs, instruction of workers, and (upland) habitat disturbance have been completed. After this time, the contractor or permittee shall designate a qualified person to monitor on-site compliance with all minimization measures. The USFWS-approved biologist shall ensure that this individual receives appropriate training as to the identification of frogs, potential hazards to the species, inappropriate and allowable work activities, and appropriate contacts for immediate, professional biological support. During work activities, all trash that may attract predators shall be properly contained, removed from the work site and disposed of regularly. Following construction, all trash and construction debris shall be removed from work areas. All fueling and maintenance of vehicles and other equipment and staging areas shall occur a minimum of 100 feet from all open water, stream, wetland, and riparian habitat. The permittee shall ensure that contamination of habitat does not occur during such operations. Prior to the onset of work, the EPA shall ensure that the permittee has prepared a plan to allow a prompt and effective response to any accidental spills. Wet weather storage ponds shall be maintained as to not attract bullfrogs. This will include allowing the ponds to go dry during the summer to disrupt any breeding activity by bullfrogs. The County shall monitor wet weather storage ponds for bullfrog activity. Streams and tributaries to Warden Creek on the Tonini property shall be restored to provide improved habitat for the California red-legged frog. Drainages currently devoid of riparian vegetation shall be revegetated with native riparian canopy and emergent species to provide additional shade, cover, and breeding habitat. Current practices of removing vegetation within and adjacent to the existing streams and tributary waters to Warden Creek on the Tonini preprty shall cease.
Q5.5-A9	The proposed project shall avoid Monarch butterfly winter roost habitats where feasible. If the proposed project will impact potential winter roost habitat, a qualified biologist with expertise in positively identifying the Monarch butterfly and winter roosting behavior shall conduct preconstruction surveys within all suitable habitat that occurs within the proposed impact area during the months of October through February. All potential roost sites that have a potential to be impacted as a result of construction activities shall be fenced and avoided. No construction activities shall be permitted in the vicinity (within 500 feet) of potential roost sites during the winter roosting months.
Q5.5-A10	Prior to construction activities on the Broderson and Mid-town properties, a qualified biologist shall be retained to identify and demarcate all host silver dune lupine (Lupinus chamissonis) shrubs that occur within the impact area. The qualified biologist shall inspect each host lupine for the presence of any Morro blue butterfly eggs, larvae, or pupae. In an effort to avoid mortality of butterfly eggs, larvae, or pupae prior to the onset of adult emergence, any host lupine specimens determined to contain eggs, larvae, or pupae shall be considered for relocation outside of the impact area and within suitable coastal dune scrub habitat on either the Broderson or Mid-town properties. Any planting and restoration efforts proposed as mitigation for the project shall include silver dune lupine within the plant palette to encourage the species to continue to use the area.

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Q5.5-A11	If any construction activities are proposed during the general bird breeding season (February 1 through August 31), a pre-construction survey shall be conducted by a qualified biologist within 10 calendar days prior to the onset of construction activities to identify any active non-raptor bird nests within 250 feet of the proposed impact area. If an active nest is identified during the pre-construction survey, a minimum no-disturbance buffer of 250 feet shall be delineated around active nests until the breeding season has ended or until a qualified biologist has determined that the birds have fledged and are no longer reliant upon the nest or parental care for survival. For sensitive species, including Allen's hummingbird, yellow warbler, and loggerhead shrike, the distance and placement of the construction avoidance shall be a minimum of 250 feet unless otherwise determined through consultation with the CDFG.
Q5.5-A12	If any construction activities are proposed during the general raptor breeding season (February 1 through August 31), a pre-construction survey shall be conducted by a qualified biologist within 10 calendar days prior to the onset of construction activities to identify any active raptor nests within 500 feet of the proposed impact area. If an active raptor nest is identified during the pre-construction survey, a minimum no-disturbance buffer of 500 feet shall be delineated around active nests until the breeding season has ended or until a qualified biologist has determined that the birds have fledged and are no longer reliant upon the nest or parental care for survival. Pursuant to Section 2050 of the CFG Code, the CDFG will not permit any impacts to the California state fully protected raptor white-tailed kite. If an active nest or breeding territory is detected during preconstruction surveys for nesting birds, no construction activities shall take place within 500 feet of the location of the active nest. The area shall be completely avoided and fenced to allow for an adequate buffer from construction activities. A qualified biologist shall be retained to monitor the activity of the nest during the breeding season until it is determined that the nest is no longer active (i.e. all young have fledged the nest and no individual kites are dependent on the nest).
Q5.5-A13	Prior to project construction and within all areas on the Broderson property that contain suitable habitat for the Monterey spineflower, a qualified biologist shall be retained to conduct botanical surveys to Monterey spineflower presence. Surveys shall be conducted during the local blooming period for the species, which typically occurs between April and June, and according to recommendations and guidelines prepared by the USFWS, CDFG, and CNPS. If positively identified, all specimens shall be clearly demarcated with flagging, and avoided to the maximum extent feasible during construction. A qualified monitoring biologist shall be retained to monitor all construction activities in the immediate vicinity (within 25 feet) of any flagged specimens that will not be removed as a result of construction activities. If specimens are positively identified within the leachfield impact area, the seeds of those specimens shall be collected and sown within suitable habitat located outside of the leachfield impact area and within the Broderson property. The County shall provide a written report to USFWS within 90 days following the completion of the project. The report shall document the number of Monterey spineflower specimens removed from project areas, the locations of areas seeded with Monterey spineflower seeds, and the number of Monterey spineflower specimens found to be dead or damaged as a result of construction activities. The report shall contain a brief discussion of any problems encountered in implementing minimization measures, results of biological surveys, observations, and any other pertinent information such as the acreages affected and restored, or undergoing restoration, of each habitat type.
Q5.5-A14	The proposed project shall minimize to the maximum extent feasible any potential impacts to non-listed plant and lichen species designated as sensitive by the CNPS, including Blochman leafy daisy, saint's daisy, San Luis Obispo wallflower, curly-leafed monardella, dune almond, spiraled old man's beard, Los Osos black and white lichen, long-fringed parmotrema, and splitting yarn lichen. The County shall retain a qualified biologist to conduct botanical surveys within suitable habitat on the Broderson and Mid-town properties to identify all sensitive plant and lichen species within and in the immediate vicinity of the impact areas. Surveys shall be conducted during the local blooming periods for each species, where applicable, and according to recommendations and guidelines prepared by the USFWS, CDFG, and CNPS. All specimens shall be clearly demarcated with flagging and avoided to the maximum extent feasible during construction.

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Q5.5-A15	Prior to project construction, land containing coastal dune scrub and maritime chaparral habitat shall be acquired on the Broderson property that is sufficient to compensate the loss of habitat for the Morro shoulderband snail and other sensitive species on the Broderson and Mid-town properties, and sensitive areas in the collection system. Seventy-three acres of the Broderson property not used for the proposed leachfields would be preserved in perpetuity and granted to an appropriate agency or conservation organization with the responsibility of management and monitoring the preserve as determined during agreements with USFWS, CDFG, and the County. A long-term management and monitoring program shall be prepared. The County shall be responsible for the allocation of appropriate funding for the long-term management and monitoring of the mitigation land.
Q5.5-A16	Immediately following construction of the leachfields within the Broderson property, the disturbance area and all existing and unaffected coastal sage scrub (or coastal dune scrub) within the property shall be restored, enhanced, and maintained to promote the land's function and value as suitable habitat for sensitive plants and wildlife that are local or endemic to the area. Restoration and enhancement efforts, including at minimum, seeding with native plant species and eradication of exotic non-native plant species, shall be repeated immediately following all long-term maintenance activities resulting in temporary disturbance of the leachfields. This shall be applied to the ripping and backfilling activities that will be required every 5 to 10 years to maintain the leachfield function. Restoration activities shall be conducted according to a Restoration Plan or similar plan specifically prepared for the effort and approved by USFWS, CDFG, and/or the CNPS. The Restoration Plan shall require at minimum, a description of the prescribed restoration and methodology, feasibility and likelihood for success, and a schedule and program for maintenance, monitoring and reporting the progress of the restoration effort. All restoration activities shall be conducted by qualified personnel with expertise in restoration ecology and knowledge of sensitive plant and wildlife species in the area. The restoration effort shall include the implementation of a seed collection program to gather seeds to be used during restoration from native sources. The seed collection program shall be prepared for approval by the County prior to project construction activities. The seed collection program shall include the use of native plants that will be removed as a result of the project, including but not limited to: mock heather (*Ericameria ericoides*), silver dune lupine (*Lupinus chamissonis*), California sagebrush (*Artemisia californica*), black sage (*Salvia mellifera*), bush monkey flower (*Mimulus aurantiacus*), and deerweed (*Lotus scoparius*). Collection shall take place by qualified personnel with expertise in botanical resources during the appropriate time of year for seed production and harvesting. Unless otherwise determined during consultation with the USFWS, the restoration effort shall be monitored against permanence standards for a minimum of five years, or until the first ripping event for the restored areas within the leachfield area, after which the maintenance and monitoring of the restored areas shall be covered within specific management directives contained within a Resource Management Plan. The performance standards shall include, at minimum, at least 80 percent native plant species coverage and no greater than 1 percent coverage of invasive non-native plant species (e.g. pampass grass, veldt grass). At minimum, the restored areas must demonstrate a continued ability to support the functions and values necessary to sustain the Morro shoulderband snail. Quarterly monitoring shall be conducted for the first two years of the restoration effort, with annual monitoring efforts to follow for the remaining three years. All monitoring and maintenance of restoration areas shall be conducted by qualified personnel with expertise in botanical resources and knowledge of sensitive species that occur in the local area, including the Morro shoulderband snail, Morro Bay kangaroo rat, and Morro blue butterfly. The County shall provide annual reports to the USFWS documenting the results of all restoration and monitoring activities. Annual reports shall be provided to the USFWS for a minimum of five years or until it is determined by the USFWS that requisite performance criteria have been met. These reports should include any noted changes in the plant community structure or composition or surface hydrology down-slope of the Broderson leachfields, in addition to other requirements as determined through USFWS consultation and stipulated within permit conditions. All on-going and long-term restoration, enhancement, and maintenance of preserve lands on the Broderson property shall be implemented according to a Resource Management Plan or similar mitigation and monitoring plan that may be developed during consultation with the USFWS. The Resource Management Plan shall include management

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	directives that are specific to the preserve and the resources present. The Resource Management Plan shall include measures for the removal and eradication of invasive exotic plant species known to occur in the local area, including veldt grass and pampas grass. Activities that involve the removal of invasive species should not result in unnecessary trampling or removal of native species, and techniques for invasive removal shall be least damaging to native species.
Q5.5-C1	Prior to project approval, an application for a Nationwide or Individual Permit shall be submitted by the County to the United States Army Corps of Engineers (USACE) pursuant to Section 404 of the Clean Water Act (CWA). If required, the County shall obtain a Nationwide or Individual Permit from the USACE for any impacts, temporary and permanent, to any areas within the proposed project which are determined to qualify as jurisdictional waters and wetlands of the U.S. The County shall implement all required conditions and special considerations stipulated within the Nationwide or Individual Permit during all relevant phases of development.
Q5.5-C2	Prior to project approval, an application for a Water Quality Certification shall be submitted by the County to the Central Coast RWQCB pursuant to Section 401 of the CWA and State Porter-Cologne Water Quality Act. If required, a Water Quality Certification shall be obtained from the Central Coast RWQCB for any impacts, temporary and permanent, to any areas within the proposed project which are determined to qualify as jurisdictional waters of the State. The County shall implement all required conditions and special considerations stipulated within the Water Quality Certification during all relevant phases of development.
Q5.5-C3	Prior to project approval, a Notification of Lake or Streambed Alteration shall be submitted by the County to the CDFG pursuant to CFG Code Section 1602. If required, a Streambed Alteration Agreement shall be obtained from the CDFG for any impacts, temporary and permanent, to any areas within the proposed project which are determined to qualify as jurisdictional streambed or riparian habitat. The County shall implement all required conditions and special considerations stipulated within the Streambed Alteration Agreement during all relevant phases of development.
Section 5.6: Cultural Resources	
Q5.6-B1	Avoidance of cultural resources is the paramount mitigation measure to protect cultural resources potentially impacted during project development.
Q5.6-B2	A Treatment Plan shall be prepared that would detail the extensive scope of the proposed project, establish site types with corresponding levels of effort for mitigation, and detail data recovery and monitoring plans for the extent of the proposed project. The former Treatment Plan (Far Western 2001) prepared for the wastewater project shall be adapted and modified where appropriate for the current project.
Q5.6-B3	No longer required.
Q5.6-B4	If avoidance of recorded archaeological sites within any portion of the approved project design (Draft EIR Exhibit 5.6-4 and Exhibit 5.6-8) is not possible through project redesign, a phased program of site testing shall be undertaken to establish boundaries and evaluate the resources' potential eligibility to the California Register of Historical Resources under CEQA and the National Register of Historic Places under NEPA. If a site is determined ineligible, no further work is required. If a site is determined eligible, data recovery excavations shall be required to mitigate adverse effects incurred from project development.
Q5.6-B5	No longer required.
Q5.6-B6	Preconstruction monitoring shall occur in areas ranked as high in sensitivity for buried deposits. Mechanical backhoe trenching shall be conducted within the sensitive areas where any construction impacts will occur and shall be monitored by a qualified geoarchaeologist. Any identified intact deposits will be evaluated, and any deposits determined to be eligible to the California Register and/or National Register shall require project redesign to avoid impacts, or data recovery to mitigate unavoidable impacts.
Q5.6-B7	While prior survey, excavation, and monitoring have been conducted for the majority of the collection system in the community of Los Osos, redesign in the placement of pipelines and location of pump stations and other facilities requires additional consideration. Areas of high archaeological sensitivity, including the locations of human burials, have been identified. Continued avoidance or addition testing, monitoring, and/or data recovery shall be required to reduce impacts to a less-than-significant level.

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Q5.6-B8	As full analysis, processing, documentation, curation, and reporting of the project collections were not achieved because of the stop-work order on the 2005 wastewater project. These tasks shall be completed by qualified archaeologists as an important mitigation effort for overall project impacts and to fulfill requirements associated with past Section 106 consultations. Study findings shall be made available to the general public and local Native Americans, as well as to the scientific community.
Q5.6-C1	Although unlikely, should any vertebrate fossils or potentially significant finds (e.g., numerous well-preserved invertebrate or plant fossils) be encountered by anyone working on the site, all activities in the immediate vicinity of the find are to cease until a qualified paleontologist evaluates the find for its scientific value. If deemed significant, the paleontological resource(s) shall be salvaged and deposited in an accredited and permanent scientific institution where they will be properly curated and preserved for the benefit of current and future generations.
Q5.6-D1	A Memorandum of Agreement has been prepared for the treatment and disposition of human remains and associated burial items. This document lays out the procedures agreed upon by interested local Native Americans and stipulated under State law, including proper and respectful handling of remains, identification of reburial areas, acceptable analyses, and resolution of conflicts. It includes a list of Most Likely Descendents approved by the Native American Heritage Commission; these individuals are signatories on the Agreement.
Q5.6-D2	For sites with known human remains or which have a potential for human remains, pre-construction excavations shall take place within the direct impact areas to insure that no human remains are present.
Q5.6-D3	If human remains are encountered within the project area, the County shall be responsible for complying with provisions of Public Resources Code Sections 5097.98 and 5097.99, and 7050.5 of the California Health and Safety Code, as amended by Assembly Bill 2641. Restrictions or procedures for excavation, treatment, or handling of human remains shall be established in consultation with the individuals designated by the Native American Heritage Commission as the Most Likely Descendents.
Section 5.7: Public Health and Safety	
Q5.7-A1	Prior to any onsite construction activities at the proposed treatment plant sites, soils shall be sampled and analyzed by a licensed engineer or geologist approved by the County of San Luis Obispo Health Department to determine the level of residue for pesticides, herbicides, chemicals, and associated metals. If residues are found to be within acceptable amounts in accordance with the San Luis Obispo County Health Department (SLOCHD) and Environmental Protection Agency/Department of Toxic Substance Control (DTSC) standards, then grading and construction may begin. If the residue is found to be greater than the SLOCHD and DTSC standards, all contaminated soils exceeding the acceptable limits shall be remediated and/or properly disposed of in accordance with SLOCHD and DTSC requirements. An appropriate verification closure letter from SLOCHD and DTSC shall be obtained and submitted to the County of San Luis Obispo Planning Department. Depending on the extent of contaminated soils, a verification closure letter from the California Regional Water Quality Control Board may also need to be submitted to the County of San Luis Obispo Planning Department. Site remediation can occur by the use of onsite transportable thermal treatment units or bio-remediation. The soil can also be excavated and shipped offsite to fixed incineration or bio-remediation facilities.
Q5.7-B1	Prior to operation of the wastewater project, a Hazardous Materials Management Plan shall be developed and submitted to the County of San Luis Obispo Environmental Health Services Division for approval. The plan shall identify hazardous materials utilized at the proposed wastewater facilities and their characteristics; storage, handling, training procedures, and spill contingency procedures. Additionally, the Hazardous Materials Management Plan shall identify procedures in the event of accidents such as the release of raw wastewater or secondary treated water into watercourses such as Los Osos Creek. These procedures shall include immediate response personnel to limit public access to spill areas, potentially shutting down pump stations, creating berms, use of vacuum trucks, and use of water booms to contain spills within open water areas. Furthermore, the Plan shall address response and containment of fuel at pump station sites.
Q5.7-D1	To reduce the potential temporary loss of water for firefighting that may occur as a result of construction activities, either of the following shall occur: (1) acquiring a water tender, to the satisfaction of the County Fire Chief; or (2) compensating for the potential temporary loss of water through some other equivalent means as determined by the County Fire Chief.

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Section 5.8: Traffic and Circulation	
Q5.8-A1	Prior to construction, a traffic management plan shall be prepared for review and approval by the County of San Luis Obispo Traffic Department. The traffic management plan shall be based on the type of roadway, traffic conditions, duration of construction, physical constraints, nearness of the work zone to traffic and other facilities (bicycle, pedestrian, driveway access, etc.). The traffic management plan shall include: a) Advertisement. An advertisement campaign informing the public of the proposed construction activities should be developed. Advertisements should occur prior to beginning work and periodically during the course of project construction. b) Property Access. Access to parcels along the construction area shall be maintained to the greatest extent feasible. Affected property owners shall receive advance notice of work adjacent to their property access and when driveways would be potentially closed. c) Schools. Any construction adjacent to schools shall ensure that access is maintained for vehicles, pedestrians, and bicyclists, particularly at the beginning and end of the school day. d) Buses, Bicycles and Pedestrians. The work zone shall provide for passage by buses, bicyclists and pedestrians, particularly in the vicinity of schools. e) Intersections. Traffic control (i.e. use of flag men) shall be used at intersections that are determined to be unacceptably congested due to construction traffic.
Section 5.9: Air Quality	
Q5.9-C1	Prior to issuance of grading permits, the applicant shall submit a Construction Activities Management Plan for the review and approval of the SLOAPCD. This plan shall include but not be limited to the following Best Available Control Technologies for construction equipment: a. Minimize the number of large pieces of construction equipment operating during any given period. b. Schedule construction related truck/equipment trips during non-peak hours to reduce peak-hour emissions. c. Properly maintain and tune all construction equipment according to manufacturer's specifications. d. Fuel all off-road and portable diesel powered equipment including but not limited to: bulldozers, graders, cranes, loaders, scrapers, backhoes, generators, compressors, auxiliary power units, with CARB motor vehicle diesel fuel. e. Use 1996 or newer heavy duty off road vehicles to the extent feasible. f. Use Caterpillar pre-chamber diesel engines (or equivalent) together with proper maintenance and operation to reduce emissions of NOX. g. Electrify equipment where possible. h. Use Compressed Natural Gas (CNG), liquefied natural gas (LNG), biodiesel, or propane for on-site mobile equipment instead of diesel- powered equipment.
Q5.9-C2	Prior to initiating grading activities, the proponent's contractor or engineer shall: a. Include the following specifications on all project plans: One catalyzed diesel particulate filter (CDPF) shall be used on the piece of equipment estimated to generate the greatest emissions. If a CDPF is unsuitable for the potential equipment to be controlled, five diesel oxidation catalysts (DOC) shall be used. b. Identify equipment to be operated during construction as early as possible in order to place the order for the appropriate filter and avoid any project delays. This is necessary so that contractors bidding on the project can include the purchase, proper installation, and maintenance costs in their bids. c. Contact the SLOAPCD Compliance Division to initiate implementation of this mitigation measure at least two months prior to start of construction.
Q5.9-C3	Prior to initiating grading activities, if it is determined that portable engines and portable equipment would be utilized, the contractor shall contact the SLOAPCD and obtain a permit to operate portable engines or portable equipment, and shall be registered in the statewide portable equipment registration program. The SLOAPCD Compliance Division shall be contacted in order to determine the requirements of this mitigation measure.
Q5.9-C4	Project contract documents would include the following dust control measures: a. Reduce the amount of the disturbed area where possible,

Mitigation Number	Mitigation Measure
	b. Use water trucks or sprinkler systems in sufficient quantities to prevent airborne dust from leaving the site. Increased watering frequency will be required whenever wind speeds exceed 15 mph. Reclaimed (non-potable) water should be used whenever possible. c. All dirt stockpile areas will be sprayed daily as needed, d. Permanent dust control measures identified in the revegetation and landscape plans will be implemented as soon as possible following completion of any soil disturbing activities. e. Exposed ground areas that are planned to be reworked at dates greater than one month after initial grading will be sown with a fast germinating native grass seed and watered until vegetation is established. f. All disturbed soil areas not subject to revegetation will be stabilized using approved chemical soil binders, jute netting, or other methods approved in advance by the APCD. g. All roadways, driveways, sidewalks, etc. to be paved will be completed as soon as possible. In addition, building pads will be laid as soon as possible after grading unless seeding or soil binders are used. h. Vehicle speed for all construction vehicles will not exceed 15 mph on any unpaved surface at the construction site. i. All trucks hauling dirt, sand, soil, or other loose materials are to be covered or will maintain at least two feet of freeboard (minimum vertical distance between top of load and top of trailer) in accordance with CVC Section 23114. j. Install wheel washers where vehicles enter and exit unpaved roads onto streets, or wash off trucks and equipment leaving the site. k. Sweep streets at the end of each day if visible soil material is carried onto adjacent paved roads. Water sweepers with reclaimed water should be used where feasible. l. If visible emissions of fugitive dust persist beyond a distance of 200 feet from the boundary of the construction site, all feasible measures shall be implemented to eliminate potential nuisance conditions at off-site receptors (e.g., increase frequency of watering or dust suppression, install temporary wind breaks where appropriate, suspend excavation and grading activity when winds exceed 25 mph) m. The contractor will designate a person or persons to monitor the dust control program and to order increased watering, as necessary, to prevent transport of dust offsite. Their duties will include holidays and weekend periods when work may not be in progress. The name and telephone number of such persons will be provided to the SLOAPCD prior to the start of construction.
Q5.9-C5	If the above mitigation measures do not bring the construction emissions below the thresholds, off-site mitigation funds can be used to secure emission reductions from projects located in close proximity to this construction site. In this instance, emissions in excess of construction phase thresholds are multiplied by the cost effectiveness value defined in the State's current Carl Moyer Incentive Program Guidelines to determine the off-site mitigation amount associated with the construction period. Examples of off-site emission reduction measures are contained in Section 5.9 of the 2003 CEQA Air Quality Handbook. The actual mix of mitigation measures that would be required to meet the reduction in NO_X to less than a total of 185 lbs per day or 6.0 tons per quarter over the term of construction and would be finalized and mutually agreed to by the Applicant and appropriate staff of the SLOAPCD prior to commencement of construction of the project.
Section 5.10: Noise	
Q5.10-A1	The project applicant shall require that the treatment plant be designed so that the mechanical aeration system is located a minimum of 250 feet away from the nearest residence.
Q5.10-A2	The project applicant shall require that the treatment plant be designed so that the backup diesel generator is enclosed in a structure and is located a minimum of 250 feet away from the nearest residence.
Q5.10-A3	The County will require that the backup power facility structures for the in-town collection system be designed so that the noise created from the backup diesel generator that would be located inside the structure would not exceed 45 dBA Leq at the nearest residence. The noise from the backup diesel generator may be attenuated through the use of a "manufacturer enclosure" or through incorporation of noise attenuation design features into the backup power facility structure.

Mitigation Number	Mitigation Measure
Q5.10-B1	Prior to initiation of construction of the collection system, the contractor/designer shall identify all areas where pile driving, or other construction methods that would result in severe ground vibrations, could occur. Deep pile foundation designs shall favor techniques that can be constructed with minimal vibration effects. Prior to construction, the contractor shall calculate the vibration effects of pile driving and other high vibration activities using the Peak Particle Velocity (PPV) metric, and shall ensure that the PPV does not exceed the following thresholds at any affected building: 0.5 at modern industrial/commercial or residential buildings; 0.3 for any building composed of masonry, unreinforced concrete, lath & plaster interiors or of similar construction; and 0.25 for any building identified as particularly sensitive to vibration impacts. Alternative design and/or construction methods shall be used to meet these limits. In addition, the construction contractor shall notify all property owners and tenants adjacent to the proposed pile driving or other vibration inducing activities of the days and hours of operation. Prior to construction activities associated with this type of work, the construction contractor shall inspect all structures within 100 feet of the proposed work to document existing characteristics of the structures. If damages to structures (e.g., residences, pools) occur during the work, the property owner shall be fairly compensated for the cost of remediating damages.
Q5.10-C1	The project applicant shall require construction contractors to adhere to the following noise attenuation requirements: • Construction activities shall be limited to between the hours of 7 a.m. to 9 p.m. on any day except Saturday or Sunday or between the hours of 8 a.m. to 5 p.m. on Saturday or Sunday. • All construction equipment shall use noise-reduction features (e.g., mufflers and engine shrouds) that are no less effective than those originally installed by the manufacturer. • Construction staging and heavy equipment maintenance activities shall be performed a minimum distance of 300 feet from the nearest residence, unless safety or technical factors take precedence. • Stationary combustion equipment such as pumps or generators operating within 100 feet of any residence shall be shielded with a noise protection barrier.
Q5.10-C2	The construction contractor shall notify all property owners and tenants adjacent to the proposed pile driving activities of the days and hours of operation. The construction contractor shall also require that a noise damper be utilized between the pile driver and the object that is being driven into the ground.
Section 5.11: Agricultural Resources	
Q5.11-A1	Within two years of the start of operation of the facility, the County Department of Public Works shall provide evidence to the County Planning and Building Department that a farmland conservation easement, a farmland deed restriction, or other farmland conservation mechanism has been granted in perpetuity to the County or a qualifying entity approved by the County Agricultural Commissioner (or designee). The easement shall provide conservation acreage at a ratio of 1:1 for direct impacts and 0.5:1 for indirect impacts. Additionally, the project proponent shall provide appropriate funds (as determined by the County Planning Department) to compensate for reasonable administrative costs incurred by the easement holder. The area conserved shall be minimally sized at 347 acres, and shall be of a quality that is reasonably (as determined by the County Agricultural Commissioner or designee) similar to that of the farmland within the project limits. The area to be conserved shall be located within San Luis Obispo County within reasonable proximity to the project site.
Q5.11-B1	Provide fencing of areas currently grazed on the Tonini parcel, and a buffer between the boundary of the disposal area and areas currently grazed. The width of the buffer shall be determined in consultation with the San Luis Obispo County Agricultural Commissioner's office.
Section 5.12: Visual Resources	
Q5.12-C1	AES 1 (construction staging area) from the Estero Area Plan shall apply. 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 of construction equipment storage away from direct views of sensitive viewing corridors (e.g. residences and major roads in the project area) shall be designated.

Mitigation Number	Mitigation Measure
Q5.12-C2	A final landscaping plan shall be prepared for the entire project site and approved by the County prior to building permit issuance. 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 landscaping plan shall be to visually integrate the project into the rural landscape, while preserving and enhancing existing views.
Q5.12-C3	Any buildings associated with collection facilities at the Broderson and Mid-Town parcels shall be designed in such a manner so they are architecturally compatible with other buildings in the vicinity.
Q5.12-D1	AES-5 (lighting plan) from the Estero Area Plan shall apply. A final lighting plan shall be prepared for the treatment and disposal facilities. The lighting plan shall meet County design standards. This shall include proper shielding, proper orientation, and applicable height standards. All lighting fixtures shall be shielded so that neither the lamp nor the related reflector interior surface is visible from adjacent properties. Light hoods shall be dark-colored.
Q5.12-F1	Any building (equipment areas, power generating stations) associated with treatment and disposal facilities (including the Tonini parcel) shall be designed to conform to an agricultural landscape. Buildings shall be designed to appear as barns or other farm related structures.
Q5.12-F2	A final landscaping plan shall be prepared for the entire project site (including the Tonini parcel) and approved by the County prior to building permit issuance. 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 landscaping plan shall be to visually integrate the project into the rural landscape, while preserving and enhancing existing views.
Q5.12-F3	AES 4 (Revegetation Plan) from the Estero Area Plan shall apply to any facilities associated with treatment and disposal (Tonini parcel). A revegetation plan shall to the satisfaction of the US Fish and Wildlife Service, California Department of Fish and Game and San Luis Obispo County for the 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.

Q.3 - PROJECT DESCRIPTION

Q.3.1 - Project Components

As explained in the Draft EIR, the Preferred Los Osos Wastewater Project (LOWWP) that the County selects could be any one of the four proposed projects described in the Draft EIR, or a different combination of project components. Based on the findings of the Draft EIR and the ongoing technical analysis, the County selected the Environmentally Superior Alternative as the Preferred Project by combining project components for wastewater collection, conveyance, treatment process and site selection, wet weather effluent storage, and effluent and biosolids disposal. The Preferred Project is a modification of Proposed Project 4, which included a wastewater treatment plant (WWTP) and effluent storage located at the Tonini site as well as a gravity wastewater collection system. The primary change that improves the environmentally superior characteristics is that an extended aeration treatment process (e.g., oxidation ditch or Biolac® as described in Proposed Projects 2 and 3) has replaced the facultative ponds from Proposed Project 4. As the LOWWP preliminary design has continued toward the Design/Build process, the County and its engineering consultants have refined the conceptual design that provided the basis for the Draft EIR. This Section Q.3 of the Preferred Project Evaluation describes the Preferred Project in detail. Table Q.3-1 provides a summarized comparison of the Preferred Project and the four proposed projects.

Table Q.3-1: Proposed Project

Proposed Project	Treatment Plant Site	Collection System	Conveyance Systems		Treatment Process	Treated Effluent Storage Location	Effluent Disposal
			Raw Wastewater	Treated Effluent			
1	Cemetery/Giacomazzi/ Branin	STEP/STEG	Mid-town Central Point to Giacomazzi	Giacomazzi to Broderson and Tonini	Facultative Ponds (Secondary Treatment)	Onsite at Cemetery/Giacomazzi/ Branin	Broderson Leachfield, Tonini Sprayfields, and Conservation
2	Giacomazzi	Gravity	Mid-town Pump Station to Giacomazzi	Giacomazzi to Broderson and Tonini	Oxidation Ditch or Biolac® (Secondary Treatment)	At Tonini Sprayfield Site	Broderson Leachfield, Tonini Sprayfields, and Conservation
3	Giacomazzi/Branin	Gravity	Mid-town Pump Station to Giacomazzi	Giacomazzi to Broderson and Tonini	Oxidation Ditch or Biolac® (Secondary Treatment)	Onsite at Giacomazzi	Broderson Leachfield, Tonini Sprayfields, and Conservation
4	Tonini	Gravity	Mid-town Pump Station to Tonini	Tonini to Broderson and onsite at Tonini	Facultative Ponds (Secondary Treatment)	Onsite at Tonini treatment and sprayfield site	Broderson Leachfield, Tonini Sprayfields, and Conservation
Preferred Project	**Tonini**	**Gravity**	**Mid-town Pump Station to Tonini**	**Tonini to Broderson and onsite at Tonini**	**Oxidation Ditch or Biolac® (Secondary Treatment)**	**Onsite at Tonini treatment and sprayfield site**	**Broderson Leachfield, Tonini Sprayfields, and Conservation**

Sources:
1. Appendix B: Kennedy/Jenks Consultants, 2008, LOWWP Environmental Impact Report Draft Proposed Projects Descriptions, Draft August 1, 2008.
2. County of San Luis Obispo, 2009, LOWWP Draft Coastal Development Permit General Application, March 2009.

Q.3.2 - Project Location

As shown in Exhibit Q.3-1, the sites selected for the various Preferred Project components are the same as the Proposed Project 4 sites. The gravity sewer collection system area is unchanged, although there have been a few design refinements to pump stations and force mains, as described in Section Q.3.3 below. The raw sewage conveyance pipeline from the Mid-town Pump Station to the WWTP and the treated effluent conveyance pipeline from the Tonini WWTP site to the Broderson leachfield will be located within the shoulders of Los Osos Valley Road. Both conveyance pipelines are depicted in Exhibit Q.3-1.

At the Tonini site, the Preferred Project replaces the facultative ponds included in Proposed Project 4 with an extended aeration treatment plant. Biolac® and oxidation ditches are two types of extended aeration treatment plants that the Design/Build contractor could propose during the Design/Build process. Although a Biolac® facility typically costs somewhat less to construct than an oxidation ditch, a Biolac® facility requires more acreage. The preliminary facilities layout shown in Exhibit Q.3-2, the Tonini Site Layout Plan, is based on an oxidation ditch WWTP layout but on the larger site size that would be required for the similar Biolac® treatment process. If the Design/Build contractor proposes an oxidation ditch treatment plant, less land area would be required. Both the Biolac® and oxidation ditch layouts provide a 100-foot buffer between the treatment plant facilities and the existing nearby drainage channel to the east.

Three typical treated effluent storage ponds on the Tonini site have been shown in Exhibit Q.3-2 southwest of the WWTP. These three ponds or a similar configuration designed by the Design/Build contractor, will have a maximum depth of 20 feet and together provide a total effluent storage capacity of about 46 acre feet (ac-ft).

Effluent disposal for the Preferred Project, like Proposed Project 4, will be provided by a combination of 160 acre-feet per year (AFY) for water conservation measures, about 842 AFY at the Tonini sprayfields and 448 AFY at the Broderson leachfield. These sites are depicted in Exhibit Q.3-1.

Q.3.3 - Project Characteristics

As explained above, the Preferred Project characteristics are similar to Proposed Project 4 on the Tonini site except for substituting the extended aeration treatment plant described for Proposed Projects 2 and 3 for the facultative ponds. In addition, the LOWWP engineering team has developed several preliminary design refinements since the Draft EIR was completed. These refinements are within the scope of the Draft EIR project design parameters, but they are provided here to clarify the Preferred Project components and to facilitate environmental analysis of the Preferred Project. Because a Design/Build contractor will complete the LOWWP final design, the final design details, with the County's approval, will be subject to change. If any Design/Build changes differ significantly from the proposed projects covered by this EIR, supplemental environmental

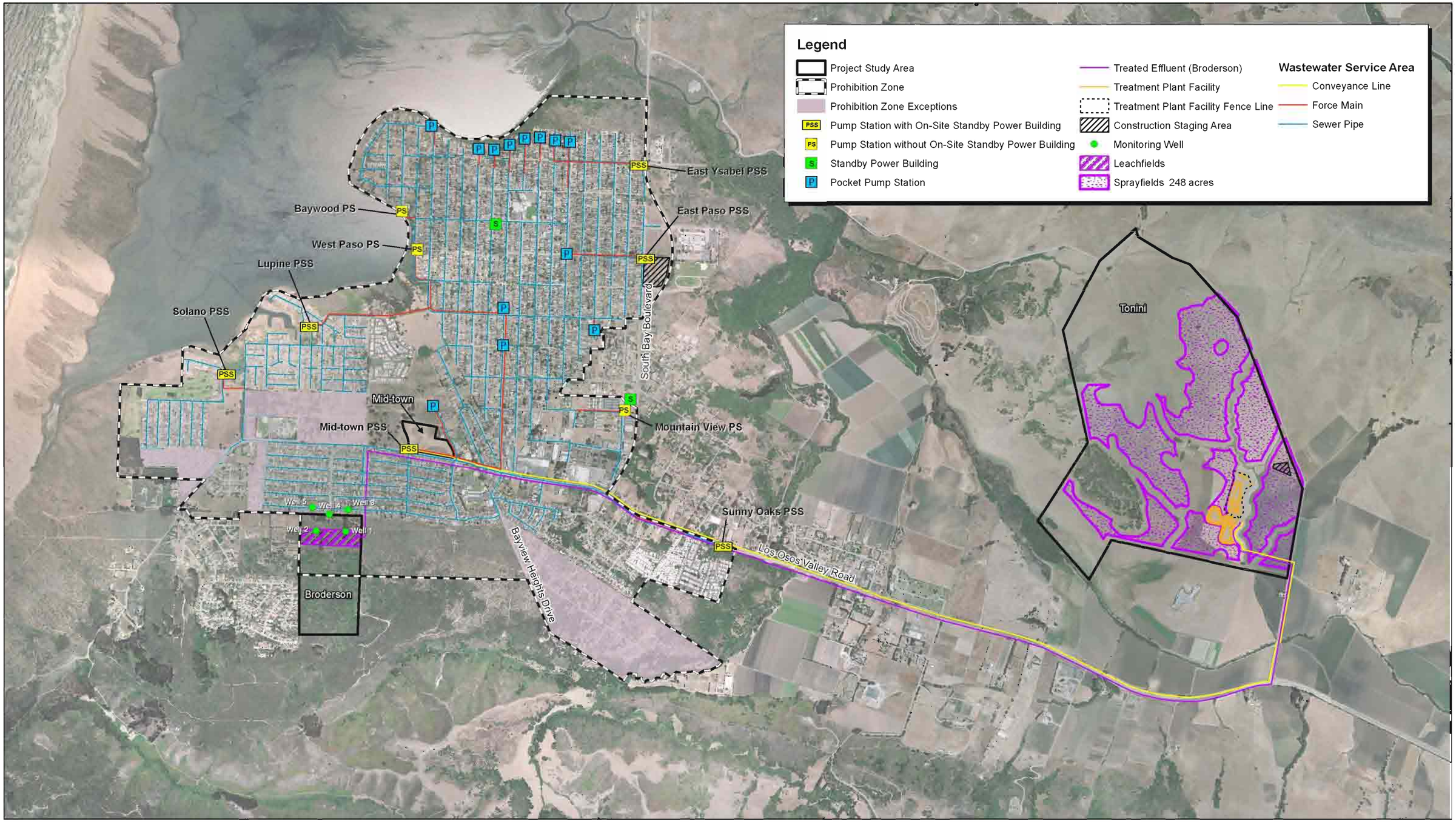
documentation may be required to evaluate some aspects of the final design, provide adequate public review of the proposed project's environmental impacts, and to support the permitting process.

Since the Draft EIR was prepared, the County's LOWWP team conducted additional geotechnical, biological, and cultural resource field studies at the Tonini site (see Sections Q.6, Q.7, Q.8, and Q.9). The Tonini Site Layout Plan, provided in Exhibit Q.3-2, has been refined as the engineering design has continued from conceptual design to prepare for the Design/Build process and to prepare the LOWWP Coastal Development Permit Application (County of San Luis Obispo, Department of Planning and Building 2009). Design refinements made in response to issues such as site constraints and operational requirements include: Provide more detailed descriptions of extended aeration WWTP facilities proposed for the LOWWP and still provide flexibility for the Design/Build process.

- Arrange the treatment facilities onsite so that gravity flow during treatment plant operations will provide energy savings.
- Provide 100-foot buffers from Environmentally Sensitive Habitat Areas (ESHAs) such as creeks, sensitive habitats, the Warden Lake wetland area, and cultural sites.
- Provide 30-foot buffer from Turri Road.
- Provide sufficient sprayfield effluent disposal capacity with evapotranspiration only and no percolation.
- Avoid the Pacific Gas and Electric Company electrical power line easement.
- Identify necessary pipeline creek crossings and develop typical design details that minimize habitat impacts.
- Develop a preliminary stormwater management plan.
- Prepare the project description in sufficient detail for the Coastal Development Permit application.
- Increase estimated WWTP operations staff requirement to a 2.5 full-time equivalent crew for the oxidation ditch/Biolac® treatment plant for the Preferred Project.

Revise project excavation requirements to reflect project refinements since the Draft EIR was prepared.

The sections below describe the Preferred Project refinements in more detail. Table Q.3-2 is a comprehensive summary of the Preferred Project.



Source: AirPhoto USA, San Luis Obispo County GIS Data, Carollo Engineers, and MBA GIS Data.

NORTH

2,000 1,000 0 2,000 Feet

Michael Brandman Associates

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Exhibit Q.3-1
LOWWP Preferred Project

Creek Crossing Legend	
1	Treated Effluent To Sprayfield
2	Treated Effluent To Sprayfield
3	Influent/Effluent
4	Influent/Effluent
5	Storm Drain Outfall
6 7 8	Treated Effluent To Sprayfield

Legend
- Project Study Area
- Creek Crossing
- Treatment Plant Facility
- Treatment Plant Facility Fence Line
- Coastal Streams
- Influent Line
- Plant Access Road
- Existing Access Road
- Sprayfield Line
- Storm Drain Outfall
- Treated Effluent (Broderson)
- Construction Staging Area
- Sprayfields 248 acres
- Environmentally Sensitive Area (ESA)
- ESA 100 Foot Boundary
- Existing Well Location
- Well 100 Foot Boundary
- Sensitive Resource Area
- PG&E Easement
- Wetlands

Well D
Well A
Well B
Well C

Source: Carollo Engineers and AirPhoto USA.

NORTH
650 325 0 650
Feet

Michael Brandman Associates

02240002 • 03/2009 | Q.3-2_tonini_site_layout.mxd

Exhibit Q.3-2
Tonini Site Layout Plan

Table Q.3-2: Summary of Proposed Projects Los Osos Wastewater Project (LOWWP)[3]

Proposed Project	Treatment Plant Site	Collection System [1]	Conveyance Systems		Treatment Process and Wastewater Flows	Treated Effluent Storage Location	Effluent Disposal	Biosolids Disposal
			Raw Wastewater	Treated Effluent				
Preferred Project	Tonini	**Gravity:** • Abandon 4,769 existing septic tanks (75% in front yards and 25% in backyards). • Install 4,769 connecting 4-inch sewer laterals from property line to street collection system (about 140,000 lf). • 230,000 lf of gravity sewer and force mains (8- to 8-inch pipeline, most at depths of less than 8 feet[2]). • 907 manholes. • 6 duplex pump stations. • 2 triplex pump stations. • 13 pocket pump stations. • Standby power facilities (For stationery duplex, triplex and Mid-town pump stations.). • Maintenance includes inspections of the collection system every 2 years (half of system each year). • Telemetry will signal false and real alarms for pump station malfunctions. • Energy consumption of about 500,000 kWhr/year.	1. Mid-town Pump Station to Tonini. • Install 28,500 lf of 14-inch force main at 4- foot depth. • Install Mid-town Pump Station with 2 75-hp pumps and 2 40-hp pumps with average pumping capacity of 875 gpm at 170 TDH. • Install enclosed 250 KW standby generator. • Pump Station site is 0.25 acre. • Construct 100 foot Los Osos Creek Crossing by installing conventional pipe hangers on Los Osos Valley Road bridge. • Construct Warden Creek crossing by installing conventional pipe hangers on Turri Road bridge. 2. Tanker trucks will pump and transport septage from 150 septic tanks each year and discharge to the treatment plant headworks.	1. Install conveyance system to transmit treated effluent from Tonini site to Broderson Leachfield. • Install 26,800 lf of 12-inch pipeline. • Install 1.2 MGD pump station at Tonini to pump maximum of 65 AF monthly (448 AF annually) of treated effluent to Broderson Leachfield. (Three 50 hp VFD pumps (2 duty and 1 standby). • Install possible second pump station at Broderson to achieve equal distribution throughout disposal field. (20 hp pump with capacity of 500 gpm at 40 psi). • Construct 100 foot Los Osos Creek Crossing using existing 24-inch utility sleeve in Los Osos Valley Road bridge. • Construct Warden Creek crossing by installing conventional pipe hangers on Turri Road bridge. 2. Install conveyance system to transmit treated effluent from Tonini site to Tonini Sprayfields. • Install 6,500 lf of 12-inch pipeline. • During non-wet periods, pump total of 842 AFY of treated effluent to Tonini sprayfields. Install possible site booster pump to increase pressure.	1. Assumes Water Conservation Measures are implemented: • Reduce water consumption and wastewater generation by 160 AFY (10% by buildout in 2020). • Mandate that bathrooms be retrofitted with all low-flow fixtures prior to hookup to the sewer. • Conduct Public Education campaign. • Promote High-Efficiency appliance programs. 2. At buildout, the wastewater generation rate (without conservation) from the gravity collection system is forecast to be: ADDWF = 1.2 MGD ADWWF = 1.4 MGD PHWWF = 2.5 MGD[3] • Average Day Influent Wastewater Characteristics: BOD5 = 340 mg/l Suspended Solids = 390 mg/l Total Nitrogen = 56 mg/l • Septic tank septage Typical Wastewater Characteristics: Average Daily Pumping = 720 gpd BOD5 increase = 30 lbs/day Suspended Solids increase = 90 lbs/day 3. Construct Oxidation Ditch or Biolac® Wastewater Treatment System to provide Secondary Treatment meeting RWQCB WDR. Plant includes: • Headworks to screen out inorganics, and de-grit and measure flow. • Oxidation Ditch or Biolac® system. • Septage receiving station required to screen and process septage from septic tanks remaining within excluded areas. • Two Secondary Clarifiers. • About 12--acre wastewater treatment facility site includes WWTP. access road, drainage facilities, and other appurtenances • Energy consumption will be about 1.36 million kWhr/year. • Nitrogen Removal System integral to Oxidation Ditch or Biolac® system without carbon addition. • Odor control by enclosing headworks and biosolids handling processes. • Site will be fenced. • Requires 2.5 FTE crew for O&M.	Construct 3 seasonal storage ponds with total capacity of 46 AF for treated effluent onsite at Tonini site. • Maximum pond depth of 20 feet plus 3 feet of freeboard • Site will be fenced. • Ponds will be lined to prevent leakage and protected with riprap. About 8 acres required for storage ponds.	Effluent Disposal will have two components: 1. Broderson Leachfield, • Construct 8-acre leachfield to discharge up to 448 AFY of treated wastewater effluent. • Can operate during dry and wet weather. • Mitigates 187 AFY of seawater intrusion (99AFY for Broderson and 88 AFY for conservation). • Site will be fenced. • Excavate leachfield, disk or rip underlying ground and reconstruct portions of leachfield every 5-10 years as needed. • Install 5 vadose zone monitoring wells. 2. Tonini Sprayfields. • Spray up to 842 AFY of treated wastewater effluent on 248 acres of available fields at Tonini site. • Disposal occurs through evapotranspiration only. • Spraying will occur during daytime and dry weather only. Spraying will stop at least 24 hours before rain is forecast. • Application rates will be monitored so effluent does not pool or runoff. • 100-foot buffer zone will be maintained between sprayfields and SRAs and ESHAs, including coastal creeks. 30-foot setback will be maintained from Turri Road. • Nitrates will be controlled by harvesting the grass several times a year and disposing of the grass at Cold Canyon or Chicago Grade landfills. • Site will be fenced.	1. Construct belt filter or screw press facilities to dewater 3,600 lbs/day of biosolids to meet Sub-Class B biosolids requirements. 2. Dewatered biosolids will be hauled to the Cold Canyon or Chicago Grade landfills for disposal. 3.Odors and noise will be controlled by enclosing the dewatering facility and providing odor scrubbing equipment.

Table Q.3-2 (Cont.): Summary of Proposed Projects Los Osos Wastewater Project (LOWWP)[3]

Proposed Project	Treatment Plant Site	Collection System [1]	Conveyance Systems		Treatment Process and Wastewater Flows	Treated Effluent Storage Location	Effluent Disposal	Biosolids Disposal
			Raw Wastewater	Treated Effluent				

Notes:
1. Cost of abandoning existing septic tanks and replacing onsite landscaping and other onsite improvements disturbed by sewer lateral and septic tank abandonment or installation is paid by property owner for all Proposed Projects. Property owner for STEP/STEG collection system pays cost of sewer lateral from house or building to new STEP/STEG tank. Property owner for gravity collection system pays cost of sewer laterals from property line to house or building.
2. 94 percent of gravity collection system will be 8-inch PVC, 3 percent will be 10- to 12-inch PVC, and 3 percent will be 15- to 18-inch PVC. 72.6 percent will be buried 8 feet or less, 24.6 percent from 9 to 12 feet, and less than 3 percent from 13 to 18 feet. See Appendix B, Project Description Data, for more detail.
3. ADDWF = Average Day Dry Weather Flow, ADWWF = Average Day Wet Weather Flow, AF = acre-feet, AFY = acre-feet per year, ESHA = Environmentally Sensitive Habitat Area, gpm = gallons per minute, gpd = gallons per day; FTE=full-time equivalent employees, hp = horsepower, kWhr = kilowatthours; lbs = pounds; lbs = pounds, lf = linear feet, MGD = million gallons per day, O&M = operations and Maintenance, psi = per square inch, PHWWF = Peak Hour Wet Weather Flow, RWQCB = Regional Water Quality Control Board, SRA = Sensitive Resource Area, STEP/STEG = Septic Tank Effluent Pumps/Septic Tank Effluent Gravity, TDH = total dynamic head, VFD = variable frequency drive.

Source:
1. Appendix B, Project Description Data; LOWWP Environmental Impact Report Draft Proposed Projects Descriptions, Final October. 2008.
2. County of San Luis Obispo Department of Planning and Building, 2009, LOWWP Coastal Development Permit General Application File under Local Coastal Plan.

Wastewater Collection System Refinements

The Preferred Project wastewater gravity collection system evaluated in the Draft EIR was originally designed for the earlier Los Osos Community Services District (LOCSD) wastewater treatment project, addressed in the 2000 EIR and approved by the California Coastal Commission (CCC). The LOWWP Preferred Project collection system is a gravity collection system. In addition about 200 homes with elevations below the planned sewer main will require grinder pumps and low pressure lines to the main. As shown in Exhibit Q.3-1, the collection system also includes 13 pocket pumps and 8 larger pump stations that will pump sewage collected by gravity from specific areas directly to the central collection point, or to higher elevations to flow by gravity directly to the central collection point at the Mid-town pump station. This will minimize the excavation depths necessary for a gravity collection system.

Exhibit Q.3-1 shows several collection system refinements the LOWWP engineering team added in order to meet permitting conditions from the earlier project and to connect to the raw wastewater conveyance pipeline to the Tonini WWTP location outside of town. These changes include:

- Relocate the 0.25-acre Mid-town Pump Station facility to the Mid-town site's southwest corner. This location takes better advantage of the hydraulic characteristics of the collection system and avoids higher quality habitat areas. The remainder of the Mid-town site will not contain any LOWWP improvements. To accommodate stormwater collection, the developed site size has been increased slightly and a berm will be built around the site.
- The Mid-town Pump Station will require two 75 horsepower (hp) pumps and two 40 hp pumps, an enclosed 250 kilowatt (KW) standby generator and a flow meter in a vault. An above ground chemical storage building has been added to store an odor control chemical, which is typically ferric chloride. Spill containment measures will be included in the chemical storage building design.
- Add Solano Pump Station and force main along Solano Street and Skyline Drive based on the California Coastal Commission's project review. This will increase the total pump stations to nine, including the Mid-town pump station. The Solano pump station will have two 20 hp pumps and have standby power from a generator in a 350 square foot building.
- Add sewage gravity collection line along Palisades Avenue flowing north from Los Osos Valley Road to the end of the developed roadway, a pocket pump, and a force main to carry the sewage back to the Mid-town Pump Station. This will increase the total number of pocket pump stations to 13.

- Update each of the nine submersible pump station site plans, including the pump and valve vault locations; water, gas and electrical connections; and above ground standby power stations and electrical panels or transformers for every pump station. The Baywood and West Paso pump stations are both served by the same new standby power station located near the corner of 8th Street and El Moro Street. The other six pump stations have new onsite standby power

stations except for the Mountain View pump station, which is served by a new standby power station located at the nearby LOCSD South Bay well site. See Exhibit Q.3-1 for the pump station and standby generator building locations.

All of the pump stations will include design features to minimize odors released from the pump stations.

Sewer System Management Plan (SSMP)

The LOWWP will develop and implement a sewer system management plan (SSMP) as required by the Statewide General Waste Discharge Requirements (WDRs) for Sanitary Sewer Systems, Water Quality Order No. 2006-0003 (Sanitary Sewer Order) adopted by the State Water Resources Control Board on May 2, 2006. The Sanitary Sewer Order requires public agencies that own or operate sanitary sewer systems to develop and implement SSMPs and report all sanitary sewer overflows (SSOs) to the State Water Board's online SSO database. The goal of the SSMP is to provide a plan and schedule to properly manage, operate, and maintain all parts of the sanitary sewer system. This will help reduce and prevent overflows as well as plan for prompt mitigation of any spills that do occur. Good operation and management practices and regular sewer system maintenance will also maintain the physical integrity of the sewer system, thereby minimizing infiltration and inflow to the sewage collection and conveyance systems as well as exfiltration from the pipelines. The SSMP will address the elements described below:

Goal	The goal of the SSMP is to provide a plan and schedule to properly manage, operate, and maintain all parts of the sanitary sewer system. This will help reduce and prevent overflows, as well as mitigate any spills that do occur.
Organization	The SSMP must identify: The name of the responsible or authorized representative The names and telephone numbers for management, administrative, and maintenance positions responsible for implementing specific measures in the SSMP program. The SSMP must identify lines of authority through an organization chart or similar document with a narrative explanation; and The chain of communication for reporting spills, from receipt of a complaint or other information, including the person responsible for reporting spills to the State and Regional Water Board and other agencies if applicable (such as Health Officer, County Environmental Health Agency, Regional Water Board, and/or State Office of Emergency Services [OES]).

Legal Authority	The County must demonstrate, through sanitary sewer system use ordinances, service agreements, or other legally binding procedures, that it possesses the necessary legal authority to: Prevent illicit discharges into its sanitary sewer system; Require that sewers and connections be properly designed and constructed; Ensure access for maintenance, inspection, or repairs for portions of the lateral owned or maintained by the County; Limit the discharge of fats, oils, and grease (FOG) and other debris that may cause blockages; and Enforce any violation of its sewer ordinances.
Operation and Maintenance Program	The SSMP must include those elements listed below that are appropriate and applicable to the system: Maintain an up-to-date map of the sanitary sewer system, showing all gravity line segments and manholes, pumping facilities, pressure pipes and valves, and applicable stormwater conveyance facilities; Describe routine prevention operation and maintenance activities by staff and contractors, including a system for scheduling regular maintenance and cleaning of the sanitary sewer system with more frequent cleaning and maintenance targeted at known problem areas. The Prevention Maintenance (PM) program should have a system to document scheduled and conducted activities, such as work orders; Develop a rehabilitation and replacement plan to identify and prioritize system deficiencies and implement short-term and long-term rehabilitation actions to address each deficiency. The program should include regular visual and TV inspections of manholes and sewer pipes, and a system for ranking the condition of sewer pipes and scheduling rehabilitation. Rehabilitation and replacement should focus on sewer pipes that are at risk of collapse or prone to more frequent blockages due to pipe defects. Finally, the rehabilitation and replacement plan should include a capital improvement plan that addresses proper management and protection of the infrastructure assets. The plan shall include a time schedule for implementing the short- and long-term plans plus a schedule for developing the funds needed for the capital improvement plan; Provide training on a regular basis for staff in sanitary sewer system operations and maintenance, and require contractors to be appropriately trained; and Provide equipment and replacement part inventories, including identification of critical replacement parts.

Design and Performance Provisions	Design and construction standards and specifications for the installation of new sanitary sewer systems, pump stations and other appurtenances; and for the rehabilitation and repair of existing sanitary sewer systems; and Procedures and standards for inspecting and testing the installation of new sewers, pumps, and other appurtenances and for rehabilitation and repair projects.
Overflow Emergency Response Plan	The County will develop and implement and overflow emergency response plan that identifies measures to protect public health and the environment. At a minimum, this plan must include the following: Proper notification procedures so that the primary responders and regulatory agencies are informed of all overflows in a timely manner; A program to ensure an appropriate response to all overflows; Procedures to ensure prompt notification to appropriate regulatory agencies and other potentially affected entities Procedures to ensure that appropriate staff and contractor personnel are aware of and follow the Emergency Response Plan and are appropriately trained; Procedures to address emergency operations, such as traffic and crowd control and other necessary response activities; and A program to ensure that all reasonable steps are taken to contain and prevent the discharge of untreated and partially treated wastewater to waters of the United States and to minimize or correct any adverse impact on the environment resulting from the overflow, including such accelerated or additional monitoring as may be necessary to determine the nature and impact of the discharge.
FOG Control Program	The County will evaluate the service area to determine whether a fats, oils and grease (FOG) control program is needed. If FOG is found to be a problem, the County will prepare and implement a FOG source control program to reduce the amount of these substances discharged to the sanitary sewer system. This plan shall include the following as appropriate: An implementation plan and schedule for a public education outreach program that promotes proper disposal of FOG; A plan and schedule for the disposal of FOG generated within the sanitary sewer system service area. This may include a list of acceptable disposal facilities and/or additional facilities needed to adequately dispose of FOG generated within a sanitary sewer system service area; The legal authority to prohibit discharges to the system and identify

	measures to prevent spills and blockages caused by FOG; Requirements to install grease removal devices (such as traps or interceptors), design standards for the removal devices, maintenance requirements, Best Management Practices (BMP) requirements, record keeping and reporting requirements; Authority to inspect grease producing facilities, enforcement authorities, and whether the Enrollee has sufficient staff to inspect and enforce the FOG ordinance; An identification of sanitary sewer system sections subject to FOG blockages and establishment of a cleaning maintenance schedule for each section; and Development and implementation of source control measures for all sources of FOG discharged to the sanitary sewer system for each section identified above.
System Evaluation and Capacity Assurance Plan:	The County will prepare and implement a capital improvement plan (CIP) that will provide hydraulic capacity of key sanitary sewer system elements for dry weather peak flow conditions, as well as the appropriate design storm or wet weather event. At a minimum, the plan must include: Evaluation: Actions needed to evaluate those portions of the sanitary sewer system that are experiencing or contributing to an overflow discharge caused by hydraulic deficiency. The evaluation must provide estimates of peak flows including flows from overflows associated with conditions similar to those causing overflow events, estimates of the capacity of key system components, hydraulic deficiencies (including components of the system with limiting capacity) and the major sources that contribute to the peak flows associated with overflow events; Design Criteria: Where design criteria do not exist or are deficient, undertake the evaluation above to establish appropriate design criteria; and Capacity Enhancement Measures: The steps needed to establish a short- and long-term CIP to address identified hydraulic deficiencies, including prioritization, alternatives analysis, and schedules. The CIP may include increase in pipe size, I/I reduction programs, increases and redundancy in pumping capacity, and storage facilities. The CIP shall include an implementation schedule and shall identify sources of funding.
Schedule	The County will develop a schedule of completion dates for all portions of the CIP developed above.

Monitoring, Measurement, and Program Modifications	The County will: Maintain relevant information that can be used to establish and prioritize appropriate SSMP activities; Monitor the implementation and, where appropriate, measure the effectiveness of each element of the SSMP; Assess the success of the preventative maintenance program; Update program elements, as appropriate, based on monitoring or performance evaluations; and Identify and illustrate Sewer System Overflows (SSO) trends, including: frequency, location, and volume.
SSMP Program Audits	As part of the SSMP, the County will conduct periodic internal audits, appropriate to the size of the system and the number of spills. At a minimum, these audits must occur every two years and a report must be prepared and kept on file. This audit shall focus on evaluating the effectiveness of the SSMP and the compliance with the SSMP, including identification of any deficiencies in the SSMP and steps to correct them.
Communication Program	The County will communicate on a regular basis with the public on the development, implementation, and performance of the SSMP. The communication system shall provide the public the opportunity to provide input as the program is developed and implemented. The County will also create a plan of communication with systems that are tributary and/or satellite to the sanitary sewer system (roads, drainage, etc.).

Wastewater Treatment Plant Site Layout Plan

As the LOWWP engineering team continued the preliminary engineering design and prepared the Coastal Development Permit application, the team refined the extended aeration WWTP layout. Several refinements were based on additional geotechnical, biological, and cultural resources field studies completed since the Draft EIR was completed. This Treatment Plant Site Plan (Exhibit Q.3-3) provides more detail on the preliminary location of typical facilities associated with an oxidation ditch/Biolac® treatment plant that provides secondary level treatment. With the facilities layout shown in Exhibit Q.3-3, the WWTP site, including the storage ponds, would be about 11 acres plus additional area for the access road to Turri Road. This facilities layout may be changed somewhat by the selected Design/Build contractor, with County approval, especially if the contractor proposes to build a Biolac® system instead of an oxidation ditch, which requires less land. Some of the facilities included at the WWTP include: two oxidation ditch/ Biolac® basins and two secondary clarifiers to provide redundancy; a 1 megawatt (MW) standby generator; building enclosures for the headworks, standby power and solids handling facilities to control odors and noise; ultraviolet disinfection with a hypochlorite tank for maintaining an effluent chlorine residual; a maintenance building, and other

ancillary facilities. Viable biosolids dewatering options that the Design/Build contractor could propose include a screw press or a belt press. The administration building will provide a control room, supervisor's office, laboratory, and men's and women's restrooms. Some of the water quality testing will be conducted onsite, and some will be conducted offsite by other County facilities.

Exhibit Q.3-3 shows areas that might be suitable for tertiary treatment or other treatment plant upgrades in response to regulatory changes. Tertiary treatment is not part of the current Preferred Project although it could be pursued in the future as a separate project.

Treatment plant access will be provided by improving the existing farm road north of the WWTP facility and realigning the intersection with Turri Road to improve sight distance for turning vehicles. The plant access road and main plant loop road will be asphalt; however, asphalt off the main roads will be minimized.

The effluent pump station will be sized to handle 1.2 MGD. This will require three 50 variable frequency drive (VFD) horsepower pumps (2 duty and 1 standby).

Treatment Plant Utilities

Four existing wells on the Tonini site will be evaluated and refurbished, if necessary, to provide a WWTP potable water supply meeting California Department of Public Health (CDPH) requirements. Exhibit Q.3-3 depicts a new water supply well near the administration building; this new well will be drilled to replace existing Well A (shown on Exhibit Q.3-2) if it does not meet the CDPH standards. A new approximately 30,000-gallon water storage tank and enclosed diesel water pump will be constructed to provide fire protection and potable water storage for the WWTP facility. The final water storage tank size will be proposed by the Design/Build contractor based on the fire code requirements related to the final building size and equipment.

Electrical power will be provided from an upgraded power line along an existing overhead power line route from Turri Road to the existing farmhouse.

Stormwater Collection

Stormwater runoff from inside the loop road at the Tonini WWTP facility site will be collected in the lined stormwater storage pond and pumped back to the WWTP headworks for treatment. During severe storms, stormwater overflow could also be pumped to the wet weather storage ponds. Stormwater from the Tonini site west and northwest of the treatment plant loop road will be collected in a new drainage channel and conveyed across the treatment plant site to an outfall into the existing drainage channel east of the treatment plant site (see Exhibit Q.3-3). The new drainage channel will incorporate Low Impact Development (LID) techniques to increase stormwater infiltration. The storm drainage outfall will also include energy dissipating rock and a new riparian area in the constructed open channel to slow and filter the stormwater.

Wet Weather Storage

Three effluent storage ponds, with impervious linings, a combined capacity of about 46 ac-ft and a total surface area of about 4.6 acres, are included in the Tonini Treatment Plant Partial Site Plan (Exhibit Q.3-3) south of the WWTP. The two larger ponds are about 20 feet deep plus a 3-foot freeboard; the smaller pond is about 12 feet plus a 3-foot freeboard. Constructing three ponds instead of a single large pond provides flexibility and reliability for wet weather storage, daily flow fluctuations and pond maintenance. For instance, when one of the ponds is taken out of service for maintenance, two ponds will remain in service.

Architectural Style

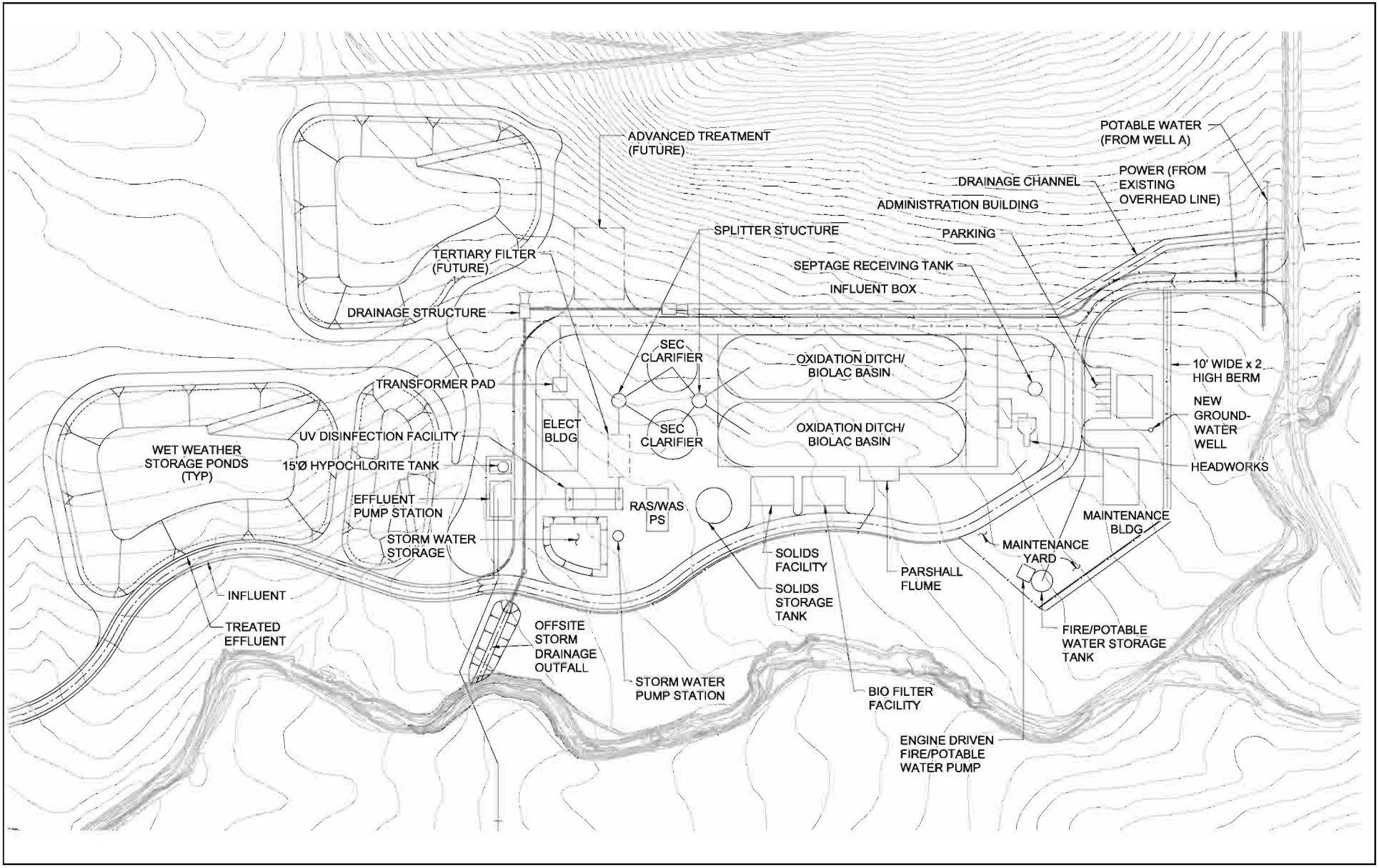
The visual impact of constructing the LOWWP treatment plant and other facilities will be minimized by designing the site buildings in an "agrarian style" that matches the local community character. Representative architectural elevations for the WWTP administration and maintenance buildings are presented in Exhibit Q.3-4 and Exhibit Q.3-5, which are architectural renderings of the administration and maintenance buildings.

Landscaping

Landscaping to visually blend the project facilities into the site will be planted at the Tonini WWTP, Mid-town Pump Station, and the other pump stations. Landscaping installed at the Tonini WWTP and sprayfield will provide partial visual screening from Turri Road and enhance the riparian habitat along the creeks crossing the site. A conceptual landscaping plan and preliminary plant palette are provided as Exhibit Q.3-6. Landscaping will also be installed at the Mid-town Pump Station as shown in Exhibit Q.3-7 and at the other pump stations.

Visual Simulations

The LOWWP project architect developed visual simulations of the wastewater treatment plant site including the wastewater treatment facilities, planned agrarian style architectural elevations, landscaping, access roads and sprayfields. Exhibit Q.3-8 is an index of the viewpoints for each visual simulation. Three views from Los Osos Valley Road are provided in Exhibit Q.3-9, and Exhibit Exhibit Q.3-10 provides three views from Turri Road.



Source: Carollo Engineers, February 2009.

NORTH

192 96 0 192
Feet

Michael Brandman Associates

02240002 • 03/2009 | Q.3-3_treatment_plant.cdr

Exhibit Q.3-3
Treatment Plant Site Plan

PERSPECTIVE

LOS OSOS WASTEWATER TREATMENT FACILITY

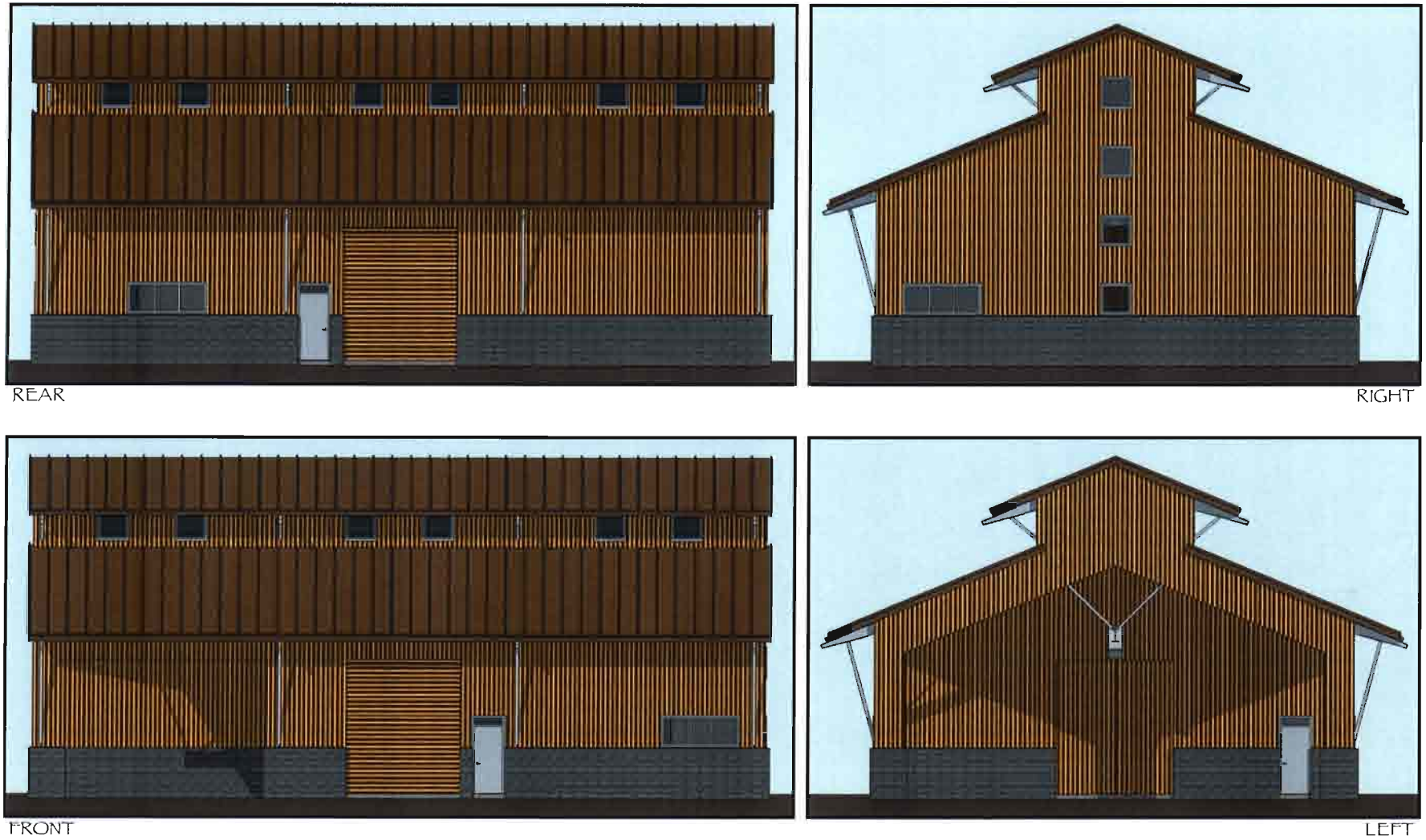
ADMINISTRATION BUILDING

Source: Steven D. Pults & Associates, LLC, February 2009.

Michael Brandman Associates

02240002 • 03/2009 | Q.3-4_arch_drawing.cdr

Exhibit Q.3-4
Administration Building Architectural Rendering



Source: Steven D. Pults & Associates, LLC, February 2009.

Michael Brandman Associates

02240002 • 03/2009 | Q.3-5_arch_drawing.cdr

Exhibit Q.3-5
Maintenance Building Architectural Rendering

Source: Wallace Group, February 2009.

NORTH

1132 566 0 1132 Feet

Michael Brandman Associates

02240002 • 03/2009 | Q.3-6_tonini_conceptual_landscape.cdr

Exhibit Q.3-6
Tonini Site Conceptual Landscape Plan

COUNTY OF SAN LUIS OBISPO • LOS OSOS WASTEWATER PROJECT
ENVIRONMENTAL IMPACT REPORT

Source: Wallace Group, February 2009.

NORTH

174 87 0 174 Feet

Michael Brandman Associates

02240002 • 03/2009 | Q.3-7_midtown_conceptual_plan.cdr

Exhibit Q.3-7
Mid-town Pump Station Conceptual Landscape Plan

Source: Steven D. Pults, AIA & Associates, LLP, March 2009.

NORTH

Not to scale

Michael Brandman Associates

02240002 • 03/2009 | Q.3-8_tonini_visual_sim_index.cdr

Exhibit Q.3-8
Tonini Site Visual Simulations Index

Source: Steven D. Pults, AIA & Associates, LLP, March 2009.

Michael Brandman Associates

Exhibit Q.3-9
Tonini Site Los Osos Valley Road Visual Simulations 1 Through 3

Source: Steven D. Pults, AIA & Associates, LLP, March 2009.

Michael Brandman Associates

02240002 • 03/2009 | Q.3-10_turri_road_visual_sims_4thru6.cdr

Exhibit Q.3-10
Tonini Site Turri Road Visual Simulations 4 Through 6

Tonini Sprayfields

Geotechnical field studies were conducted in late 2008 to evaluate the Tonini site geology, soils, and groundwater conditions (Fugro2008). One of the findings is that because expansive soils underlie much of the Tonini site, soil permeability rates are lower than previously assumed. Consequently, the sprayfield design for effluent disposal is now based on evapotranspiration (ET) only rather than a combined ET and percolation rate. The capacity for the 248 acres available for sprayfields is between 3.7 acrefeet per year per acre (AFY/acre) in a wet year and 3.9 AFY/acre in a normal year. (Appendix Q6.1, Cleath-Harris Geologists, 2009). At a design sprayfield disposal rate of 3.7 AFY/acre, about 228 acres of sprayfields will provide sufficient capacity to dispose of 842 AFY of treated effluent at Tonini. Since 248 acres are available at Tonini for sprayfields, the additional capacity will allow operational flexibility for field rotation, spray system repairs, runoff prevention, crop choices, planting time, etc. In addition, the LOWWP operators would have the ability to avoid additional onsite sensitive resources should they be identified during construction or operations.

Several studies were also conducted to identify which portions of the Tonini site would be suitable for sprayfields. These studies covered geology (Appendix Q.7), biology (Appendix Q.8), and cultural resources (Appendix Q.9.) Exhibit Q.3-2 depicts the 248 acres of available sprayfield capacity at Tonini. The sprayfields include land that has a slope of 20 percent or less, is outside the powerline easement, and is 100 feet or more away from ESHAs such as coastal creeks, cultural sites, wetlands, and other sensitive habitats. A 30-foot setback is provided from Turri Road. The 248 acres of sprayfields would provide a maximum effluent disposal capacity of 918 AF per year in a wet year, which is greater than the buildout effluent disposal requirement of 842 AF per year.

There have been several sprayfield design criteria modifications as the preliminary design progressed. They include:

- The sprayfields will be prepped and maintained using contour plowing techniques.
- The sprayfield pumps will be designed for an average spray period of 12 hours per day. This will require three 75 horsepower pumps (two duty and one standby.)
- The sprayfield operations plan will require that effluent disposal rates be low enough that effluent does not pool or run off the site. Consequently, the drainage system at the bottom of the sprayfields to capture excess sprayfield effluent and runoff from the sprayfields and reapply it to the sprayfields has been deleted from the project description.
- The sprayfield operations plan will specify that effluent disposal at the sprayfields will stop 24 hours or more before a storm is forecast for the area. When the sprayfields are out of operation, the treated effluent will be stored in the wet weather storage ponds and/or directed to the Broderson leachfield.
- A 100-foot buffer will be maintained between the sprayfields and all ESHAs, including the coastal creeks as shown in Exhibit Q.3-2. A 30-foot setback is provided from Turri Road.

- Project Design Feature 5.3.A-5 has been modified to indicate that the nearest sprayfield sprayheads would be located at least 100 feet from the upper extent of the wetland. Spray heads near the 100-foot buffer zones will have a 180-degree or smaller spray range focused inward towards the sprayfield so that no direct spray reaches the buffer zones.
- Project Design Feature 5.3.A-6 specified that berms would be constructed parallel to existing onsite drainages; they have been deleted from the project description because the lower application rates associated with ET and the protection provided by the 100-foot buffer zones make them unnecessary.

Creek Crossings

The Preferred Project creek crossing locations will be the same as those anticipated for Proposed Project 4, but the open cut installation has been eliminated. As shown in Exhibit Q.3-1, the raw wastewater and treated effluent conveyance pipelines will cross Los Osos Creek and several other drainages under Los Osos Valley Road and Turri Road. The existing pipe sleeve through the south side of the Los Osos Valley Road bridge across Los Osos Creek will be used for the 12-inch treated effluent conveyance pipeline. Conventional pipe hangers will be used to suspend the 14- to 16-inch raw wastewater conveyance pipeline from the north side of the Los Osos Valley Road bridge across Los Osos Creek. Similarly, conventional pipe hangers will be installed to suspend the raw wastewater and treated effluent pipelines across the Turri Road bridge crossing of Warden Creek.

Exhibit Q.3-2 provides more detail on the creek crossing locations on the Tonini WWTP and sprayfield site. These creek crossings will be constructed using open cuts and placing at least 5 feet of cover over the raw wastewater pipelines and at least 3 feet of cover over the treated effluent pipelines.

Broderson Leachfield Refinements

Hydrogeologists on the LOWWP team have continued to develop the Broderson leachfield effluent disposal program. The operational plan, groundwater monitoring program and surface stormwater runoff plans have been developed further as discussed below.

Operational Plan

Beginning at least 24 hours before forecasted storm events, which primarily occur during the wet winter season, all of the LOWWP treated effluent will be directed to the wet weather storage ponds and/or the Broderson leachfields. During dry weather, the majority of the treated effluent will be directed to the Tonini sprayfields with lesser amounts conveyed to the Broderson leachfields. The planned operational scenario at Broderson is to operate the disposal leachfields at a rate of up to 800,000 gallons per day (gpd), disposing of a maximum of 448 ac-ft of effluent at Broderson during the entire year. At 800,000 gpd, which is equivalent to 3.1 gpd per square foot of active leachfield area, the fields would be operating at less than 2 percent of the maximum tested infiltration rate of 180 gpd per square foot of leachfield area (Cleath and Associates 2000). For the first two to three

years of operation, LOWWP operators expect to limit total disposal at Broderson to 200 AFY to verify the results of the various hydrogeological studies. This can be accomplished because the community is not at buildout.

Monitoring Wells

The plan for Broderson leachfield groundwater level monitoring is to install five vadose-zone (shallow) monitoring wells, each one consisting of three piezometers clustered in a single 10-inch borehole. As shown in Exhibit Q.3-1, two of the wells are immediately below the leachfield, a third is between the leachfield and Highland Avenue, and the last two are in the right-of-way on Highland Avenue. These five vadose zone cluster wells (15 individual piezometers) are for monitoring potential perched water lenses up to 40 feet deep. In addition, existing deeper monitoring wells will allow the LOWWP operators to monitor development of the primary mound which will develop on the regional clay aquitard.

In addition, there will be a need to monitor development of the primary mound which will develop on the regional clay aquitard. These deeper monitoring wells are already in place. (Cleath and Associates, 2009) The groundwater monitoring program will also monitor project impacts on surface water features using the extensive number of existing water quality monitoring and water supply wells throughout the Los Osos community.

Stormwater Runoff

Project Design Feature 5.7.B-2 specified that berms would be constructed around the Broderson leachfields in locations where they would allow potential effluent runoff during storm events to be captured and allowed to infiltrate. This project design feature has been deleted from the project description because the treated effluent discharge rates will prevent effluent from surfacing at the Broderson site. During and after the initial leachfield construction and periodic rehabilitation of portions of the leachfields, , Best Management Practices will be used to control surface erosion from the site until the revegetation process is complete.

Water Conservation Measures

The Preferred Project's water conservation measures were derived from the Los Osos Community Services District 2000 Urban Water Conservation Plan (LOCSD 2000). With a target 10 percent per capita water demand reduction and a corresponding 10 percent wastewater generation reduction by 2020, the LOWWP's primary water conservation measure is requiring bathroom retrofits with low-flow fixtures , including toilets, prior to connecting to the new sewer. Additional water conservation will be obtained through a public education program and promoting high-efficiency appliances. If a 10 percent water conservation rate is not obtained with the existing water conservation measures, then the LOWWP would implement additional water conservation measures in coordination with the water purveyors to achieve the target conservation rate.

Construction Staging Areas

There are two planned construction staging areas. One is at the East Paso Pump station, which is part of a 7-acre parcel on the southeast corner of Pismo Avenue and 18th Street. Devoid of native vegetation, this site was used by the previous LOCSD wastewater project. The second construction staging area is about 1.5 acres at the Tonini site located southwest of the Tonini WWTP entrance road intersection with Turri Road. Both construction staging areas are shown on Exhibit Q.3-1.

Excavation

The LOWWP excavation requirements for the Preferred Project in comparison to Proposed Project 4 are summarized in Table Q.3-3. Overall the net total project excavation increase of 5,000 CY for the Preferred Project in comparison to Proposed Project 4 is less than 1 percent of the total project excavation. One of the two largest changes is that substituting the oxidation ditch/Biolac® process in the Preferred Project for the facultative ponds in Proposed Project 4 decreases project excavation requirements by 54,000 cubic yards (CY). This excavation reduction has been offset by the 46,000 CY excavation increase to construct three wet weather effluent storage ponds instead of a single storage pond. Constructing three ponds instead of one will increase the LOWWP operational flexibility and reliability as explained above under Wet Weather Storage Ponds. During the final design, it is possible that the Design/Build contractor will modify the pond design to decrease the net excavation requirement.

Table Q.3-3: Excavation Comparison of Preferred Project and Proposed Project 4

Project Facility	Proposed Project 4 (CY)	Preferred Project (CY)
Collection System[1]	322,000	342,000
Raw Water Conyeyance[2]	16,100	17,000
Treated Effluent Conveyance	15,100	15,100
Wastewater Treatment Plant[3]	83,000	24,000
Solids Processing and Disposal[4]	1,000	1,900
Seasonal Storage[5]	77,000	123,000
Leachfield	73,000	73,000
Sprayfield[6]	25,000	21,000
Total Estimated Excavation	**612,200**	**617,000**

Project Facility	Proposed Project 4 (CY)	Preferred Project (CY)

Notes:
[1] Preferred Project adds 2 new pump stations and 1800 feet of 8-inch force main.
[2] Preferred Project eliminates 2 creek crossings. Increases Mid-town pump station excavation to contain stormwater runoff.
[3] Proposed Project 4 based on Kennedy/Jenks Consultants estimate for Facultative Ponds. Preferred Project based on Carollo Engineers estimate for 11-acre oxidation ditch/Biolac WWTP site minus solids processing facility excavation plus 1600-foot access road.
[4] Solids processing facility is deducted from Carollo Engineers estimate for WWTP excavation.
[5] Proposed Project 4 has 1 pond with 46 acrefeet of treated effluent storage. Preferred Project has 3 ponds with total of 46 acrefeet of treated effluent storage volume.
[6] Estimated excavation for irrigation lines and pump station. Preferred Project has 248 acres of sprayfields. Proposed Project 4 had 175 acres of sprayfields and runoff collection recirculation pipeine. Additional grading will occur seasonally during planting

Sources: (1) Appendix B-1, Kennedy/Jenks Consultants 2008; (2) Carollo Engineers, 2008, Technical Memorandum on Effluent Reuse and Disposal Alternatives; (3) Carollo Engineers, 2009, email communication from Karl Hadler on March 10, 2009.

Q.4 - ENVIRONMENTAL SETTING

The analysis contained in this Section is intended to describe differences between Proposed Project 4 from the Draft EIR and the Preferred Project that is based on engineering refinements and project changes discussed in Section Q.3. The goal is to aid decision-makers and the public by providing factual information about the potential environmental consequences of the Preferred Project as compared to Proposed Project 4 that was analyzed in detail in the Draft EIR. Based on a thorough understanding of the environmental setting, the potential project-specific and cumulative impacts can be evaluated.

Since the Preferred Project is based on Proposed Project 4, discussed in detail in the Draft EIR and no geographic areas have been added, the reader is referred to Section 4 and Exhibit 4-1 of the Draft EIR. As in the Draft EIR the specific differences in the Environmental Setting (if they exist) are discussed in the detailed sections of Section Q.5.

Q.5 - ENVIRONMENTAL ANALYSIS

As explained in the Section Q.3, the LOWWP Preferred Project selected by the County is a modification of Proposed Project 4. The project components from Proposed Project 4 that were carried over to the Preferred Project include locating the wastewater treatment plant (WWTP), effluent storage and effluent disposal sprayfields at the Tonini site, implementing water conservation measures, and constructing a gravity wastewater collection system, a leachfield at Broderson, and the raw wastewater and treated effluent conveyance systems to connect them. The primary change that improves the environmentally superior characteristics is that an extended aeration treatment process (e.g., oxidation ditch or Biolac®) has replaced the facultative ponds from Proposed Project 4. This change also shifts the biosolids processing from dredging the facultative ponds and processing the biosolids every 15 to 20 years to dewatering biosolids daily and hauling the resulting Sub-Class B biosolids to a landfill for disposal.

Other elements of the Preferred Project have evolved as the LOWWP preliminary design has continued towards the Design/Build process and the Coastal Development Permit application was prepared. The County and its engineering, architectural, and environmental consultants have refined the conceptual design that provided the basis for the Draft EIR.

This environmental analysis section focuses on analyzing impacts of the Preferred Project elements that are different from the Proposed Project 4 elements that were analyzed comprehensively in the Draft EIR. Table Q.5-1 compares the Preferred Project described in Section Q.3 and Proposed Project 4 from the Draft EIR.

Differences between the two projects fall into three categories:

1. Different combination of project components,
2. Refined or modified project design elements as the LOWWP moved from conceptual to final design, and
3. Project design elements that were added in response to operating requirements or site conditions.

The subsequent sections in Section Q.5 evaluate the impacts in each resource area for the Preferred Project in comparison to Proposed Project 4. If the project elements and impacts are the same, then no additional analysis was completed. If the project elements are different or more detailed design information is available, then additional analysis was conducted to assess the corresponding environmental impacts and their level of significance.

One of the assumptions in the Preferred Project environmental analysis for the Tonini sprayfields is a design sprayfield capacity of 3.7 acre feet per year (AFY) per acre. A recent hydrogeological evaluation of evapotranspiration (ET) only rates by Cleath - Harris Geologists, Inc. (CHG 2009)

provides an updated Tonini sprayfield capacity of 3.7 AFY/acre in wet years and 3.9 AFY/acre in normal years. This would reduce the required sprayfield acreage to 228 acres of the 248 acres available for sprayfields at Tonini.

Table Q.5-1: Differences between Proposed Project 4 and the Preferred Project

Project Features	Proposed Project 4	Preferred Project
Wastewater Collection System	• 5 duplex pump stations • 2 triplex pump stations • 12 pocket pump stations • New standby power station provided onsite for each duplex and triplex pump station.	• 6 duplex pump stations o Add Solano pump station and force main along Solano Street and Skyline Drive • 2 triplex pump stations • 13 pocket pump stations o Add sewage gravity collection line, pocket pump, and a force main along Palisades Avenue to collect sewage and convey back to the Mid-town Pump Station along Los Osos Valley Road. • Pump station standby power stations. o Baywood and West Paso pump stations will share a single new standby power station located at existing LOCSD water yard near the corner of 8th Street and El Moro Street. Provide electrical connection from standby power station to two pump stations. o Mountain View pump station has electrical connection to its new standby power station located offsite at nearby LOCSD South Bay well site. • Updated design details of the nine submersible pump stations, including pump and valve vault locations; water, gas and electrical connections; and above ground standby power stations and electrical panels or transformers. • Provide all pump stations will include design features to minimize release of odors during operation.
Raw Wastewater Conveyance System	• Creek crossings o Construct 500 foot Los Osos Creek Crossing with open cut in creek. o Construct 500-foot Warden Creek crossing with open cut in creek. • Raw wastewater effluent line location is on north side of Los Osos Valley Road from Los Osos Creek to Turri Road. • Mid-town Pump Station o Pump Station site is 0.1 acre.	• Creek crossings o Construct 100 foot Los Osos Creek Crossing by installing conventional pipe hangers on Los Osos Valley Road. o Construct 100-foot Warden Creek crossing by installing conventional pipe hangers on Turri Road bridge. • Raw wastewater effluent line location is on south side of Los Osos Valley Road from Los Osos Creek to Turri Road. • Mid-town Pump Station o Pump Station site is 0.25 acre.

Project Features	Proposed Project 4	Preferred Project
	o Central pump station at southeast corner of Mid-town site o Pump Station with 3 75-hp pumps and 0 40-hp pumps. o Emergency power source not available. o Detailed site plan unavailable.	o Central pump station at southwest corner of Mid-town site. o Pump Station with two 75-hp pumps and two 40-hp pumps o Install enclosed 250 KW standby generator. o Add above ground chemical storage building to store an odor control chemical, which is typically ferric chloride. Spill containment measures will be included. o Add berm around the site to contain pump station site stormwater. o Preliminary landscaping plan depicts how Mid-town pump station will be blended into project area.
Treated Effluent Conveyance System	• Creek Crossings o Construct 500 foot Los Osos Creek Crossing with open cut in creek. o Construct 500-foot Warden Creek crossing with open cut in creek. • Effluent pump station at Tonini with 75 hp pump 1000 gpm.	• Creek Crossings o Construct Los Osos Creek crossing using existing 24-inch utility sleeve in Los Osos Valley Road bridge. o Construct Warden Creek crossing by installing conventional pipe hangers on Turri Road bridge. • Effluent pump station at Tonini with three 50 hp variable frequency drive (VFD) pumps, (2 duty and 1 standby.)
Wastewater Treatment Process	• Facultative Ponds • About 20-acre wastewater treatment facility site. • Energy consumption will be about 1.24 million kWhr/year. • Nitrogen removal with limited carbon addition (methanol) • 2.0 FTE (full-time equivalent) employees for O&M. • WWTP facilities construction excavation requirement is 83,000 cubic yards. • WWTP site plan and storm drainage details unavailable.	• Oxidation Ditch or Biolac® system • About 20-acre wastewater treatment facility site, including WWTP, storage ponds, access road, drainage facilities and ancillary facilities. • Energy consumption will be about 1.36 million kWhr/year. • Nitrogen removal without carbon addition (methanol) • 2.5 FTE employees for O&M. • WWTP facilities construction excavation requirement is 26,000 cubic yards, including biosolids processing facility and access road. • Arrange treatment facilities onsite so that wastewater flows by gravity during treatment process for energy savings. • Realign treatment plant access road intersection with Turri Road to be perpendicular for better sight distance. • Potential well to replace existing agricultural well if it cannot provide potable water supply. • Add 30,000-gallon fire and potable water storage tank and

Project Features	Proposed Project 4	Preferred Project
		enclosed diesel water pump. • Onsite stormwater will be collected and pumped to WWTP headworks for treatment. • Add LID drainage channel and pipe to carry stormwater runoff originating above WWTP and convey it around facility to creek outfall and energy dissipater. • Preliminary landscaping plan and architectural style renderings available to depict how WWTP will be blended into project area.
Treated Effluent Storage Ponds	• Construct one 46 acre foot (AF) seasonal storage pond • Pond depth 5-11 feet plus 4 feet of freeboard	• Construct 3 seasonal storage ponds with combined 46 AF capacity. • Pond depths 12 to 20 feet plus 3 feet of freeboard
Biosolids Disposal	• Construction excavation requirement for biosolids processing facility is 1,000 CY. • Biosolids dredged from facultative ponds every 15-20 years and dewatered to meet Sub-Class B biosolids requirements with portable dewatering equipment.	• Construction excavation requirement for biosolids processing facility is 1,900 CY. • Construct belt filter or screw press facilities to dewater 3600 lbs/day of biosolids to meet Sub-Class B biosolids requirements • Dewatered Sub-Class B biosolids hauled daily to Cold Canyon or Chicago Grade landfills for disposal.
Effluent Disposal	• Tonini Sprayfields o 175 acres of dedicated sprayfields required. o Percolation/Evaporation (Perc/ET) (4.8 AFY/acre) and Evapotranspiration only (3 AFY/acre) for sprayfield disposal rates. o Sprayfields limited to sites with 10 percent slope or less. o Berms constructed parallel to existing onsite drainages. o Potential for effluent ponding in Perc/ET areas. o Collect any sprayfield runoff accumulating within berms surrounding sprayfields and reapply to sprayfield. o 100-foot buffer from jurisdictional drainages. o No sprayfield setback from Turri Road or property to the south.	• Tonini Sprayfields o 228 acres required of 248 acres of available dedicated sprayfields o Evapotranspiration only (3.7 AFY/acre) sprayfield design disposal rate. o Sprayfields limited to sites with 20 percent slope or less. o No berms constructed on sprayfields. o Lower spray rate will reduce effluent ponding potential. o Application rates will be monitored so effluent does not pool or runoff. o Spraying will stop at least 24 hours before forecasted rain to prevent runoff. o Provide 100-foot buffers from drainages, and cultural and biological ESHA sites on the Tonini property. o Provide 30-foot buffer from Turri Road and 100-foot buffer from adjoining property to the south.

Project Features	Proposed Project 4	Preferred Project
	o Nearest sprayheads to buffer zones set 15 feet inside sprayfield. • Broderson Leachfield. o Berms constructed around Broderson leachfield. o Construction stormwater runoff management program unavailable. • Operations groundwater monitoring program not previously identified.	o Sprayheads located at edge of sprayfields (no 15-foot setback) will have 180 degree range or less focused inward so that sprayed effluent does not directly reach buffer zones or outside sprayfields. • Broderson Leachfield. o No berms constructed around Broderson leachfield since effluent will not reach surface. o BMPs used at Broderson during revegetation process to control stormwater runoff and erosion. • Operations groundwater monitoring program o Use 5 existing wells for vadose zone monitoring near Broderson leachfield. o Develop groundwater monitoring program using existing water supply and water quality monitoring wells to observe impacts to Los Osos area surface water features.
Construction Staging	• One of several construction staging areas identified as 5-8 acre parcel south of Pismo Avenue between South Bay Boulevard and 18th Street. Other sites unknown.	• Two construction staging areas identified: o Southeast corner of Pismo Avenue and 18th Street intersection. (7 acres.) o Southwest of WWTP access road intersection with Turri Road. (1.5 acres.)

Q.5.1 - Land Use and Planning

The following impact evaluation is based on the environmental setting, regulatory setting, and thresholds of significance discussions provided for the proposed projects in Draft EIR Section 5.1, Land Use and Planning, and in Appendix C-1, Expanded Land Use and Planning Analysis. These previous discussions are not repeated in the following evaluation. The evaluation is a comparative analysis between the Preferred Project and Proposed Project 4.

Divide an Established Community

Q5.1-A: The project would not physically divide an established community.

Project Specific Impact Analysis

Collection System

Similar to Proposed Project 4, the collection system under the Preferred Project is a gravity system. As described in Table Q.5-1, the Preferred Project includes additional collection system facilities such as pump stations, standby power stations, and pipelines, as well as modifications to specific locations and size of facilities such as the central pump station, pipelines within streets, and pipelines crossing creeks compared to Proposed Project 4. Based on a review of the additions and modifications of the collection system facilities, the Preferred Project would not divide an established community similar to Proposed Project 4.

Treatment Plant Site

Similar to Proposed Project 4, the proposed treatment plant facilities under the Preferred Project include treatment facilities, appurtenant structures and storage facilities located on the Tonini parcel. As described in Table Q.5-1, the Preferred Project will include an Oxidation Ditch or Biolac® facility that encompasses less area and requires substantially less grading than the facultative ponds proposed under Proposed Project 4. Based on the revision to the proposed treatment process, the Preferred Project would also not divide the established agricultural community in the vicinity of the Tonini parcel similar to the finding provided for Proposed Project 4.

Disposal Sites

Similar to Proposed Project 4, the proposed disposal systems under the Preferred Project include sprayfields at the Tonini parcel and leachfields at the Broderson parcel. Under the Preferred Project, the type of spray was revised to exclude percolation and as a result approximately 73 more acres of sprayfields are proposed to accommodate the 842 acre-feet of spray at Tonini compared to Proposed Project 4. The Preferred Project also includes setbacks from Turri Road and the property south of Tonini; Proposed Project 4 did not include setbacks. Based on a review of the increase in sprayfield area and since the proposed sprayfields closely resemble facilities associated with agricultural uses, the proposed facilities would not represent a physical division of the established agricultural community in the vicinity of the Tonini parcel. This finding is similar to the finding for Proposed Project 4.

Combined Project Effects

Similar to Proposed Project 4, the proposed facilities for the treatment and sprayfields under the Preferred Project would be located on the Tonini parcel. The combination of the two facilities on the Tonini parcel would encompass approximately 268 acres of the approximate 650-acre parcel. Similar to Proposed Project 4, since the proposed facilities at the sprayfields under the Preferred Project closely resemble facilities associated with agricultural uses, and the proposed treatment plant facilities would encompass approximately 20-acres, the facilities at the Tonini parcel under the Preferred Project encompass a relatively small area and would not divide the established multi-square mile agricultural community in the vicinity of the Tonini parcel.

Since the remainder of each component of the Preferred Project would not result in dividing an established community, the combined effect of implementing the proposed collection, treatment plant, and disposal facilities within the existing urban area and agricultural area of Los Osos would not result in the division of an established community.

Cumulative Impact Analysis

Similar to Proposed Project 4, the Preferred Project would result in no impacts relating to physically dividing an established community. Therefore, the Preferred Project would not contribute to any potential cumulative impacts on physically dividing an established community.

Mitigation Measures

Project-Specific

No mitigation measures are required.

Cumulative

No mitigation measures are required.

Level of Significance After Mitigation

Project-Specific

No impact.

Cumulative

No impact.

Conflict with Applicable Plans, Policies, or Regulations

Q5.1-B:	**The project would not conflict with applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect.**

Project Specific Impact Analysis

Collection System

Similar to Proposed Project 4, the collection system under the Preferred Project is a gravity system. As described in Table Q.5-1, the Preferred Project includes additional collection system facilities such as pump stations, standby power stations, and pipelines, as well as modifications to specific locations and size of facilities such as the central pump station, pipelines within streets, and pipelines crossing creeks compared to Proposed Project 4. Based on a review of the additions and modifications of the collection system facilities, the Preferred Project would not conflict with applicable land use plans, policies or regulations similar to Proposed Project 4.

Treatment Plant Site

Similar to Proposed Project 4, the proposed treatment plant facilities under the Preferred Project include treatment facilities, appurtenant structures and storage facilities located on the Tonini parcel. As described in Table Q.5-1, the Preferred Project will include an Oxidation Ditch or Biolac® facility that encompasses less area and requires substantially less grading than the facultative ponds proposed under Proposed Project 4. In addition, the excavation requirements for the proposed biosolids handling area under the Preferred Project would be approximately one-half the excavation required under Proposed Project 4. Given the reduction in size of the treatment plant, the feasibility of the two alternative locations for the treatment plant facilities as well as for the disposal facilities that is presented in the Draft EIR and is evaluated and presented below under Combined Project Effects for the Preferred Project. As described below, there are no feasible alternative locations for the proposed treatment plant and sprayfield facilities; therefore, similar to Proposed Project 4, the Preferred Project would be consistent with Section 23.08.288 of the Coastal Land Use Ordinance. Based on the revision to the proposed treatment process and reduction in size of the treatment plant, the Preferred Project would also not conflict with applicable land use plans, policies or regulations similar to Proposed Project 4.

Disposal Sites

Similar to Proposed Project 4, the proposed disposal systems under the Preferred Project include sprayfields at the Tonini parcel and leachfields at the Broderson parcel. Under the Preferred Project, the type of spray was revised to exclude percolation and as a result approximately 73 more acres of sprayfields are proposed to accommodate the 842 acre-feet of spray at Tonini compared to Proposed Project 4. The Preferred Project also includes setbacks from Turri Road and the property south of Tonini, and Proposed Project 4 did not include setbacks. The additional 73 acres extended to the boundary of the existing Sensitive Resource Area (SRA) on the Tonini parcel; however, the sprayfield is located outside of this existing SRA. Given the increase in size of the sprayfields, the feasibility of the two alternative locations for the sprayfields as well as the treatment plant facilities that is presented in the Draft EIR is evaluated and presented below under Combined Project Effects for the Preferred Project. As described below, there are no other feasible locations for the proposed sprayfield facilities; therefore, similar to Proposed Project 4, the Preferred Project would be consistent with Section 23.08.288 of the Coastal Land Use Ordinance. Based on the revision to the proposed

treatment process and reduction in size of the treatment plant, the Preferred Project would also not conflict with applicable land use plans, policies or regulations similar to Proposed Project 4.

Combined Project Effects

Similar to Proposed Project 4, the proposed facilities for the treatment and sprayfields under the Preferred Project would result in the removal of prime agricultural soil which is considered a sensitive environmental area. The combination of the two facilities on the Tonini parcel would encompass approximately 268 acres of the approximate 650-acre parcel. Given the increase in size of the sprayfields, the feasibility of the two alternative locations for the sprayfields as well as the treatment plant facilities that is presented in the Draft EIR is evaluated and presented below under Combined Project Effects for the Preferred Project. As described below, there are no other feasible locations for the proposed sprayfield facilities and treatment plant facilities; therefore, similar to Proposed Project 4, the Preferred Project would be consistent with Section 23.08.288 of the Coastal Land Use Ordinance. Based on a review of the additions and modifications to the collection system, treatment plant, and disposal sites, the Preferred Project would also not conflict with applicable land use plans, policies or regulations similar to Proposed Project 4.

Feasibility of Alternative Locations for Treatment Plant and Sprayfield Facilities

Alternative locations for the treatment plant facilities are considered throughout the Draft EIR. A screening analysis was conducted as described in Section 7 of the Draft EIR to identify the sites that could feasibly accomplish the fundamental goals of the project, while minimizing environmental impacts. The wastewater treatment plant sites that are determined to be feasible are located east of Los Osos Creek. As described in the Draft EIR, Los Osos Creek establishes the dividing line between agricultural land uses to the east and environmentally sensitive habitat areas to the west. In 2001, the Los Osos Wastewater Project was approved and the proposed treatment plant was located west of Los Osos Creek at the Mid-Town site. However, shortly after construction began, the majority of the Los Osos Community Service District board members were recalled and the new board members immediately halted construction on the wastewater project. This action demonstrated that the placement of a wastewater treatment plant west of Los Osos Creek would not be feasible from a social (community) standpoint. Therefore, feasible locations east of Los Osos Creek were reviewed for the location of a wastewater treatment plant. In addition, because of the relatively large area (approximately 228-acres which is modified from 175 acres identified in the Draft EIR) that is required for the proposed spray disposal, locations for the proposed sprayfield facilities were also reviewed east of Los Osos Creek. Although 228 acres are required for spray disposal, the Preferred Project includes 248 acres for potential spray disposal to account for any further future refinement of the sprayfield area.

In evaluating potential sites for the proposed treatment plant and sprayfield facilities, various constraints were identified. These constraints are shown on Exhibit 5.1-1 in the Draft EIR and include the following:

- No treatment plant would be located on slopes greater than 10 percent and no sprayfield facilities would be located on slopes of greater than 20 percent, due to the need for substantial grading for treatment plant facilities and the increased potential for surface water runoff from the sprayfields. This slope constraint for the sprayfields was revised from the 10 percent slope constraint identified in the Draft EIR. Given that the distance between 10 percent and 20 percent slope in these areas is only a few hundred feet in distance, the additional available land for sprayfields did not increase substantially.
- No treatment plant or sprayfield facilities would be located within a Environmentally Sensitive Habitat Area or a Sensitive Resource Area as defined by County of San Luis Obispo.
- No treatment plant or sprayfield facilities would be located on or within existing urban areas.

Based on a review of the revised constraints and requirements, no additional potential locations within the Los Osos Valley have been identified as potential sites for the proposed treatment plant site and/or sprayfields.

As discussed in the Draft EIR, the unconstrained areas were evaluated next to determine prime agricultural and non-prime agricultural. This evaluation utilizes the California Coastal Commissions definition of prime farmland. Farmland is considered Prime Farmland under the California Coastal Commission definition when one of the four following criteria is met:

- The soils are classified as Class I and/or Class II irrigated soils.
- The soils have an 80 to 100 Storie Index rating.
- The land has a gross crop return of $200 or more per acre per year.
- The land has an annual carrying capacity of one animal unit per acre per year.

Based on the above definition, there are no substantial areas within the Los Osos valley floor that are classified as non-agricultural land and outside of the constraints identified above. Areas classified as non-prime agricultural land are reviewed to determine whether there are feasible, alternative locations for the proposed treatment plant and sprayfield facilities. Large areas classified as prime agricultural land were not reviewed because the objective of the analysis is to reduce the potential impact of the proposed facilities on prime agricultural land while taking into consideration various environmental constraints.

As discussed in the Draft EIR, two areas with the most acres and classified as non-prime agricultural land includes the parcel immediately south of the Tonini parcel and the series of parcels east of the Cemetery parcel known as the Andre, Robbins 1, and Robbins 2 parcels as well as one additional parcel east of the Robbins 2 parcel. The Andre, Robbins 1, and Robbins 2 parcels constitute a series of parcels identified as an alternative for treatment plant facilities in Section 7 of the Draft EIR.

The area south of the Tonini parcel encompasses approximately 181-acres of prime agricultural land and approximately 73-acres of non-prime agricultural land. Within this parcel, there is Warden Creek that extends west to east across the site. In addition, this site has multiple streams classified as coastal streams (ESHAs). In addition, this parcel includes an approximately 3-acre surface water feature in the middle of the non-prime agricultural land area. Based on a review of the aerial photograph from the County of San Luis Obispo Interactive GIS Mapping System, there are no drainages that convey water away from the surface water feature. Therefore, the surface water feature is assumed to be a depression within the non-prime area.

Based on the constraints that include 100-foot setbacks from all coastal streams and the 3-acre surface water feature, this parcel could accommodate approximately 198 acres of sprayfields. Given that this location could accommodate only 198 acres for sprayfields, this location would not be adequate to accommodate the 228 acres of sprayfields required for spraying 842 acre-feet of treated water per year. Therefore, this site which is located south of the Tonini parcel is not considered feasible as an alternative location for sprayfields.

This parcel south of Tonini could accommodate the proposed treatment plant facilities of approximately 20-acres. If this parcel was selected only for treatment plant facilities, it would result in the loss of a nominal amount of prime agricultural land since the facilities could be placed within the non-prime farmland area, but an access road would need to be extended through a prime farmland area. The sprayfields would still be required at the Tonini site and approximately 179 acres of prime farmland would be lost. The removal of the treatment plant site at Tonini would allow the sprayfields to be located at less steep slopes. Therefore, the implementation of the treatment plant at the site south of Tonini and the sprayfields on Tonini would still result in the loss of approximately 179 acres of prime farmland. Additional issues related to using this alternative location for the treatment plant is that locating the treatment facilities closer to Los Osos Valley Road could cause visual issues from the primary entrance into the community of Los Osos, and the County would need to purchase the approximately 254-acre site. As a result of not reducing the impact on prime farmland, potentially causing a visual impact, and increasing the land cost for proposed facilities compared to the Preferred Project, the placement of a treatment plant on the parcel south of Tonini would not be feasible.

The area east of the Cemetery parcel is primarily classified as non-prime agricultural land. These parcels encompass approximately 128-acres; however, 46-acres include environmental constraints such as an environmentally sensitive habitat area. The area outside of the environmental constraints encompasses approximately 63-acres of non-prime agricultural land and 0.09-acre of prime agricultural land. The total 63.09 acres of this unconstrained area are not enough to accommodate the required sprayfield area of 228-acres. Therefore, this area is not feasible for a sprayfield. This area could accommodate treatment plant facilities of approximately 20 acres. The sprayfields would still be required at the Tonini site and approximately 179 acres of prime farmland would be lost. As

discussed above, the removal of the treatment plant site at Tonini would allow the sprayfields to be located at less steep slopes.

Additional issues related to using this alternative location for the treatment plant include:

1. These parcels are owned by private individuals that does not want to sell their property; and therefore, the County would be required to obtain the property through eminent domain which is not desired by the County.
2. The area is located immediately adjacent to Los Osos Valley Road and would result in a significant impact on views while entering the community of Los Osos.
3. Los Osos Valley Road is proposed as a scenic corridor and the placement of treatment plant facilities adjacent to this roadway would not be consistent with a scenic corridor designation.
4. Due to these issues, the County considers that this series of parcels would not be feasible to accommodate the proposed treatment plant facilities.

Based on the above evaluation, there are no feasible alternative locations for the proposed treatment plant facilities and sprayfields compared with the location of the facilities under the Preferred Project. Therefore, the combined effects associated with Preferred Project would be consistent with the local goals, policies, and ordinances.

Cumulative Impact Analysis

Similar to Proposed Project 4, the Preferred Project would result in no impacts relating to existing goals, policies, and ordinances. Therefore, the Preferred Project would not contribute to any potential cumulative impacts to existing goals, policies, and ordinances.

Mitigation Measures

Project-Specific

Preferred Project

No mitigation measures are required.

Cumulative

Preferred Project

No mitigation measures are required.

Level of Significance After Mitigation

Project-Specific

Preferred Project

No impact.

Cumulative

Preferred Project

No impact.

Q.5.2 - Groundwater Resources

The following impact evaluation is based on the environmental setting, regulatory setting, and thresholds of significance discussions provided for the proposed projects in Draft EIR Section 5.2, Groundwater Resources, and in Appendix D-1, Expanded Groundwater Resources Analysis. These previous discussions are not repeated in the following evaluation. The evaluation is a comparative analysis between the Preferred Project and Proposed Project 4.

Groundwater Supply

Q5.2-A:	**The proposed project would not substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted.**

Project Specific Impact Analysis

Collection System

Short-term Construction Effects

Similar Long-term Operational Effects

Similar to Proposed Project 4, the collection system under the Preferred Project is a gravity system. As described in Table Q.5-1, the Preferred Project includes additional collection system facilities such as pump stations, standby power stations, and pipelines, as well as modifications to specific locations and size of facilities such as the central pump station, pipelines within streets, and pipelines crossing creeks compared to Proposed Project 4. Based on a review of additions and modifications of the collection system facilities, implementation of the Preferred Project would still result in the same proportional impact to groundwater supplies as Proposed Project 4. This impact would be considered less than significant with the offset in the loss of flow into the lower aquifer as described under "Combined Project Effects."

Treatment Plant Site

Short-term Construction Effects

Similar to Proposed Project 4, the proposed treatment plant facilities under the Preferred Project include treatment facilities, appurtenant structures and storage facilities located on the Tonini parcel. As described in Table Q.5-1, the Preferred Project will include an Oxidation Ditch or Biolac® facility that encompasses less area and requires substantially less grading than the facultative ponds proposed under Proposed Project 4. Based on the revisions to the proposed treatment process, the construction activities associated with the treatment facilities for the Preferred Project could contact groundwater due to the approximately 20-foot deep storage ponds in the southern portion of the site. Construction activities may require dewatering, however, the dewatering activities are not expected to substantially alter the quantity of existing groundwater supplies. Therefore, the proposed construction activities associated with the Preferred Project would result in a less than significant impact on groundwater supplies.

Long-term Effects

Similar to Proposed Project 4, the proposed treatment plant facilities under the Preferred Project include treatment facilities, appurtenant structures and storage facilities located on the Tonini parcel. As described in Table Q.5-1, the Preferred Project will include an Oxidation Ditch or Biolac® facility that encompasses less area and requires substantially less grading than the facultative ponds proposed under Proposed Project 4. The facilities would be lined to prevent leaching of untreated wastewater from the treatment plant site to the groundwater and would have no impact on groundwater supply under the treatment plant site.

Disposal Sites

Short-term Construction Effects

Similar to Proposed Project 4, the proposed disposal systems under the Preferred Project include sprayfields at the Tonini parcel and leachfields at the Broderson parcel. Under the Preferred Project, the type of spray was revised to exclude percolation and as a result approximately 73 more acres of sprayfields are proposed to accommodate the 842 acre-feet of spray at Tonini compared to Proposed Project 4. Based on a review of the increase in sprayfield area, the proposed disposal would result in a less than significant impact on groundwater supplies similar to Proposed Project 4.

Long-term Operational Effects

Similar to Proposed Project 4, the proposed disposal systems under the Preferred Project include sprayfields at the Tonini parcel and leachfields at the Broderson parcel. Under the Preferred Project, the type of spray was revised to exclude percolation and as a result approximately 73 more acres of sprayfields are proposed to accommodate the 842 acre-feet of spray at Tonini compared to Proposed Project 4. Based on a review of the increase in sprayfield area, the proposed facilities of the Preferred Project would still result in a less than significant impact on groundwater quantities within the bedrock aquifer that is below the Tonini site. Therefore, impacts to the Zone B and C aquifers are considered less than significant. The potential impact on the exact quantity of groundwater in the perched aquifer is unknown and the potential impact on groundwater flow to surrounding surface water features is speculative given that the amount of perched groundwater currently flowing to surface water features is not known. Furthermore, the proposed disposal of treated effluent at Broderson would reduce the current rate of seawater intrusion into the lower aquifer, thus resulting in a beneficial impact.

Combined Project Effects

Based on the additions and modifications to the facilities in Proposed Project 4, the Preferred Project would still result in less than significant impacts to the quantity of groundwater in the bedrock aquifer east of Los Osos Creek. The impact conclusions regarding the Los Osos Valley Groundwater Basin that are provided for Proposed Project 4 could be the same for the Preferred Project.

Cumulative Impact Analysis

Similar to Proposed Project 4, the Preferred Project would result in a beneficial impact on reducing the rate of seawater intrusion and no impact relating to the depletion of groundwater supplies or the substantial interference with groundwater recharge. There are no related projects that would contribute to cumulative groundwater supply impacts, implementation of the Preferred Project would not contribute to cumulative impacts related to groundwater supply.

Mitigation Measures

Project-Specific

No mitigation measures are required.

Cumulative

No mitigation measures are required.

Level of Significance After Mitigation

Project-Specific

Less than Significant.

Cumulative

No impact.

Groundwater Quality

Q5.2-B: The proposed project would not degrade groundwater quality.

Project Specific Impact Analysis

Collection System

Short-term Construction Effects

Similar to Proposed Project 4, the collection system under the Preferred Project is a gravity system. As described in Table Q.5-1, the Preferred Project includes additional collection system facilities such as pump stations, standby power stations, and pipelines, as well as modifications to specific locations and size of facilities such as the central pump station, pipelines within streets, and pipelines crossing creeks compared to Proposed Project 4. Based on a review of the additions and modifications of the collection system facilities, the Preferred Project may require additional dewatering of the existing groundwater supplies during short-term construction activities within the perched aquifer. Based on a review of the additions and modifications of the collection system facilities under the Preferred Project, no substantial dewatering of the existing groundwater supplies within the perched aquifer would occur. Therefore, the impact on the quality of the groundwater would be less than significant.

Long-term Operational Effects

Similar to Proposed Project 4, the collection system under the Preferred Project is a gravity system. As described in Table Q.5-1, the Preferred Project includes additional collection system facilities such as pump stations, standby power stations, and pipelines, as well as modifications to specific locations

and size of facilities such as the central pump station, pipelines within streets, and pipelines crossing creeks compared to Proposed Project 4. Based on a review of additions and modifications of the collection system facilities, the Preferred Project would remove septic recharge from private septic tank systems, resulting in the removal of a source of groundwater contamination. Accordingly, the construction and operation of the proposed collection system under the Preferred Project would result in a beneficial impact to groundwater quality.

Treatment Plant Site

Short-term Construction Effects

Similar to Proposed Project 4, the proposed treatment plant facilities under the Preferred Project include treatment facilities, appurtenant structures and storage facilities located on the Tonini parcel. As described in Table Q.5-1, the Preferred Project will include an Oxidation Ditch or Biolac® facility that encompasses less area and requires substantially less grading than the facultative ponds proposed under Proposed Project 4. Based on the revisions to the proposed treatment process, the construction of the proposed storage ponds may extend to the groundwater table requiring dewatering; however, the dewatering activities would result in a less than significant impact on groundwater quality.

Long-term Operational Effects

Similar to Proposed Project 4, the proposed treatment plant facilities under the Preferred Project include treatment facilities, appurtenant structures and storage facilities located on the Tonini parcel. As described in Table Q.5-1, the Preferred Project will include an Oxidation Ditch or Biolac® facility that encompasses less area and requires substantially less grading than the facultative ponds proposed under Proposed Project 4. The proposed treatment ponds and storage ponds that would be implemented under the Preferred Project would be lined to prevent leaching of wastewater from the treatment plant site to the groundwater. Since the facilities would be lined, the Preferred Project would have no impact on groundwater quality. In addition, the Preferred Project includes a stormwater detention basin to capture stormwater runoff with the treatment plant site. The detention basin and stormwater return pumping system would circulate treatment plant area stormwater into the treatment plant headworks, resulting in no discharge to groundwater.

Disposal Sites

Short-term Construction Effects

Similar to Proposed Project 4, the proposed disposal systems under the Preferred Project include sprayfields at the Tonini parcel and leachfields at the Broderson parcel. Under the Preferred Project, the type of spray was revised to exclude percolation and as a result approximately 73 more acres of sprayfields are proposed to accommodate the 842 acre-feet of spray at Tonini compared to Proposed Project 4. Based on a review of the increase in sprayfield area, the construction of the proposed facilities on the Tonini property and the leachfields on Broderson would result in no impact on the existing groundwater quality beneath the proposed disposal site.

Long-term Operational Effects

Similar to Proposed Project 4, the proposed disposal systems under the Preferred Project include sprayfields at the Tonini parcel and leachfields at the Broderson parcel. Under the Preferred Project, the type of spray was revised to exclude percolation and as a result approximately 73 more acres of sprayfields are necessary to accommodate the 842 acre-feet of spray at Tonini compared to Proposed Project 4. Based on a review of the increase in sprayfield area, salt loading impacts to groundwater from spraying treated effluent at the proposed Tonini sprayfield site would be considered less than significant and the potential impacts of effluent disposal at the Broderson site would result in a beneficial impact that would improve water quality.

Combined Project Effects

Short-term Construction Effects

Similar to Proposed Project 4, all short-term effects on groundwater quality from construction of the Preferred Project collection system and facilities at the treatment plant site and disposal sites are less than significant.

Long-term Operational Effects

Similar to Proposed Project 4, the Preferred Project would provide a beneficial water quality impact on the Los Osos Basin and a less than significant impact on the bedrock aquifer. Accordingly, water quality impacts associated with the combined project disposal program would be less than significant.

Cumulative Impact Analysis

Similar to Proposed Project 4, the Preferred Project would not contribute to cumulative impacts on groundwater quality. There are no related projects that would contribute to cumulative groundwater quality impacts, implementation of the Preferred Project would not contribute to cumulative impacts related to groundwater quality.

Mitigation Measures

Project-Specific

No mitigation measures are required.

Cumulative

No mitigation measures are required.

Level of Significance After Mitigation

Project-Specific

Less than Significant.

Cumulative

No impact.

Local Programs and Policies Related to Groundwater Supply or Quality

Q5.2-C: The proposed project would not conflict with local programs or policies related to groundwater quality or water supply?

Project Specific Impact Analysis

Similar to Proposed Project 4, the proposed facilities under the Preferred Project are in compliance with the County's applicable General Plan programs and policies related to groundwater quality or supply.

Cumulative Impact Analysis

Similar to Proposed Project 4, the Preferred Project would not contribute to cumulative impacts on the County's groundwater supply and groundwater quality programs and policies.

Mitigation Measures

Project-Specific

No mitigation measures are required.

Cumulative

No mitigation measures are required.

Level of Significance After Mitigation

Project-Specific

Less than Significant.

Cumulative

No impact.

Q.5.3 - Drainage and Surface Water Quality

The following impact evaluation is based on the environmental setting, regulatory setting, and thresholds of significance discussions provided for the proposed projects in Draft EIR Section 5.3, Drainage and Surface Water Quality, and in Appendix D-1, Expanded Drainage and Surface Water Quality Analysis. These previous discussions are not repeated in the following evaluation. The evaluation is a comparative analysis between the Preferred Project and Proposed Project 4.

Water Quality Standards and Requirements

Q5.3-A: **The proposed projects would not violate any water quality standards or waste discharge requirements.**

Project Specific Impact Analysis

Collection System

Similar to Proposed Project 4, the collection system under the Preferred Project is a gravity system. As described in Table Q.5-1, the Preferred Project includes additional collection system facilities such as pump stations, standby power stations, and pipelines, as well as modifications to specific locations and size of facilities such as the central pump station, pipelines within streets, and pipelines crossings over Los Osos Creek and Warden Creek compared to Proposed Project 4. Based on a review of the additions and modifications of the collection system facilities, the construction activities associated with the Preferred Project would result in less than significant impacts on water quality standards. During the long-term operational activities, the Preferred Project would not result in a violation of any water quality standards or discharge requirements, similar to Proposed Project 4.

Treatment Plant Site

Short Term Construction Impacts

Similar to Proposed Project 4, the proposed treatment plant facilities under the Preferred Project include treatment facilities, appurtenant structures and storage facilities located on the Tonini parcel. As described in Table Q.5-1, the Preferred Project will include an Oxidation Ditch or Biolac® facility that encompasses less area and requires substantially less grading than the facultative ponds proposed under Proposed Project 4. Based on the revisions to the proposed treatment process, implementation of the Preferred Project includes construction activities that would not violate any water quality standards or waste discharge requirements, similar to Proposed Project 4.

Long-term Operational Impacts

Similar to Proposed Project 4, the proposed treatment plant facilities under the Preferred Project include treatment facilities, appurtenant structures and storage facilities located on the Tonini parcel. As described in Table Q.5-1, the Preferred Project will include an Oxidation Ditch or Biolac® facility that encompasses less area and requires substantially less grading than the facultative ponds proposed under Proposed Project 4. The discharge of stormwater outside of the treatment plant would be conveyed through a drainage channel, into a drainage structure and discharged into the creek through a storm drainage outfall via an energy dissipater. Based on the revisions to the proposed treatment process as well as the addition of the drainage facility that conveys stormwater around the treatment

facilities, the Preferred Project would not violate any water quality standards or waste discharge requirements, similar to Proposed Project 4.

Disposal Sites

Similar to Proposed Project 4, the proposed disposal systems under the Preferred Project include sprayfields at the Tonini parcel and leachfields at the Broderson parcel. Under the Preferred Project, the type of spray was revised to exclude percolation and as a result, approximately 73 more acres of sprayfields are proposed to accommodate the 842 acre-feet of spray at Tonini compared to Proposed Project 4. Based on a review of the increase in sprayfield area, the implementation of the existing federal, State, and County stormwater regulations as well as the incorporation of design features of the Preferred Project, would result in no violations to water quality standards and waste discharge requirements. Therefore, implementation of the Preferred Project would result in less than significant impacts associated with water quality standards and waste discharge requirements.

Combined Project Effects

Similar to Proposed Project 4, the individual construction and operation of the facilities associated with the Preferred Project collection system, treatment plant site, and disposal sites would not violate any water quality standards or waste discharge requirements and therefore, result in less than significant impact. Construction and long-term operational activities associated with the proposed facilities would result in a combined effect related to water quality standards or waste discharge requirements; however, the combined effects would be less than significant since the construction and operational activities associated with each project component would not violate water quality standards or waste discharge requirements.

Cumulative Impact Analysis

Similar to Proposed Project 4, the Preferred Project would not contribute to cumulative impacts related to water quality standards and requirements.

Mitigation Measures

Project-Specific

No mitigation measures are required.

Cumulative

No mitigation measures are required.

Level of Significance After Mitigation

Project-Specific

Less than Significant.

Cumulative

No impact.

Drainage Pattern: Erosion or Siltation

Q5.3-B: **The proposed projects would not substantially alter the existing drainage pattern or area, including 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.**

Project Specific Impact Analysis

Collection System

Similar to Proposed Project 4, the collection system under the Preferred Project is a gravity system that consists of a combination of conventional gravity sewers (GS) and low-pressure grinder pumps (LPGP). As described in Table Q.5-1, the Preferred Project includes additional collection system facilities such as pump stations, standby power stations, and pipelines, as well as modifications to specific locations and size of facilities such as the central pump station, pipelines within streets, and pipelines crossing creeks compared to Proposed Project 4. Based on a review of the additions and modifications of the collection system facilities, the Preferred Project would expose sediment to stormwater, increasing the potential for erosion or siltation on-site or off-site, similar to Proposed Project 4. However, construction activities would implement BMPs that would ensure that construction and operational activities associated with the collection system would not result in substantial erosion or siltation on-site or off-site. Therefore, similar to Proposed Project 4 impacts would be less than significant.

Treatment Plant Site

Similar to Proposed Project 4, the proposed treatment plant facilities under the Preferred Project include treatment facilities, appurtenant structures and storage facilities located on the Tonini parcel. As described in Table Q.5-1, the Preferred Project will include an Oxidation Ditch or Biolac® facility that encompasses less area and requires substantially less grading than the facultative ponds proposed under Proposed Project 4. The discharge of stormwater outside of the treatment plant would be conveyed through a drainage channel, into a drainage structure and discharged into the creek through a storm drainage outfall. The outfall includes an energy dissipater to reduce the potential for erosion. Based on the revisions to the facilities at the treatment plant, the volume of stormwater discharge leaving the site after construction of the Preferred Project would not be greater than pre-development discharge. The adherence to design requirements (including those outlined in the CZLUO and the County Standards), as well as to permit conditions established by the USACE, RWQCB, or CDFG, would result in the project not substantially altering the existing drainage pattern of the site in a manner which would result in substantial erosion or siltation on-site or off-site. Therefore, similar to Proposed Project 4 less than significant impacts would occur under the Preferred Project.

Disposal Sites

Similar to Proposed Project 4, the proposed disposal systems under the Preferred Project include sprayfields at the Tonini parcel and leachfields at the Broderson parcel. Under the Preferred Project, the type of spray was revised to exclude percolation and as a result approximately 73 more acres of sprayfields are proposed to accommodate the 842 acre-feet of spray at Tonini compared to Proposed Project 4. Based on a review of the increase in sprayfield area, the revision to the type of spray to

evapotranspiration, and the removal of the berms identified under Proposed Project 4, the proposed facilities under the Preferred Project would result in the same less than significant impacts associated with erosion or siltation as Proposed Project 4.

Combined Project Effects

Similar to Proposed Project 4, the construction and operation of the facilities associated with the Preferred Project would result in a combined effect related to existing drainage patterns; however, the combined effects would be less than significant since the construction and operational activities associated with each project component would result in less than significant effects on the existing drainage patterns, and therefore, less than significant erosion or siltation would occur onsite or offsite.

Cumulative Impact Analysis

Similar to Proposed Project 4, the Preferred Project would not contribute to cumulative impacts related to drainage patterns and erosion or siltation.

Mitigation Measures

Project-Specific

No mitigation measures are required.

Cumulative

No mitigation measures are required.

Level of Significance After Mitigation

Project-Specific

Less than Significant.

Cumulative

No impact.

Drainage Pattern: Flooding

Q5.3-C:	**The proposed projects would not substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site.**

Project Specific Impact Analysis

Collection System

Similar to Proposed Project 4, the collection system under the Preferred Project is a gravity system. As described in Table Q.5-1, the Preferred Project includes additional collection system facilities such as pump stations, standby power stations, and pipelines, as well as modifications to specific locations and size of facilities such as the central pump station, pipelines within streets, and pipelines crossing creeks compared to Proposed Project 4. Based on a review of the additions and modifications of the collection system facilities, the Preferred Project would generate negligible, if any, additional surface

water runoff and would not substantially increase the rate or amount of surface runoff in a manner which would result in flooding on-site or off-site.

Treatment Plant Site

Similar to Proposed Project 4, the proposed treatment plant facilities under the Preferred Project include treatment facilities, appurtenant structures and storage facilities located on the Tonini parcel. As described in Table Q.5-1, the Preferred Project will include an Oxidation Ditch or Biolac® facility that encompasses less area and requires substantially less grading than the facultative ponds proposed under Proposed Project 4. Based on the revisions to the proposed revisions at the treatment plant, the potential impacts caused by construction and operation of the treatment plant site system are generally described above under Impact Q5.3-B and would not substantially increase the rate or amount of surface runoff in a manner which would result in flooding on-site or off-site.

Disposal Sites

Similar to Proposed Project 4, the proposed disposal systems under the Preferred Project include sprayfields at the Tonini parcel and leachfields at the Broderson parcel. Under the Preferred Project, the type of spray was revised to exclude percolation and as a result approximately 73 more acres of sprayfields are necessary to accommodate the 842 acre-feet of spray at Tonini compared to Proposed Project 4. Based on a review of the increase in sprayfield area, the potential construction and operation impacts associated with the proposed disposal sites would be the same as described above under Impact Q5.3-B and would not substantially increase the rate or amount of surface runoff in a manner which would result in flooding on-site or off-site.

Combined Project Effects

Similar to Proposed Project 4, the construction and operation of the facilities associated with the collection system, treatment plant site, and disposal sites under the Preferred Project would not substantially alter the existing drainage patterns in the respective areas in a manner that would result in a substantial increase in the rate or amount of surface water runoff that would result in flooding. Construction and long-term operational activities associated with the proposed facilities could result in a combined effect related to increasing the rate or amount of runoff; however, the combined effects would be less than significant since negligible collection facilities would remain above ground, the treatment plant site would contain all storm water, and the disposal sites would be operated so that no substantial increase in the rate or amount of surface water runoff would occur.

Cumulative Impact Analysis

Similar to Proposed Project 4, the Preferred Project would not contribute to cumulative impacts related to drainage patterns and flooding.

Mitigation Measures

Project-Specific

No mitigation measures are required.

Cumulative

No mitigation measures are required.

Level of Significance After Mitigation

Project-Specific

Less than Significant.

Cumulative

No impact.

Runoff Water and Drainage Systems

Q5.3-D:	**The proposed projects would not 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.**

Project Specific Impact Analysis

Collection System

Similar to Proposed Project 4, the collection system under the Preferred Project is a gravity system. As described in Table Q.5-1, the Preferred Project includes additional collection system facilities such as pump stations, standby power stations, and pipelines, as well as modifications to specific locations and size of facilities such as the central pump station, pipelines within streets, and pipelines crossing creeks compared to Proposed Project 4. Potential impacts caused by construction and operation of the collection system are generally described above under Impact Q5.3-A, as well as Impact Q5.3-B. Based on a review of the additions and modifications of the collection system facilities, the Preferred Project would not exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff.

Treatment Plant Site

Similar to Proposed Project 4, the proposed treatment plant facilities under the Preferred Project include treatment facilities, appurtenant structures and storage facilities located on the Tonini parcel. As described in Table Q.5-1, the Preferred Project will include an Oxidation Ditch or Biolac® facility that encompasses less area and requires substantially less grading than the facultative ponds proposed under Proposed Project 4. The discharge of stormwater outside of the treatment plant would be conveyed through a drainage channel, into a drainage structure and discharged into the creek through a storm drainage outfall via an energy dissipater. Based on the revisions to the facilities at the treatment plant site, the drainage channel and outfall would result in the project not creating or contributing runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff.

Disposal Sites

Similar to Proposed Project 4, the proposed disposal systems under the Preferred Project include sprayfields at the Tonini parcel and leachfields at the Broderson parcel. Under the Preferred Project, the type of spray was revised to exclude percolation and as a result approximately 73 more acres of

sprayfields are proposed to accommodate the 842 acre-feet of spray at Tonini compared to Proposed Project 4. Based on a review of the increase in sprayfield area and the revision to spray by evapotranspiration the proposed facilities would not exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff. Therefore, similar to Proposed Project 4, less than significant impacts would occur under the Preferred Project.

Combined Project Effects

Similar to Proposed Project 4, the Preferred Project would result in no substantial additional sources of polluted runoff would occur; thereby resulting in a less than significant impact.

Cumulative Impact Analysis

Similar to Proposed Project 4, the Preferred Project would result not contribute to cumulative impacts related to runoff water and drainage systems.

Mitigation Measures

Project-Specific

No mitigation measures are required.

Cumulative

No mitigation measures are required.

Level of Significance After Mitigation

Project-Specific

Less than Significant.

Cumulative

No impact.

Water Quality

Q5.3-E: The proposed projects would not otherwise substantially degrade water quality.

Project Specific Impact Analysis

Collection System

Similar to Proposed Project 4, the collection system under the Preferred Project is a gravity system. As described in Table Q.5-1, the Preferred Project includes additional collection system facilities such as pump stations, standby power stations, and pipelines, as well as modifications to specific locations and size of facilities such as the central pump station, pipelines within streets, and pipelines crossing creeks compared to Proposed Project 4. Potential impacts to water quality caused by construction and operation of the collection system are generally described above under Impact Q5.3-A. Based on a review of the additions and modifications of the collection system facilities, the Preferred Project would not otherwise substantially degrade water quality, similar to Proposed Project 4.

Treatment Plant Site

Similar to Proposed Project 4, the proposed treatment plant facilities under the Preferred Project include treatment facilities, appurtenant structures and storage facilities located on the Tonini parcel. As described in Table Q.5-1, the Preferred Project will include an Oxidation Ditch or Biolac® facility that encompasses less area and requires substantially less grading than the facultative ponds proposed under Proposed Project 4. Potential impacts to water quality caused by construction and operation of the collection system are generally described above under Impact Q5.3-A. Based on the revisions to the proposed facilities at the plant site, including the drainage facility that would convey stormwater around the treatment plant and ultimately into the onsite creek after stormwater passes through an energy dissipater, the Preferred Project would not contribute to a degradation of water quality, similar to Proposed Project 4.

Disposal Sites

Similar to Proposed Project 4, the proposed disposal systems under the Preferred Project include sprayfields at the Tonini parcel and leachfields at the Broderson parcel. Under the Preferred Project, the type of spray was revised to exclude percolation and as a result approximately 73 more acres of sprayfields are necessary to accommodate the 842 acre-feet of spray at Tonini compared to Proposed Project 4. Potential impacts to water quality caused by construction and operation of the disposal sites are generally described above under Impact Q5.3-A. Based on a review of the increase in sprayfield area, the Preferred Project would not substantially degrade water quality similar to Proposed Project 4.

Combined Project Effects

Similar to Proposed Project 4, the Preferred Project would result in the construction and operation of the individual facilities associated with the collection system, treatment plant site, and disposal sites and would not contribute runoff that would substantially degrade surface water quality. Construction and long-term operational activities associated with the Preferred Project facilities could result in a combined effect related to water quality degradation; however, similar to Proposed Project 4each component of the Preferred Project includes water quality best management practices so that no substantial surface water quality degradation would occur, thereby resulting in a less than significant impact.

Cumulative Impact Analysis

Similar to Proposed Project 4, the Preferred Project would not contribute to cumulative impacts related to water quality.

Mitigation Measures

Project-Specific

No mitigation measures are required.

Cumulative

No mitigation measures are required.

Level of Significance After Mitigation

Project-Specific

Less than Significant.

Cumulative

No impact.

Housing Placement: Flood Hazard Area

Q5.3-F:	**The proposed projects would not 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.**

Project Specific Impact Analysis

Similar to Proposed Project 4, the collection system under the Preferred Project is a gravity system. As described in Table Q.5-1, the Preferred Project includes additional collection system facilities such as pump stations, standby power stations, and pipelines, as well as modifications to specific locations and size of facilities such as the central pump station, pipelines within streets, and pipelines crossing creeks compared to Proposed Project 4. Based on a review of the additions and modifications of the collection system facilities, the Preferred Project would not involve the development of housing. Therefore, although portions of the project site are located within a 100-year flood hazard zone as mapped on FEMA FIRMs, no housing would be placed within the boundaries of that zone. Therefore, there would be no impact, similar to Proposed Project 4.

Cumulative Impact Analysis

Similar to Proposed Project 4, the Preferred Project does not include the development of housing and would not contribute cumulatively to the placement of housing within 100-year flood hazard areas. Therefore, the Preferred Project would result in no cumulative flood hazard impacts associated with the placement of housing.

Mitigation Measures

Project-Specific

No mitigation measures are required.

Cumulative

No mitigation measures are required.

Level of Significance After Mitigation

Project-Specific

No impact.

Cumulative

No impact.

Structures: Flood Hazard Area

Q5.3-G: **The proposed projects would not place within a 100-year flood hazard area structures which would impede or redirect flood flows.**

Project Specific Impact Analysis

Collection System

Similar to Proposed Project 4, the collection system under the Preferred Project is a gravity system. As described in Table Q.5-1, the Preferred Project includes additional collection system facilities such as pump stations, standby power stations, and pipelines, as well as modifications to specific locations and size of facilities such as the central pump station, pipelines within streets, and pipelines crossing creeks compared to Proposed Project 4. Based on a review of the additions and modifications of the collection system facilities, the Preferred Project would not impede or redirect flood flows to any significant degree. Therefore, the impact would be less than significant similar to Proposed Project 4.

Treatment Plant Site

Similar to Proposed Project 4, the proposed treatment plant facilities under the Preferred Project include treatment facilities, appurtenant structures and storage facilities located on the Tonini parcel. As described in Table Q.5-1, the Preferred Project will include an Oxidation Ditch or Biolac® facility that encompasses less area and requires substantially less grading than the facultative ponds proposed under Proposed Project 4. The discharge of stormwater outside of the treatment plant would be conveyed through a drainage channel, into a drainage structure and discharged into an onsite Creek through a storm drainage outfall via an energy dissipater. Based on the revisions to the facilities at the treatment plant site, the storm drain outfall would extend into the 100-year flood flow; however, this facility would not substantially impede or redirect flows within the creek. Therefore, the impact would be less than significant similar to Proposed Project 4.

Disposal Sites

Similar to Proposed Project 4, the proposed disposal systems under the Preferred Project include sprayfields at the Tonini parcel and leachfields at the Broderson parcel. Under the Preferred Project, the type of spray was revised to exclude percolation and as a result, approximately 73 more acres of sprayfields are proposed to accommodate the 842 acre-feet of spray at Tonini compared to Proposed Project 4. Based on a review of the increase in sprayfield area and the existing flood hazard areas, the additional pipelines required to serve the additional sprayfield area would not impede a flood area. Therefore, similar to Proposed Project 4, the Preferred Project would result in less than significant impacts to flood hazard areas.

Combined Project Effects

Similar to Proposed Project 4, the combined effect of placing structures within a 100-year flood hazard area under the Preferred Project would be less than significant for the Preferred Project.

Cumulative Impact Analysis

Similar to Proposed Project 4, the Preferred Project would not contribute to cumulative impacts related to placement of structures within a 100-year flood hazard area.

Mitigation Measures

Project-Specific

No mitigation measures are required.

Cumulative

No mitigation measures are required.

Level of Significance After Mitigation

Project-Specific

Less than Significant.

Cumulative

No impact.

Flooding

Q5.3-H:	**The proposed projects would not 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.**

Project Specific Impact Analysis

Collection System

Similar to Proposed Project 4, the collection system under the Preferred Project is a gravity system. As described in Table Q.5-1, the Preferred Project includes additional collection system facilities such as pump stations, standby power stations, and pipelines, as well as modifications to specific locations and size of facilities such as the central pump station, pipelines within streets, and pipelines crossing creeks compared to Proposed Project 4. Based on a review of the additions and modifications of the collection system facilities, the Preferred Project would not expose people or structures to a significant risk of loss, injury, or death involving flooding. Because the proposed pipelines that would cross Los Osos Creek and Warden Creek are proposed to be placed on the bridge compared to burial beneath the creeks, the Preferred Project would result in no impacts to structures related to significant loss, injury or death involving flooding.

Treatment Plant Site

Similar to Proposed Project 4, the proposed treatment plant facilities under the Preferred Project include treatment facilities, appurtenant structures and storage facilities located on the Tonini parcel. As described in Table Q.5-1, the Preferred Project will include an Oxidation Ditch or Biolac® facility that encompasses less area and requires substantially less grading than the facultative ponds proposed under Proposed Project 4. Based on the revisions to the proposed treatment process, the facilities within the site are located more than 100 feet from the upland boundary of the 100-year flood hazard

area, as defined in the FEMA FIRM. There are also no dams within the vicinity of the treatment plant site. Therefore, the placement of the treatment plant under the Preferred Project would not 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. This finding is the same as the finding for Proposed Project 4.

Disposal Sites

Similar to Proposed Project 4, the proposed disposal systems under the Preferred Project include sprayfields at the Tonini parcel and leachfields at the Broderson parcel. Under the Preferred Project, the type of spray was revised to exclude percolation and as a result approximately 73 more acres of sprayfields are necessary to accommodate the 842 acre-feet of spray at Tonini compared to Proposed Project 4. Based on a review of the increase in sprayfield area the Preferred Project, similar to Proposed Project 4, would not 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.

Combined Project Effects

Similar to Proposed Project 4, the Preferred Project would not expose people or structures to a significant risk of loss, injury, or death involving flooding. Therefore, the combined effect of placing structures within a 100-year flood hazard area would not 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.

Cumulative Impact Analysis

Similar to Proposed Project 4, the Preferred Project would not contribute to cumulative impacts related to flooding, as a result of the failure of a levee or dam.

Mitigation Measures

Project-Specific

No mitigation measures are required.

Cumulative

No mitigation measures are required.

Level of Significance After Mitigation

Project-Specific

No impact.

Cumulative

No impact.

Seiche, Tsunami, or Mudflow

Q5.3-I: **The proposed projects would be subject to inundation by seiche, tsunami, or mudflow.**

Project Specific Impact Analysis

Collection System

Similar to Proposed Project 4, the collection system under the Preferred Project is a gravity system. As described in Table Q.5-1, the Preferred Project includes additional collection system facilities such as pump stations, standby power stations, and pipelines, as well as modifications to specific locations and size of facilities such as the central pump station, pipelines within streets, and pipelines crossing creeks compared to Proposed Project 4. Based on a review of the additions and modifications of the collection system facilities, the Preferred Project would not be subject to inundation by seiche, tsunami or mudflow similar to Proposed Project 4.

Treatment Plant Site

Similar to Proposed Project 4, the proposed treatment plant facilities under the Preferred Project include treatment facilities, appurtenant structures and storage facilities located on the Tonini parcel. As described in Table Q.5-1, the Preferred Project will include an Oxidation Ditch or Biolac® facility that encompasses less area and requires substantially less grading than the facultative ponds proposed under Proposed Project 4. Based on the revisions to the proposed facilities at the treatment plant site, the combination of distance from the ocean, local topography, and elevation of the site would result in the project not being subject to inundation by seiche, tsunami, or mudflow. Therefore, similar to Proposed Project 4, less than significant impacts would occur with the implementation of the Preferred Project.

Disposal Sites

Similar to Proposed Project 4, the proposed disposal systems under the Preferred Project include sprayfields at the Tonini parcel and leachfields at the Broderson parcel. Under the Preferred Project, the type of spray was revised to exclude percolation and as a result approximately 73 more acres of sprayfields are necessary to accommodate the 842 acre-feet of spray at Tonini compared to Proposed Project 4. Based on a review of the increase in sprayfield area as well as the distance of the site from the ocean, local topography, and elevation of the Tonini site, the Preferred Project facilities at the Tonini site would not be subject to inundation by seiche, tsunami, or mudflow.

Combined Project Effects

Similar to Proposed Project 4, the Preferred Project would not be subject to inundation by seiche, tsunami, or mudflow. Therefore, the combined effects of inundation by seiche, tsunami, or mudflow would be less than significant.

Cumulative Impact Analysis

Similar to Proposed Project 4, the Preferred Project would not contribute to cumulative impacts, regarding seiche, tsunami, or mudflow.

Mitigation Measures

Project-Specific

No mitigation measures are required.

Cumulative

No mitigation measures are required.

Level of Significance After Mitigation

Project-Specific

Less than Significant.

Cumulative

No impact.

Wastewater Treatment

Q5.3-J:	**The proposed projects would not exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board.**

Project Specific Impact Analysis

Similar to Proposed Project 4, the collection system under the Preferred Project is a gravity system. As described in Table Q.5-1, the Preferred Project includes additional collection system facilities such as pump stations, standby power stations, and pipelines, as well as modifications to specific locations and size of facilities such as the central pump station, pipelines within streets, and pipelines crossing creeks compared to Proposed Project 4. Based on a review of the additions and modifications of the collection system facilities, the Preferred Project would not exceed wastewater treatment requirements of the Central Coat RWQCB. Thus, the Preferred Project would result in no impact related to the exceedance of wastewater treatment requirements of the Regional Water Quality Control Board, similar to Proposed Project 4.

Cumulative Impact Analysis

Similar to Proposed Project 4, the Preferred Project would result in no impact related to the exceedance of wastewater treatment requirements of the Regional Water Quality Control Board; therefore, the Preferred Project would not contribute to a cumulative impact.

Mitigation Measures

Project-Specific

No mitigation measures are required.

Cumulative

No mitigation measures are required.

Level of Significance After Mitigation

Project-Specific

No impact.

Cumulative

No impact.

Stormwater Drainage Facilities

Q5.3-K:	**The proposed projects would require or result in the construction of minor new storm water drainage facilities or expansion of existing facilities. The construction of this minor facility would not cause significant environmental effects.**

Project Specific Impact Analysis

Collection System

Similar to Proposed Project 4, the collection system under the Preferred Project is a gravity system. As described in Table Q.5-1, the Preferred Project includes additional collection system facilities such as pump stations, standby power stations, and pipelines, as well as modifications to specific locations and size of facilities such as the central pump station, pipelines within streets, and pipelines crossing creeks compared to Proposed Project 4. Based on a review of the additions and modifications of the collection system facilities, the Preferred Project may include slightly greater impervious areas due to the addition of pump stations, standby power stations, and a greater footprint for the Mid-town pump station. However, the relatively small surface areas for these facilities would cause a negligible increase in the volume of localized stormwater runoff that would eventually percolate in the soils. Therefore, similar to Proposed Project 4, the Preferred Project would result in less than significant impacts from the negligible increases in stormwater.

Treatment Plant Site

Similar to Proposed Project 4, the proposed treatment plant facilities under the Preferred Project include treatment facilities, appurtenant structures and storage facilities located on the Tonini parcel. As described in Table Q.5-1, the Preferred Project will include an Oxidation Ditch or Biolac® facility that encompasses less area and requires substantially less grading than the facultative ponds proposed under Proposed Project 4. The discharge of stormwater outside of the treatment plant would be conveyed through a drainage channel, into a drainage structure and discharged into an onsite creek through a storm drainage outfall via an energy dissipater. Based on the revisions to the proposed facilities at the treatment plant site, the Preferred Project would not require alterations to the existing storm drain facilities. Therefore, similar to Proposed Project 4, the Preferred Project would result in a less than significant environmental effect on alterations to existing drainage.

Disposal Sites

Similar to Proposed Project 4, the proposed disposal systems under the Preferred Project include sprayfields at the Tonini parcel and leachfields at the Broderson parcel. Under the Preferred Project, the type of spray was revised to exclude percolation and as a result approximately 73 more acres of

sprayfields are necessary to accommodate the 842 acre-feet of spray at Tonini compared to Proposed Project 4. Based on a review of the increase in sprayfield area, no new drainage facilities are required; therefore, no environmental effects would occur during construction.

Combined Project Effects

Similar to Proposed Project 4, the Preferred Project would result in less than significant impacts; therefore, the combined effects associated with the facilities under the Preferred Project would result in less than significant impacts.

Cumulative Impact Analysis

Similar to Proposed Project 4, the Preferred Project would not contribute to cumulative impacts, related to stormwater drainage facilities.

Mitigation Measures

Project-Specific

No mitigation measures are required.

Cumulative

No mitigation measures are required.

Level of Significance After Mitigation

Project-Specific

Less than Significant.

Cumulative

No impact.

Consistency with Federal Laws and Local Goals and Policies Related to Hydrology and Water Quality

Q5.3-L:	**The proposed projects would not conflict with federal laws or local goals and policies relating to hydrology and water quality.**

Project Specific Impact Analysis

Similar to Proposed Project 4, the Preferred Project includes a collection system, treatment plant facilities, and disposal facilities. Based on a review of the additions and modifications of the proposed facilities, the Preferred Project would not conflict with federal laws or local goals and policies relating to hydrology and water quality; therefore, similar to Proposed Project 4, the Preferred Project would result in no impacts.

Cumulative Impact Analysis

Similar to Proposed Project 4, the Preferred Project would not contribute to cumulative impacts on federal laws and local goals and policies relating to hydrology and water quality.

Mitigation Measures

Project-Specific

No mitigation measures are required.

Cumulative

No mitigation measures are required.

Level of Significance After Mitigation

Project-Specific

No impact.

Cumulative

No impact.

Q.5.4 - Geology

The following impact evaluation is based on the environmental setting, regulatory setting, and thresholds of significance discussions provided for the proposed projects in Draft EIR Section 5.4, Geology, and in Appendix F-1, Expanded Geology Analysis. These previous discussions are not repeated in the following evaluation. The evaluation is a comparative analysis between the Preferred Project and Proposed Project 4.

An additional geotechnical investigation (Preliminary Geotechnical Report) was conducted by Fugro West Inc. on January 29, 2009 and is provided in Section Q7. This report found no new significant geological impacts related to the Los Osos Wastewater Project. The following evaluation includes information provided in this report. In addition, the Preliminary Geotechnical Report prepared by Fugro West, Inc. on May 21, 2008 was inadvertently left out of Appendix F-2 of the Draft EIR and is also include in Section Q7. Although this report was inadvertently left out of the Draft EIR, it was summarized in Appendix F-1, Expanded Geology Analysis and in Section 5.4 in the Draft EIR. It was also available for review during the public review period of the Draft EIR at the County of San Luis Obispo Department of Public Works.

Faulting

Q5.4-A:	**The project would not expose people or structures to potential substantial adverse effects, including the risk of loss, injury or death involving a rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault.**

Project Specific Impact Analysis

Collection System

Similar to Proposed Project 4, the collection system under the Preferred Project is a gravity system. As described in Table Q.5-1, the Preferred Project includes additional collection system facilities such as pump stations, standby power stations, and pipelines, as well as modifications to specific locations and size of facilities such as the central pump station, pipelines within streets, and pipelines crossing creeks compared to Proposed Project 4. Based on a review of the additions and modifications of the collection system facilities and the location of existing faults, the Preferred Project would not expose people or structures to potential substantial adverse effects, including the risk of loss, injury or death involving a rupture of a known earthquake fault. This finding is the same for Proposed Project 4.

Treatment Plant Site

Similar to Proposed Project 4, the proposed treatment plant facilities under the Preferred Project include treatment facilities, appurtenant structures and storage facilities located on the Tonini parcel. As described in Table Q.5-1, the Preferred Project will include an Oxidation Ditch or Biolac® facility that encompasses less area and requires substantially less grading than the facultative ponds proposed under Proposed Project 4. Based on the revision to the proposed treatment process, the Preferred Project, similar to Proposed Project 4, would not expose people or structures to potential substantial

adverse effects, including the risk of loss, injury or death involving a rupture of a known earthquake fault.

Disposal Sites

Similar to Proposed Project 4, the proposed disposal systems under the Preferred Project include sprayfields at the Tonini parcel and leachfields at the Broderson parcel. Under the Preferred Project, the type of spray was revised to exclude percolation and as a result, approximately 73 more acres of sprayfields are necessary to accommodate the 842 acre-feet of spray at Tonini compared to Proposed Project 4. Based on a review of the increase in sprayfield area and the location of the existing faults, the proposed facilities would not expose people or structures to potential substantial adverse effects, including the risk of loss, injury or death involving a rupture of a known earthquake fault. This finding is the same finding for Proposed Project 4.

Combined Project Effects

Similar to Proposed Project 4, the proposed facilities for the treatment and sprayfields under the Preferred Project would be located on the Tonini parcel. The combination of the two facilities on the Tonini parcel would encompass approximately 268 acres of the approximate 650-acre parcel. Similar to Proposed Project 4, the facilities at the Tonini parcel under the Preferred Project encompass a relatively small area and would not expose people or structures to potential substantial adverse effects, including the risk of loss, injury or death involving a rupture of a known earthquake fault.

Since the remainder of each component of the Preferred Project would not result in not exposure of people or structures to potential substantial adverse effects, including the risk of loss, injury or death involving a rupture of a known earthquake fault, the combined effect of implementing the proposed collection, treatment plant, and disposal facilities within the existing urban area and agricultural area of Los Osos would not result in exposure of people or structures to potential substantial adverse effects, including the risk of loss, injury or death involving a rupture of a known earthquake fault.

Cumulative Impact Analysis

Similar to Proposed Project 4, the Preferred Project would not expose people or structures to potential substantial adverse effects, including the risk of loss, injury or death involving a rupture of a known earthquake fault. Therefore, the Preferred Project would not contribute to any potential cumulative impacts related to exposure of people or structures to potential substantial adverse effects, including the risk of loss, injury or death involving a rupture of a known earthquake fault.

Mitigation Measures

Project-Specific

No mitigation measures are required.

Cumulative

No mitigation measures are required.

Level of Significance After Mitigation

Project-Specific

No impact.

Cumulative

No impact.

Seismic Ground Shaking

Q5.4-B:	**The project could expose people or structures to potential substantial adverse effects, including the risk of loss, injury or death involving a strong seismic ground-shaking.**

Project Specific Impact Analysis

Collection System

Similar to Proposed Project 4, the collection system under the Preferred Project is a gravity system. As described in Table Q.5-1, the Preferred Project includes additional collection system facilities such as pump stations, standby power stations, and pipelines, as well as modifications to specific locations and size of facilities such as the central pump station, pipelines within streets, and pipelines crossing creeks compared to Proposed Project 4. Similar to the sites for Proposed Project 4, the sites under the Preferred Project are located within a seismically active area, and the potential exists for strong ground motion to affect the proposed facilities at the sites under the Preferred Project during the design lifetime. In general, the primary effects will be those phenomena associated with shaking and/or ground acceleration. Given that it is likely for the proposed facilities under the Preferred Project to be impacted by strong ground motion, potential seismic ground-shaking impacts are considered significant similar to Proposed Project 4.

Treatment Plant Site

Similar to Proposed Project 4, the proposed treatment plant facilities under the Preferred Project include treatment facilities, appurtenant structures and storage facilities located on the Tonini parcel. As described in Table Q.5-1, the Preferred Project will include an Oxidation Ditch or Biolac® facility that encompasses less area and requires substantially less grading than the facultative ponds proposed under Proposed Project 4. Similar to the sites for Proposed Project 4, the sites under the Preferred Project are located within a seismically active area, and the potential exists for strong ground motion to affect the proposed facilities at the sites under the Preferred Project during the design lifetime. In general, the primary effects will be those phenomena associated with shaking and/or ground acceleration. Given that it is likely for the proposed facilities under the Preferred Project to be impacted by strong ground motion, potential seismic ground-shaking impacts are considered significant similar to Proposed Project 4.

Disposal Sites

Similar to Proposed Project 4, the proposed disposal systems under the Preferred Project include sprayfields at the Tonini parcel and leachfields at the Broderson parcel. Under the Preferred Project,

the type of spray was revised to exclude percolation and as a result approximately 73 more acres of sprayfields are proposed to accommodate the 842 acre-feet of spray at Tonini compared to Proposed Project 4. Similar to the sites for Proposed Project 4, the sites under the Preferred Project are located within a seismically active area, and the potential exists for strong ground motion to affect the proposed facilities at the sites under the Preferred Project during the design lifetime. In general, the primary effects will be those phenomena associated with shaking and/or ground acceleration. Given that it is likely for the proposed facilities to be impacted by strong ground motion, potential seismic ground-shaking impacts are considered significant similar to Proposed Project 4.

Combined Project Effects

Similar to Proposed Project 4, the proposed facilities for the treatment and sprayfields under the Preferred Project would be located on the Tonini parcel. The combination of the two facilities on the Tonini parcel would encompass approximately 268 acres of the approximate 650-acre parcel. In addition, the facilities at the Tonini parcel under the Preferred Project encompass a relatively small area. Similar to the sites for Proposed Project 4, the sites under the Preferred Project are located within a seismically active area, and the potential exists for strong ground motion to affect the proposed facilities at the sites under the Preferred Project during the design lifetime. In general, the primary effects will be those phenomena associated with shaking and/or ground acceleration. Given that it is likely for the proposed facilities to be impacted by strong ground motion, potential seismic ground-shaking impacts are considered significant similar to Proposed Project 4.

Since the remainder of each component of the Preferred Project may result in potential seismic ground-shaking impacts, the combined effect of implementing the proposed collection, treatment plant, and disposal facilities within the existing urban area and agricultural area of Los Osos are considered significant.

Cumulative Impact Analysis

Similar to Proposed Project 4, the Preferred Project would not affect the level of intensity at which a seismic event on an adjacent property is experienced. Therefore, the Preferred Project in conjunction with other projects or conditions will not result in cumulative impacts related to seismic ground shaking,

Mitigation Measures

5.4-B1 Prior to the approval of building plans for each proposed facility, the design of each facility shall be based on a facility-specific geotechnical report prepared by a California registered geotechnical engineer and professional geologist. The geotechnical report shall provide seismic data for use with at least the minimum requirements of the California Building Code (2007), as adopted by the County of San Luis Obispo.

Cumulative

No mitigation measures are required.

Level of Significance After Mitigation

Project-Specific

Less than significant.

Cumulative

No impact.

Seismic-Related Ground Failure

Q5.4-C:	**The project may expose people or structures to potential substantial adverse effects, including the risk of loss, injury or death involving seismic-related ground failure, including liquefaction.**

Project Specific Impact Analysis

Collection System

Similar to Proposed Project 4, the collection system under the Preferred Project is a gravity system. As described in Table Q.5-1, the Preferred Project includes additional collection system facilities such as pump stations, standby power stations, and pipelines, as well as modifications to specific locations and size of facilities such as the central pump station, pipelines within streets, and pipelines crossing creeks compared to Proposed Project 4. Based on a review of the additions and modifications of the collection system facilities, the proposed collection system for the Preferred Project may experience significant liquefaction impacts. Furthermore, this potentially significant impact could result in pipeline breaks and release of untreated and/or treated effluent along the proposed collection/conveyance system, including within Los Osos Creek and Warden Creek similar to Proposed Project 4. Because the Preferred Project includes the placement of the collection/conveyance pipeline on the bridges that cross Los Osos Creek and Warden Creek, slightly less pipeline impacts may occur but the overall impact would remain significant similar to Proposed Project 4.

Treatment Plant Site

Similar to Proposed Project 4, the proposed treatment plant facilities under the Preferred Project include treatment facilities, appurtenant structures and storage facilities located on the Tonini parcel. As described in Table Q.5-1, the Preferred Project will include an Oxidation Ditch or Biolac® facility that encompasses less area and requires substantially less grading than the facultative ponds proposed under Proposed Project 4. Based on the revision to the proposed treatment process, the proposed facilities at the treatment plant site may experience significant liquefaction impacts similar to the finding provided for Proposed Project 4.

Disposal Sites

Similar to Proposed Project 4, the proposed disposal systems under the Preferred Project include sprayfields at the Tonini parcel and leachfields at the Broderson parcel. Under the Preferred Project, the type of spray was revised to exclude percolation and as a result, approximately 73 more acres of sprayfields are necessary to accommodate the 842 acre-feet of spray at Tonini compared to Proposed

Project 4. Based on a review of the increase in sprayfield area, the sprayfield irrigation at Tonini would have little impact in the potential for liquefaction. Should liquefaction occur at the site, it is unlikely that the occurrence of liquefaction would impact the suitability of the site for spray irrigation. This finding is similar to the finding for Proposed Project 4.

Combined Project Effects

Similar to Proposed Project 4, the proposed facilities for the treatment and sprayfields under the Preferred Project would be located on the Tonini parcel. The combination of the two facilities on the Tonini parcel would encompass approximately 268 acres of the approximate 650-acre parcel. Similar to Proposed Project 4, the facilities at the Tonini parcel under the Preferred Project encompass a relatively small area and may expose people or structures to potential substantial adverse effects, including the risk of loss, injury or death involving seismic-related ground failure, including liquefaction.

Since the remainder of each component of the Preferred Project may expose people or structures to potential substantial adverse effects, including the risk of loss, injury or death involving seismic-related ground failure, including liquefaction, the combined effect of implementing the proposed collection, treatment plant, and disposal facilities within the existing urban area and agricultural area of Los Osos may expose people or structures to potential substantial adverse effects, including the risk of loss, injury or death involving seismic-related ground failure, including liquefaction.

Cumulative Impact Analysis

Similar to Proposed Project 4, the Preferred Project may expose people or structures to potential substantial adverse effects, including the risk of loss, injury or death involving seismic-related ground failure, including liquefaction. Therefore, the Preferred Project may contribute to potential cumulative impacts related to exposure of people or structures to potential substantial adverse effects, including the risk of loss, injury or death involving seismic-related ground failure, including liquefaction.

Mitigation Measures

Project-Specific

In addition to the implementation of Mitigation Measure 5.7-B.1 to reduce impacts from accidental spills due to seismic conditions, the following mitigation measures shall be implemented.

5.4-C1 Prior to approval of the improvement plans for the proposed facilities that are part of the collection system and at the treatment plant site, a geotechnical report that addresses liquefaction hazards shall be prepared and approved by the County of San Luis Obispo. The geotechnical report shall state the recommended actions for the collection system and treatment plant site so that potential impacts from seismically-induced liquefaction would be reduced to less than significant.

5.4-C2 Prior to operation of the facility, an Emergency Response Plan (ERP) shall be prepared as part of the operation and maintenance plan for the proposed collection system. The ERP shall recognize the potential for liquefaction, seismic hazards and ground lurching, to impact the pipeline or other proposed facilities, and specific high hazard areas shall be inspected for damage following an earthquake. "Soft Fixes" shall be incorporated in the ERP. Soft fixes typically consist of having a plan in-place to address the hazards, such as can be achieved by storing supplies and equipment for repair.

Cumulative

Implementation of Mitigation Measures 5.7-B.1, 5.4-C1 and 5.4-C2 are required.

Level of Significance After Mitigation

Project-Specific

Less than significant.

Cumulative

Less than significant.

Landslides

Q5.4-D:	**The project would not expose people or structures to potential substantial adverse effects, including the risk of loss, injury or death involving landslides.**

Project Specific Impact Analysis

Collection System

Similar to Proposed Project 4, the collection system under the Preferred Project is a gravity system. As described in Table Q.5-1, the Preferred Project includes additional collection system facilities such as pump stations, standby power stations, and pipelines, as well as modifications to specific locations and size of facilities such as the central pump station, pipelines within streets, and pipelines crossing creeks compared to Proposed Project 4. Based on a review of the additions and modifications of the collection system facilities and the location of potential landslide area, the Preferred Project, similar to Proposed Project 4, would not result in landslide impacts.

Treatment Plant Site

Similar to Proposed Project 4, the proposed treatment plant facilities under the Preferred Project include treatment facilities, appurtenant structures and storage facilities located on the Tonini parcel. As described in Table Q.5-1, the Preferred Project will include an Oxidation Ditch or Biolac® facility that encompasses less area and requires substantially less grading than the facultative ponds proposed under Proposed Project 4. Based on the revision to the proposed treatment process, the Preferred Project would also not result in landslide impacts in the vicinity of the Tonini parcel similar to the finding provided for Proposed Project 4.

Disposal Sites

Similar to Proposed Project 4, the proposed disposal systems under the Preferred Project include sprayfields at the Tonini parcel and leachfields at the Broderson parcel. Under the Preferred Project, the type of spray was revised to exclude percolation and as a result approximately 73 more acres of sprayfields are necessary to accommodate the 842 acre-feet of spray at Tonini compared to Proposed Project 4. Based on a review of the increase in sprayfield area and potential landslide areas, the proposed facilities would not result in landslide impacts within the sprayfield area. This finding is similar to the finding for Proposed Project 4.

Combined Project Effects

Similar to Proposed Project 4, the proposed facilities for the treatment and sprayfields under the Preferred Project would be located on the Tonini parcel. The combination of the two facilities on the Tonini parcel would encompass approximately 268 acres of the approximate 650-acre parcel. Similar to Proposed Project 4, the facilities at the Tonini parcel under the Preferred Project encompass a relatively small area and would not result in landslide impacts within the proposed developed area of the Tonini parcel.

Since the remainder of each component of the Preferred Project would not result in landslide impacts, the combined effect of implementing the proposed collection, treatment plant, and disposal facilities within the existing urban area and agricultural area of Los Osos would not result in landslide impacts.

Cumulative Impact Analysis

Similar to Proposed Project 4, the Preferred Project would result in no impacts relating to landslides. Therefore, the Preferred Project would not contribute to any potential cumulative impacts on exposure of people or structures to potential substantial adverse effects, including the risk of loss, injury or death involving landslides.

Mitigation Measures

Project-Specific

No mitigation measures are required.

Cumulative

No mitigation measures are required.

Level of Significance After Mitigation

Project-Specific

No impact.

Cumulative

No impact.

Soil Erosion or Loss of Topsoil

Q5.4-E: The project could result in substantial soil erosion or the loss of topsoil.

Project Specific Impact Analysis

Collection System

Similar to Proposed Project 4, the collection system under the Preferred Project is a gravity system. As described in Table Q.5-1, the Preferred Project includes additional collection system facilities such as pump stations, standby power stations, and pipelines, as well as modifications to specific locations and size of facilities such as the central pump station, pipelines within streets, and pipelines crossing creeks compared to Proposed Project 4. Based on a review of the additions and modifications of the collection system facilities, construction and periodic maintenance activities associated with the proposed facilities under the Preferred Project could result in substantial soil erosion or the loss of topsoil; thus, a significant impact could occur similar to Proposed Project 4.

Treatment Plant Site

Similar to Proposed Project 4, the proposed treatment plant facilities under the Preferred Project include treatment facilities, appurtenant structures and storage facilities located on the Tonini parcel. As described in Table Q.5-1, the Preferred Project will include an Oxidation Ditch or Biolac® facility that encompasses less area and requires substantially less grading than the facultative ponds proposed under Proposed Project 4. Based on the revision to the proposed treatment process, construction and periodic maintenance activities associated with the proposed facilities under the Preferred Project could result in substantial soil erosion or the loss of topsoil in the vicinity of the Tonini parcel similar to the finding provided for Proposed Project 4.

Disposal Sites

Similar to Proposed Project 4, the proposed disposal systems under the Preferred Project include sprayfields at the Tonini parcel and leachfields at the Broderson parcel. Under the Preferred Project, the type of spray was revised to exclude percolation and as a result, approximately 73 more acres of sprayfields are necessary to accommodate the 842 acre-feet of spray at Tonini compared to Proposed Project 4. Based on a review of the increase in sprayfield area, construction and periodic maintenance activities associated with the proposed facilities under the Preferred Project could result in substantial soil erosion or the loss of topsoil in the vicinity of the Tonini parcel. This finding is similar to the finding for Proposed Project 4.

Combined Project Effects

Similar to Proposed Project 4, the proposed facilities for the treatment and sprayfields under the Preferred Project would be located on the Tonini parcel. The combination of the two facilities on the Tonini parcel would encompass approximately 268 acres of the approximate 650-acre parcel. Similar to Proposed Project 4, the facilities at the Tonini parcel under the Preferred Project encompass a relatively small area. However, both construction and periodic maintenance activities associated with

the proposed facilities under the Preferred Project could result in substantial soil erosion or the loss of topsoil in the vicinity of the Tonini parcel.

Since the remainder of each component of the Preferred Project could result in substantial soil erosion or the loss of topsoil, the combined effect of implementing the proposed collection, treatment plant, and disposal facilities within the existing urban area and agricultural area of Los Osos could result in substantial soil erosion or the less of topsoil.

Cumulative Impact Analysis

Similar to Proposed Project 4, the Preferred Project could result in significant impacts relating to soil erosion or the loss of topsoil. Therefore, the Preferred Project's contribution would be considered cumulatively considerable and, therefore significant similar to Proposed Project 4.

Mitigation Measures

Project-Specific

5.4-E1 Prior to the approval of grading plans for each facility, erosion control measures shall be incorporated into the grading plans to minimize the potential for erosion or loss of top soil during grading to the satisfaction of the County of San Luis Obispo.

5.4-E2 Prior to the approval of grading plans for each facility, vegetation/landscaping shall be provided on the graded cut and fill slopes to reduce the long-term potential for soil erosion or loss of topsoil to the satisfaction of the County of San Luis Obispo.

5.4-E3 Prior to the approval of grading plans for each facility, the plans shall provide for the control of surface water away from slopes to the satisfaction of the County of San Luis Obispo.

Cumulative

Implementation of Mitigation Measures 5.4-E1 through 5.4-E3 is required.

Level of Significance After Mitigation

Project-Specific

Less than significant.

Cumulative

Less than significant.

Unstable Geologic Location

Q5.4-F: **The project could be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse.**

Project Specific Impact Analysis

Collection System

Similar to Proposed Project 4, the collection system under the Preferred Project is a gravity system. As described in Table Q.5-1, the Preferred Project includes additional collection system facilities such as pump stations, standby power stations, and pipelines, as well as modifications to specific locations and size of facilities such as the central pump station, pipelines within streets, and pipelines crossing creeks compared to Proposed Project 4. Based on a review of the additions and modifications of the collection system facilities, the Preferred Project facilities may be located on a geologic unit or soil that is unstable and could potentially result in lateral spreading, subsidence, liquefaction or collapse similar to Proposed Project 4. Unlike Proposed Project 4, the pipeline facilities under the Preferred Project that are proposed to cross the creeks would be placed on bridges, thus reducing the potential for landslides to less than significant. In addition, there is a potential for ground lurching to impact the project site under the Preferred Project. Ground lurching is generally not a geologic hazard that can be prevented, and therefore it would be considered a significant impact.

Treatment Plant Site

Similar to Proposed Project 4, the proposed treatment plant facilities under the Preferred Project include treatment facilities, appurtenant structures and storage facilities located on the Tonini parcel. As described in Table Q.5-1, the Preferred Project will include an Oxidation Ditch or Biolac® facility that encompasses less area and requires substantially less grading than the facultative ponds proposed under Proposed Project 4. Based on the revision to the proposed treatment process, the Preferred Project may be located on a geologic unit or soil that is unstable and could potentially result in lateral spreading, subsidence, liquefaction or collapse similar to Proposed Project 4. In addition, there is a potential for ground lurching to impact the project site under the Preferred Project. Ground lurching is generally not a geologic hazard that can be prevented, and therefore it would be considered a significant impact.

Disposal Sites

Similar to Proposed Project 4, the proposed disposal systems under the Preferred Project include sprayfields at the Tonini parcel and leachfields at the Broderson parcel. Under the Preferred Project, the type of spray was revised to exclude percolation and as a result, approximately 73 more acres of sprayfields are necessary to accommodate the 842 acre-feet of spray at Tonini compared to Proposed Project 4. The Preferred Project also includes setbacks from Turri Road and the property south of Tonini, and Proposed Project 4 did not include setbacks. Based on a review of the increase in sprayfield area, the Preferred Project may be located on a geologic unit or soil that is unstable and could potentially result in lateral spreading, subsidence, liquefaction or collapse similar to Proposed Project 4. In addition, there is a potential for ground lurching to impact the project site under the

Preferred Project. Ground lurching is generally not a geologic hazard that can be prevented, and therefore it is considered a significant impact.

Combined Project Effects

Similar to Proposed Project 4, the proposed facilities for the treatment and sprayfields under the Preferred Project would be located on the Tonini parcel. The combination of the two facilities on the Tonini parcel would encompass approximately 268 acres of the approximate 650-acre parcel. Similar to Proposed Project 4, the facilities at the Tonini parcel under the Preferred Project encompass a relatively small area. The Preferred Project may be located on a geologic unit or soil that is unstable and could potentially result in lateral spreading, subsidence, liquefaction, or collapse similar to Proposed Project 4. In addition, there is a potential for ground lurching to impact the project site under the Preferred Project. Ground lurching is generally not a geologic hazard that can be prevented, and therefore it is considered a significant impact.

Since the remainder of each component of the Preferred Project may be located on a geologic unit or soil that is unstable and could potentially result in lateral spreading, subsidence, liquefaction or collapse, the combined effect of implementing the proposed collection, treatment plant, and disposal facilities within the existing urban area and agricultural area of Los Osos would may be located on a geologic unit or soil that is unstable and could potentially result in lateral spreading, subsidence, liquefaction or collapse.

Cumulative Impact Analysis

Similar to Proposed Project 4, the Preferred Project could result in impacts relating to exposure to unstable soils or geologic unit due to the potential for lateral spreading, ground subsidence and ground lurching. Therefore, implementation of the Preferred Project may contribute to cumulative impacts associated with lateral spreading, ground subsidence and ground lurching within the vicinity of Los Osos. This contribution is considered cumulatively considerable and, therefore, significant for the Preferred Project.

Mitigation Measures

Project-Specific

5.4-F1 Prior to approval of the improvement plans for the proposed facilities, a geotechnical report that addresses the potential for lateral spreading, ground subsidence, and ground lurching and provides measures to reduce potential impacts to less than significant shall be prepared and approved by the County of San Luis Obispo.

Cumulative

Implementation of Mitigation Measure 5.4-F1 is required.

Level of Significance After Mitigation

Project-Specific

Less than significant.

Cumulative

Less than significant.

Expansive Soil

Q5.4-G:	**The projects would be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property.**

Project Specific Impact Analysis

Collection System

Similar to Proposed Project 4, the collection system under the Preferred Project is a gravity system. As described in Table Q.5-1, the Preferred Project includes additional collection system facilities such as pump stations, standby power stations, and pipelines, as well as modifications to specific locations and size of facilities such as the central pump station, pipelines within streets, and pipelines crossing creeks compared to Proposed Project 4. Based on a review of the additions and modifications of the collection system facilities, the Preferred Project could be located on expansive soil, and therefore could experience a significant impact similar to Proposed Project 4.

Treatment Plant Site

Similar to Proposed Project 4, the proposed treatment plant facilities under the Preferred Project include treatment facilities, appurtenant structures and storage facilities located on the Tonini parcel. As described in Table Q.5-1, the Preferred Project will include an Oxidation Ditch or Biolac® facility that encompasses less area and requires substantially less grading than the facultative ponds proposed under Proposed Project 4. Based on the revision to the proposed treatment process, the Preferred Project could also be located on expansive soil, and therefore could experience a significant impact similar to the finding provided for Proposed Project 4.

Disposal Sites

Similar to Proposed Project 4, the proposed disposal systems under the Preferred Project include sprayfields at the Tonini parcel and leachfields at the Broderson parcel. Under the Preferred Project, the type of spray was revised to exclude percolation and as a result, approximately 73 more acres of sprayfields are necessary to accommodate the 842 acre-feet of spray at Tonini compared to Proposed Project 4. The Preferred Project also includes setbacks from Turri Road and the property south of Tonini, and Proposed Project 4 did not include setbacks. Based on a review of the increase in sprayfield area, the proposed facilities could be located on expansive soil, and therefore could experience a significant impact. This finding is similar to the finding for Proposed Project 4.

Combined Project Effects

Similar to Proposed Project 4, the proposed facilities for the treatment and sprayfields under the Preferred Project would be located on the Tonini parcel. The combination of the two facilities on the Tonini parcel would encompass approximately 268 acres of the approximate 650-acre parcel. Similar to Proposed Project 4, the facilities at the Tonini parcel under the Preferred Project encompass a relatively small area and could be located on expansive soil.

Since the remainder of each component of the Preferred Project would be located on expansive soil, the combined effect of implementing the proposed collection, treatment plant, and disposal facilities within the existing urban area and agricultural area of Los Osos would be significant.

Cumulative Impact Analysis

Similar to Proposed Project 4, the Preferred Project could result in impacts relating to expansive soils. Therefore, implementation of the Preferred Project may contribute to cumulative impacts associated with expansive soils within the vicinity of Los Osos. This contribution is considered cumulatively considerable and, therefore, significant for the Preferred Project.

Mitigation Measures

Project-Specific

5.4-G1 Prior to approval of improvement and building plans for the proposed collection system facilities, facilities at the treatment plant site, and facilities at Broderson, a design-level geotechnical report shall be prepared that addresses and reduces potential expansive soil impacts to less than significant. The expansive soil data shall be used with the requirements of the California Building Code (2007), as adopted by the County of San Luis Obispo.

Cumulative

Implementation of Mitigation Measure 5.4-G1 is required.

Level of Significance After Mitigation

Project-Specific

Less than significant.

Cumulative

Less than significant.

Wastewater Disposal Systems

Q5.4-H: The project would not have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater.

Project Specific Impact Analysis

Collection System

Similar to Proposed Project 4, the collection system under the Preferred Project is a gravity system. As described in Table Q.5-1, the Preferred Project includes additional collection system facilities such as pump stations, standby power stations, and pipelines, as well as modifications to specific locations and size of facilities such as the central pump station, pipelines within streets, and pipelines crossing creeks compared to Proposed Project 4. Based on a review of the additions and modifications of the collection system facilities, the capability of soils adequately supporting the use of septic tanks does not apply to Preferred Project because no septic tanks are proposed as part of the collection system.

Therefore, the Preferred Project would result in no impacts related to soils incapable of adequately supporting septic tanks.

Treatment Plant Site

Similar to Proposed Project 4, the proposed treatment plant facilities under the Preferred Project include treatment facilities, appurtenant structures and storage facilities located on the Tonini parcel. As described in Table Q.5-1, the Preferred Project will include an Oxidation Ditch or Biolac® facility that encompasses less area and requires substantially less grading than the facultative ponds proposed under Proposed Project 4. Based on the revision to the proposed treatment process, the Preferred Project would result in no impacts related to soils incapable of adequately supporting septic tanks. This finding is similar to the finding for Proposed Project 4.

Disposal Sites

Similar to Proposed Project 4, the proposed disposal systems under the Preferred Project include sprayfields at the Tonini parcel and leachfields at the Broderson parcel. Under the Preferred Project, the type of spray was revised to exclude percolation and as a result, approximately 73 more acres of sprayfields are necessary to accommodate the 842 acre-feet of spray at Tonini compared to Proposed Project 4. The Preferred Project also includes setbacks from Turri Road and the property south of Tonini, and Proposed Project 4 did not include setbacks. Based on a review of the increase in sprayfield area, the Preferred Project would result in no impacts related to soils incapable of adequately supporting septic tanks. This finding is similar to the finding for Proposed Project 4.

Combined Project Effects

Similar to Proposed Project 4, the proposed facilities for the treatment and sprayfields under the Preferred Project would be located on the Tonini parcel. The combination of the two facilities on the Tonini parcel would encompass approximately 268 acres of the approximate 650-acre parcel. Similar to Proposed Project 4, the facilities at the Tonini parcel under the Preferred Project encompass a relatively small area and the capability of soils adequately supporting the use of septic tanks does not apply to Preferred Project because no septic tanks are proposed as part of the collection system.

Since the remainder of each component of the Preferred Project would result in no impacts related to soils incapable of adequately supporting septic tanks, the combined effect of implementing the proposed collection, treatment plant, and disposal facilities within the existing urban area and agricultural area of Los Osos would not result in impacts related to soils incapable of adequately supporting septic tanks.

Cumulative Impact Analysis

Similar to Proposed Project 4, the Preferred Project would result in no impacts relating to the capability of soils adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater. Therefore, the Preferred

Project would not contribute to cumulative impacts related to soils incapable of adequately supporting septic tanks.

Mitigation Measures

Project-Specific

No mitigation measures are required.

Cumulative

No mitigation measures are required.

Level of Significance After Mitigation

Project-Specific

No impact.

Cumulative

No impact.

Q.5.5 - Biological Resources

Special Status Species

Q5.5-A: **The project would have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service.**

Project-Specific Impact Analysis

Collection System

Similar to Proposed Project 4 analyzed within the Draft EIR, the collection system for the Preferred Project encompasses areas throughout the community of Los Osos within the Urban Reserve Line, east along the Los Osos Valley Road right-of-way to Turri Road, and north along the Turri Road right-of-way for approximately 2,800 feet to the proposed treatment facility location on the Tonini property. The collection system for the Preferred Project includes septic tank abandonment and installation of a network of sewer collection pipelines and force main lines, nine pump stations (Mid-town, six duplex, two triplex), thirteen pocket pump stations, two standby power stations located onsite at six of the pump station sites, thirteen pocket pump stations, and a wastewater conveyance pipeline to the treatment facility. The treated effluent pipeline from the treatment facility to the Broderson leachfields is also addressed under the collection system for the Preferred Project.

As discussed in Section 3, the wastewater gravity collection system within the Urban Reserve Line evaluated in the Draft EIR was originally designed for the previous iteration of the project that was approved by the California Coastal Commission (CCC) and issued a Coastal Development Permit (CDP). This same wastewater gravity collection system design has been adopted for the Preferred Project, with additional refinements that meet the conditions of the CDP issued for the previous iteration of the project, as well as the new engineering demands in delivering wastewater out to the Tonini site.

The collection system for Preferred Project would be the same as that which is proposed for Proposed Project 4 in the Draft EIR, with the addition of the new refinements. The additional refinements are discussed in detail within Appendix Q.3. Of the additional refinements, the on-site design changes for pump stations would not result in any impacts to biological resources. However, those resulting in developments and siting changes within new sewer collection pipelines, force mains, pocket pump stations, and pump stations could result in impacts to biological resources that were not addressed within the Draft EIR. The refinements that are expected to result in potential impacts on biological resources include the following:

- a change in location of the Mid-town pump station from the southeast corner to the southwest corner of the Mid-town site;
- a sewage gravity collection line, pocket pump, and a force main along Palisades Avenue to collect sewage and convey back to the Mid-town Pump Station along Los Osos Valley Road;

- the addition of the Solano pump station and force main along Solano Street and Skyline Drive, increasing the total number of pump stations to nine;
- a connection to a new standby power station for the Baywood and West Paso pump stations located near the corner of 8th Street and El Moro Street instead of onsite standby power stations at both pump station sites;
- a connection to a new standby power station for the Mountain View pump station located at the nearby LOCSD South Bay well site instead of an onsite standby power station; and
- an approximately 7-acre construction staging area located northwest of the intersection of Pismo Avenue and South Bay Boulevard, adjacent to the East Paso pump station.

A description of each refinement and discussion of the existing conditions at each of the proposed locations are provided below.

Sewer Collection Pipelines and Force Main Lines

Similar to that analyzed for Proposed Project 4 in the Draft EIR, the sewer collection pipelines and force main lines for the Preferred Project will be contained within disturbed and developed portions of surface street rights-of-way throughout the community of Los Osos. The network of sewer collection pipelines and force main lines is displayed on Exhibit Q.3-1. The Preferred Project incorporates refinements to the sewer collection pipelines and force main line layout that include the installation of an additional sewer collection line along Palisades Road north of Los Osos Valley Road, the installation of a force main along Palisades Road north of Los Osos Valley Road, the installation of a force main along Los Osos Valley Road running west from Palisades Road to the Mid-town pump station, and the installation of a force main from the Solano pump station south along Solano Street and east along Skyline Drive. Additionally, lateral lines will run from the sewer collection pipelines to each property lines being served by the collection system. It is expected that the majority of the sewer collection pipeline, force main line, and lateral line installation would occur within disturbed and developed portions of surface street rights-of-way. These areas do not contain suitable habitat for any special status species; therefore, no impacts are anticipated to occur to biological resources, including special status species.

Pocket Pump Stations

The Preferred Project includes a total of thirteen unnamed pocket pump stations required within individual low-elevation locations of the collection system. These pocket pump station locations are displayed on Exhibit Q.3-1 and labeled with the letter "P". All pocket pump stations will occur in disturbed and developed areas contained primarily within surface street rights-of-way. The refinements call out the need for an additional pocket pump station located at the northern terminus of Palisades Avenue. The pocket pump station development will require the additional force main along Palisades Avenue north of Los Osos Valley road that was addressed above under the sewer collection pipelines and force main lines discussion. The new pocket pump station will be contained within

disturbed and developed portions of Palisades Avenue that do not contain any native plant species or natural communities, or federally- or state-regulated wetland resources.

Pump Stations

The Preferred Project includes a total of nine pump stations referred to as the Mid-town, Solano, Lupine, West Paso, Baywood, East Ysabel, East Paso, Mountain View, and Sunny Oaks pump stations. These pump stations are displayed on Exhibit Q.3-1 and are referred to as either pump stations with (PSS) or without (PS) on-site standby power buildings. It should be noted that with the exception of the Mid-town pump station, all pump stations will occur within a variety of disturbed and developed areas, and areas vegetated primarily with non-native ornamental and ruderal (weedy) plant species. With the exception of the Mid-town pump station, none will occur within any natural communities or areas dominated by native vegetation. The 0.03-acre Baywood pump station and 0.03-acre Mountain View pump station will be entirely contained within paved asphalt portions of El Moro Avenue and Mountain View Drive.

Of the nine pump stations, only a single pump station, the Solano pump station, was not addressed in the Draft EIR. This pump station is addressed below. Additionally, the change in location of the Mid-town pump station was not addressed in the Draft EIR. The change in location of the Mid-town pump station is also addressed below.

***Solano Pump Station*:** The Solano pump station will occur within an approximately 0.07-acre area located on the east side of Solano Street, immediately south of the eastern terminus of Butte Drive adjacent to the Sea Pines Golf Resort in western Los Osos. The pump station development will require the additional force mains along Solano Street and Skyline Drive that were addressed above under the sewer collection pipelines and force main lines discussion. The 0.07-acre area is contained within a flat disturbed lot that is currently being used for storage, presumably by the Sea Pines Golf Resort. A number of dirt piles, a concrete pipeline segment, and other debris were observed scattered throughout the area. The area is subject to routine pedestrian and vehicle traffic as a result of recreation and golf course maintenance activities. The area is characterized by bare earth and non-native ruderal (weedy) vegetation, and does not contain any native plant species or natural communities, or federally- or state-regulated wetland resources.

***Mid-town Pump Station*:** The location of the Mid-town pump station has been changed from the location identified in the Draft EIR due to the hydraulic characteristics and requirements of the proposed collection system.

The new proposed location encompasses a 0.25-acre area near the southwest corner of the Mid-town property (Exhibit Q.3-1). As discussed in the Draft EIR, the Mid-town pump station is proposed within land that had been cleared in 2005 for the previously approved iteration of the project. The biological resources-related impacts associated with the new location are essentially the same as those associated with the previous location and analyzed for Proposed Projects 1 through 4. In general, the

pump station occurs within a flat upland area characterized by bare earth and sparse native and non-native vegetation. Since the previous clearing and relocation activities, the overall Mid-town property has partially recovered to support a sparse arrangement of native and non-native plant species. Some areas remain highly disturbed and contain a significant percentage of bare earth and non-native veldt grass (*Ehrharta calycina*), while other areas support an open canopy of disturbance-tolerant and early-seral type native shrub species. Although much of the 0.25-acre area proposed for the Mid-town pump station is characterized by bare earth (approximately 70 percent), it does contain a sparse arrangement of vegetative cover (approximately 30 percent). Dominant non-native plant species observed include veldt grass and fig marigold (*Carpobrotus edulis*). Native plant species that have sparsely recruited back into the area include deerweed (*Lotus scoparius*), black sage (*Salvia mellifera*), silver dune lupine (*Lupinus chamissonis*), and California croton (*Croton californicus*). An east-to-west trending section of the chain-linked perimeter fence for the property transects the southern half of the 0.25-acre area. Sand bags support the base of the chain-linked fence poles.

Standby Power Stations

The Baywood and Mountain View pump stations for the Preferred Project will be served by two standby power stations that occur in isolation from the pump station developments. These standby power station locations are displayed on Exhibit Q.3-1 and labeled with the letter "S". Both standby power stations will be located within disturbed and developed land. Coaxial connections will be contained within disturbed and developed portions of surface street rights-of-way. Therefore, no impacts to biological resources are anticipated to result from the standby power stations for the Preferred Project.

Raw Wastewater Conveyance Pipeline

The raw wastewater conveyance pipeline for the Preferred Project is similar to that analyzed for Proposed Project 4 in the Draft EIR, with the exception of bridge suspension methodologies as opposed to open-cut trenching for the installation of pipelines that will cross Los Osos Creek and Warden Creek. As discussed in the Draft EIR, the raw wastewater conveyance pipeline will begin at the Mid-town pump station, continue east on Los Osos Valley Road to Turri Road before heading north and terminating at the Tonini wastewater treatment facility site. The pipeline will be installed entirely within disturbed and developed portions of the Los Osos Valley Road and Turri Road rights-of-way using open trench construction, with the exception of the Los Osos Creek and Warden Creek crossings. At the Los Osos Creek crossing, the pipeline will be secured using conventional pipe hangers along the north edge of the existing Los Osos Valley Road bridge. Similarly, at the Warden Creek crossing, the pipeline will be secured using conventional pipe hangers along the west edge of the existing Turri Road bridge. At each of the Los Osos Creek and Warden Creek crossings it will be necessary to support the pipeline during installation. It is anticipated that this will be accomplished from above on top of the bridge with an excavator, crane, or similar equipment, or with hand-built falsework. If required, the pipeline (or pipeline segments) would be lowered into place and retrieved with a crane from above. No access ramp would be required for either crossing as no in-stream heavy

equipment use is anticipated. The crossing of several tributary drainages to Warden Creek and seasonal wetland swales will also be required along Los Osos Valley Road and Turri Road. These crossings will be accomplished by open trench construction during the dry season.

Treated Effluent Pipeline

The treated effluent pipeline for the Preferred Project is similar to that analyzed for Proposed Project 4 in the Draft EIR, with the exception of bridge suspension methodologies as opposed to open-cut trenching for the installation of pipelines that will cross Los Osos Creek and Warden Creek. As discussed in the Draft EIR, the pipeline will convey the treated effluent from the treatment facility at the Tonini site to the sprayfields on the Tonini ranch property and to the leachfields on the Broderson property. A short pipeline and series of distribution lines all contained within the Tonini property will convey treated effluent to the sprayfields. These pipelines will cross tributary streams to Warden Creek at five locations on the Tonini property, and will be installed using open-cut trenching methods during the dry season. The treated effluent conveyance pipeline out to the leachfields on the Broderson property will run within the Los Osos Valley Road right-of-way for most of its length before heading south within the Broderson Avenue right-of-way and terminating at the leachfields. The pipeline will be installed entirely within disturbed and developed portions of the Los Osos Valley Road and Broderson Avenue rights-of-way using open trench construction, with the exception of the Los Osos Creek and Warden Creek crossings. The pipeline crossing at Warden Creek will be secured using conventional pipe hangers along the east edge of the Turri Road bridge. The pipeline crossing at Los Osos Creek however will not require pipe hangers as installation will occur through existing voids within the Los Osos Valley Road bridge abutments. Similar to the raw wastewater conveyance line, the treated effluent pipeline may need to be supported during installation. If required, it is anticipated that this will be accomplished from above on top of the bridge with an excavator, crane, or similar equipment, or with hand-built falsework. If required, the pipeline (or pipeline segments) would be lowered into place and retrieved with a crane from above. No access ramp would be required for either crossing as no in-stream heavy equipment use is anticipated. Similar to the raw wastewater conveyance pipeline, the crossing of several tributary drainages to Warden Creek and seasonal wetland swales will also be required along Los Osos Valley Road. These crossings will be accomplished by open trench construction during the dry season.

Construction Staging Areas

The construction yard to be used during installation of the collection system for the Preferred Project includes a 7-acre area located at the northwest corner of Pismo Avenue and South Bay Boulevard. This parcel will also support the East Paso pump station for the Preferred Project. The 7-acre disturbed area was used by the previous LOCSD wastewater project and is primarily characterized by bare earth. No impacts to biological resources are anticipated to result from the construction staging area for the Preferred Project collection system.

Short Term Construction Impacts

The collection system for the Preferred Project could result in significant direct and indirect short-term construction impacts to special status species. The following provides a project-specific impact analysis of the short-term construction impacts on special status plant and wildlife species for the collection system element of Preferred Project.

- **Special Status Plant Species**. Impacts to special status plant species resulting from the collection system component of Preferred Project would be essentially the same as those addressed for Proposed Project 4 within the Draft EIR. It was determined that portions of the collection system contain suitable habitat for the federally-endangered Morro manzanita. No other special status plant species were determined to have a potential to occur within the collection system area.

  Surveys conducted by the County Department of Public Works in December 2008 and January 2009 concluded that no naturally occurring Morro manzanita specimens are present within the collection system impact area. Therefore, no impacts to this species are anticipated to occur as a result of the collection system component of the Preferred Project, and no mitigation measures are required.

- **Special Status Wildlife Species**. Impacts to special status wildlife species resulting from the collection system component of Preferred Project would be essentially the same as those addressed for Proposed Project 4 within the Draft EIR. The Preferred Project could result in significant direct and indirect impacts to special status wildlife species and their habitat during project construction, including including the Morro shoulderband snail (*Helminthoglypta walkeriana*) and federally-designated critical habitat, south-central California coast steelhead (*Oncorhynchus mykiss irideus*; southern steelhead) and federally-designated critical habitat, California red-legged frog (*Rana aurora draytonii*), and Morro blue butterfly (*Icaricia icarioides moroensis*).

  Morro Shoulderband Snail. A detailed description of this species recovery status, biological requirements, and critical habitat is provided within Section 5-5 and Appendix G of the Draft EIR. The collection system component of the Preferred Project could result in direct impacts to the Morro shoulderband snail through the permanent removal and temporary disturbance of areas potentially occupied by this species during the construction phase.

  Approximately 0.25 acre of temporary impacts to potentially occupied habitat would result from the construction of sewer collection pipelines and force mains within surface street rights-of way west of Los Osos Creek. These areas contain very limited vegetative cover and do not support the primary constituent elements for this species. The potential for snail occurrence within these areas is very low; however,

limited portions may support a very low number of individual snails. Therefore, there is a potential for the project to result in direct impacts to this species during construction activities within the 0.15-acre area proposed for sewer collection pipeline and force main developments.

Approximately 0.75 acre of permanent impacts to potentially occupied habitat would result from pump station developments, of which, approximately 0.25-acre would result from the Mid-town pump station. With the exception of the Mid-town pump station, the remaining 0.50-acre of pump station areas are confined to disturbed and developed land with very limited vegetative cover. The areas do not contain the primary constituent elements for this species. The potential for snail occurrence within these areas is very low; however, limited portions may support a very low number of individual snails. Therefore, there is a potential for the project to result in direct impacts to this species during construction activities within the 0.50-acre area proposed for pump station developments.

Approximately 0.25 acre of permanent impacts to potentially occupied habitat would result from development of the Mid-town pump station. As described above, the 0.25-acre pump station is proposed within portions of the parcel in which plant regeneration has been limited to approximately 10 to 15 percent cover of non-native plant species and marginal coastal dune scrub constituents. Due to the young age of the coastal dune scrub constituents, there is little duff under the plants to provide suitable conditions for the Morro shoulderband snail. The potential for snail occurrence within the 0.25-acre area is low; however, the area may support a low number of individual snails. Therefore, there is a potential for the project to result in direct impacts to this species during construction activities within the 0.25-acre area proposed for the Mid-town pump station.

The current project proposes to impact approximately 9 acres of coastal dune scrub habitat yet still proposes 73 acres of open space at the Broderson parcel. Because the current project results in the same or less impacts in the same locations as the previous project, use of the same mitigation (Broderson) for the loss of habitat is appropriate. Further, with the assumption that the Mid-town site is developing into suitable Morro shoulderband snail habitat, future impacts of other projects on the Mid-town site will likely require mitigation.

In summary, the collection system for the Preferred Project would result in the disturbance and/or removal of approximately 1.0 acre of habitat that could be occupied by low numbers of Morro shoulderband snail individuals. Impacts resulting from "take" of individual snails and loss of occupied and critical habitat would be considered significant. Implementation of Mitigation Measures Q5.5-A1, Q5.5-A3,

Q5.5-A4, Q5.5-A15, and Q5.5-A16 provided within Table Q.2-2 would minimize and reduce the level of impacts to the Morro shoulderband snail to a less than significant level.

Mitigation Measure Q5.5-A1 is proposed as a standard condition for the project to ensure that formal consultation is initiated and carried out by the appropriate agencies. The County of San Luis Obispo Department of Public Works have prepared a Biological Assessment for the project that specifically addresses project impacts to this and other federally-listed species. The Biological Assessment has incorporated the findings and proposed measures contained herein, and will accompany the consultation process with the USFWS. The proposed measure identifies that the project would be subject to all mandatory reasonable and prudent measures that will be developed through the consultation process as part of the forthcoming Biological Opinion provided by the USFWS. The mandatory reasonable and prudent measures would ensure that impacts are minimized to federally-listed species, including the Morro shoulderband snail.

Mitigation Measure Q5.5-A3 proposes that a worker education program be developed, and a biologist approved by the USFWS be retained, to provide construction personnel specific instruction on general detection and avoidance of sensitive resources, including the Morro shoulderband snail, during construction activities. Implementation of Mitigation Measure Q5.5-A3 would ensure that potential "take" of the Morro shoulderband snail is minimized during construction activities in suitable habitat for the species.

Mitigation Measure Q5.5-A4 proposes surveys for the Morro shoulderband snail prior to construction, monitoring and relocation during construction, and reporting to the USFWS. Implementation of Mitigation Measure Q5.5-A4 would ensure that potential "take" of the Morro shoulderband snail is avoided to the maximum extent feasible during construction activities within areas determined to be occupied by the species.

Mitigation Measure Q5.5-A15 proposes habitat-based compensatory mitigation for the loss of 1.0 acre of habitat potentially occupied by Morro shoulderband snail. The 1.0 acre loss areas includes disturbed lands currently characterized by either low quality coastal dune scrub or minimally vegetated areas that have the potential to support coastal dune scrub over time if left unaffected. Implementation of Mitigation Measure Q5.5-A15 would ensure that 72 acres of coastal dune scrub and central maritime chaparral are acquired and preserved in perpetuity on the Broderson site, and that plans are prepared and implemented for restoration and long-term

management of the preserve. This includes approximately 15.4 acres of coastal dune scrub that is contained within USFWS-designated Critical Habitat (Unit 2) and is considered occupied by the species. In addition to being occupied by the species and containing the primary constituent elements for the species' Critical Habitat, the proposed mitigation lands on the Broderson site contain all of the following attributes: they are contiguous with existing preservation lands within the Morro Dunes Ecological Reserve and areas studied for the Greenbelt Program by the Land Conservancy; they currently support appropriate soils to accept native plantings for restoration; they are capable of being cleared of unfavorable debris and structures; they support primarily windblown sand deposits that are in a stabilized condition (i.e. not mobile dune habitat); they are characterized by habitat types with an open canopy; they contain appropriate slopes to accommodate snail mobility to and from adjacent lands; and they are of appropriate aspect and meteorological conditions. Compared with the 1.0 acre of loss resulting from the proposed collection system and the 8.0 acres of loss resulting from the proposed leachfields on the Broderson site, the acquisition and preservation of 15.4 acres of coastal dune scrub on the Broderson site represents an "in-kind" on-site mitigation ratio that exceeds 1.5:1 (1.5 acres of acquisition for every 1.0 acre of loss). Implementation of this measure would fully compensate the loss of occupied habitat and promote the long-term viability and recovery of the species.

Mitigation Measure Q5.5-A16 proposes measures for restoring areas within the Broderson site that will be impacted as a result of construction and long-term maintenance of the leachfields, in addition to areas outside of the proposed leachfields that will be unaffected and preserved in perpetuity. Implementation of Mitigation Measure Q5.5-A16 would restore damaged areas and enhance preserve lands to provide functioning live-in habitat for the Morro shoulderband snail as well as other sensitive species with the potential to occur in the area.

Southern Steelhead. A detailed description of this species recovery status, biological requirements, and critical habitat is provided within Section 5-5 and Appendix G of the Draft EIR. The collection system component of the Preferred Project could result in direct and indirect impacts to the federally threatened southern steelhead through the installation of conveyance pipelines during the construction phase.

The proposed raw wastewater conveyance pipeline and treated effluent conveyance pipeline will cross several drainages, including Los Osos Creek, which supports southern steelhead and is designated as critical habitat for the species. As discussed above, the crossing of Los Osos Creek will occur at the Los Osos Valley Road bridge and will be conducted by securing the pipelines to proposed conventional pipe hangers and existing voids within the bridge structure. The raw wastewater pipeline

will be secured by hangers proposed on the north edge of the bridge and the treated wastewater pipeline will be placed inside existing bridge abutment voids on the south side of the bridge. Construction of hangers and supporting the pipeline during installation could be conducted from above with an excavator or similar equipment, from below with a small backhoe/loader, or with hand-built falsework. If any materials or construction equipment will be required below within the creek bed, it would be lowered into place and retrieved with a crane. Therefore, no access ramp would be required.

Due to the fact that installation of pipelines across Los Osos Creek at the Los Osos Valley Road bridge will be conducted during the dry time of year, impacts to steelhead habitat would be temporary in nature and direct mortality of individuals is not likely. However, the installation of pipelines could result in the temporary degradation of steelhead habitat through alterations of the stream substrate during construction, downstream sedimentation during and after construction, and the temporary loss of riparian vegetation and stream function as fishery habitat during construction. Indirect injury or mortality to steelhead individuals could result from an accidental spill of hazardous materials or careless fueling or oiling of vehicles or equipment near sensitive upland or aquatic habitats. Remnant materials left within the streambed or adjacent areas after construction could runoff and enter the creek during a time when it may be occupied by steelhead, potentially resulting in injury or mortality. Implementation of Mitigation Measures Q5.5-A3 and Q5.5-A6 provided within Table Q.2-2 would minimize and reduce the level of impacts to the southern steelhead and its critical habitat to a less than significant level.

Mitigation Measure Q5.5-A3 proposes that a worker education program be developed, and a biologist approved by the USFWS be retained, to provide construction personnel specific instruction on general detection and avoidance of sensitive resources during construction activities, including the south-central California coast steelhead and its critical habitat within Los Osos Creek. Implementation of Mitigation Measure Q5.5-A3 would ensure that adverse impacts to this species and its critical habitat are minimized during construction activities in the Los Osos Creek vicinity.

Mitigation Measure Q5.5-A6 proposes avoidance, minimization, monitoring, and restoration measures that will be implemented during and immediately after construction. The construction schedule will be restricted to the time of year when Los Osos Creek will be dry thereby eliminating the potential for direct impacts to individuals. Minimization measures that include site-specific Best Management Practices and a Spill Prevention Plan will restrict construction activities and contain

potential pollutants within safe upland areas that are setback from Los Osos Creek. A qualified biological monitor will be required on-site during any construction activities that must occur within Los Osos Creek to direct and contain activities within construction boundaries and minimize disturbance. Lastly, all disturbance areas will be restored to pre-project conditions immediately after construction to ensure that the functions and values of Los Osos Creek are not lost. Implementation of Mitigation Measure Q5.5-A6 would ensure that adverse impacts to this species and its critical habitat are avoided and minimized during and immediately after construction activities in the Los Osos Creek vicinity.

As discussed within Impact Q5.5-C and Mitigation Measures Q5.5-C1, Q5.5-C2, and Q5.5-C3, the project will be required to obtain the appropriate permits from the USACE, RWQCB, and CDFG for impacts to waters and wetlands, and riparian-vegetated streambed associated with Los Osos Creek. These permits, along with the project's forthcoming CDP from the CCC, will contain additional conditions that will further reduce impacts to Los Osos Creek and associated resources. Any impacts to riparian and wetland habitat shall be mitigated for through replacement mitigation at a minimum ratio of 1:1 so that there is no net loss, or at a set ratio as determined through the permitting process. Where the mitigation requirements of separate policy under the CZLUO, or the requirements of the USACE, RWQCB, and CDFG or other agency with jurisdiction over an affected area or resource are different, the more restrictive regulations shall apply.

California Red-Legged Frog. A detailed description of this species recovery status, biological requirements, and critical habitat is provided within Section 5-5 and Appendix G of the Draft EIR. The collection system component of the Preferred Project could result in direct and indirect impacts to the federally-threatened and California State species of special concern California red-legged frog through the installation of conveyance pipelines during the construction phase. Potential impacts to this species are essentially the same as those discussed in the Draft EIR and Appendix G for proposed Project 4, with the exception of the installation methodologies for pipeline crossings at Los Osos Creek and Warden Creek.

The collection system for the Preferred Project would result in the temporary disturbance of stream and wetland habitat that could be used by California red-legged frog during construction. These impacts could result from the construction activities associated with the installation of conveyance pipelines on existing bridge structures across Los Osos Creek and Warden Creek, and construction activities associated with open-cut installation of conveyance pipelines within tributary waters to Warden Creek on the Tonini property. Impacts resulting from "take" of individual frogs and loss of occupied habitat would be considered significant. Construction activities

could result in injury or mortality of individuals as a result of being crushed by earth moving equipment, construction debris, and worker foot traffic. Construction noise and disturbance from instream activities could also resulting displacement of individuals from suitable habitat, including breeding and aestivation sites, as well as degradation of habitat. Improper containment and use of hazardous materials, including fuel or oil, could also result in the injury or mortality of individuals and degradation of habitat. Additionally, the improper handling, containment, or transport of individuals, or release of individuals into unsuitable habitat could result in injury or mortality. Implementation of Mitigation Measures Q5.5-A1, Q5.5-A3, and Q5.5-A8 provided within Table Q.2-2 would minimize and reduce the level of impacts to the California red-legged frog to a less than significant level.

Mitigation Measure Q5.5-A1 is proposed as a standard condition for the project to ensure that formal consultation is initiated and carried out by the appropriate agencies. The County of San Luis Obispo Department of Public Works have prepared a Biological Assessment for the project that specifically addresses project impacts to this and other federally-listed species. The Biological Assessment has incorporated the findings and proposed measures contained herein, and will accompany the consultation process with the USFWS. The proposed measure identifies that the project would be subject to all mandatory reasonable and prudent measures that will be developed through the consultation process as part of the forthcoming Biological Opinion provided by the USFWS. The mandatory reasonable and prudent measures would ensure that impacts are minimized to federally-listed species, including the California red-legged frog.

Mitigation Measure Q5.5-A3 proposes that a worker education program be developed, and a biologist approved by the USFWS be retained, to provide construction personnel specific instruction on general detection and avoidance of sensitive resources during construction activities, including the California red-legged frog. Implementation of Mitigation Measure Q5.5-A3 would ensure that adverse impacts to this species and its habitat are minimized during construction activities.

Mitigation Measure Q5.5-A8 proposes pre-construction survey, avoidance, minimization, monitoring, and restoration measures to reduce the risk of incidental "take" of individuals and minimize disturbance of habitat. The construction schedule will be restricted to the time of year when stream and wetland habitat will be dry, with the exception of Warden Creek (which supports perennial flows year-round), thereby minimizing the potential for incidental direct impacts to individuals. Aligning with Mitigation Measure Q5.5-A3, all biologists retained to conduct initial survey and relocation and monitoring activities for the California red-legged frog

shall be approved by the USFWS. The pre-construction surveys would confirm presence/absence of individuals within the affected areas and immediate vicinity so that appropriate avoidance and relocation measures can be undertaken prior to construction. The measure would ensure that the functions and values of all affected areas and immediate vicinity are restored to pre-project conditions and enhanced to eradicate exotic predators, create additional live-in habitat, and promote the long-term viability of the species.

Minimization measures that include site-specific Best Management Practices and a Spill Prevention Plan would also be implemented and would restrict construction activities and contain potential pollutants within safe upland areas that are setback from habitat for the California red-legged frog. Additionally, as discussed within Impact Q5.5-C and Mitigation Measures Q5.5-C1, Q5.5-C2, and Q5.5-C3, the project will be required to obtain the appropriate permits from the USACE, RWQCB, and CDFG for impacts to waters and wetlands, and riparian-vegetated streambed associated with Los Osos Creek, Warden Creek, and tributaries to Warden Creek. These permits, along with the project's forthcoming CDP from the CCC, will contain additional conditions that will further reduce impacts to California red-legged frog habitat. Any impacts to riparian and wetland habitat shall be mitigated for through replacement mitigation at a minimum ratio of 1:1 so that there is no net loss, or at a set ratio as determined through the permitting process. Where the mitigation requirements of separate policy under the CZLUO, or the requirements of the USACE, RWQCB, and CDFG or other agency with jurisdiction over an affected area are different, the more restrictive regulations shall apply.

Morro Blue Butterfly. A detailed description of this species status and biological requirements is provided within Section 5-5 and Appendix G of the Draft EIR. The collection system component of the Preferred Project could result in direct and indirect impacts to the non-listed locally rare Morro blue butterfly through the construction of the Mid-town pump station.

The refined location of the 0.25-acre Mid-town pump station was determined to contain a few specimens of the larval host plant for the Morro blue butterfly, silver dune lupine (*Lupinus chamissonis*), and therefore, there is a potential for the area to support a low number of individuals of this species. Construction activities would result in the removal of all silver dune lupine shrubs within the 0.25-acre impact area. Depending on the time of year, the removal of larval host plants could result in direct mortality of butterfly eggs, larvae, or pupae that are attached to the plant. Due to the current status of this non-listed species and the fact that project construction may only affect a low number of individuals, impacts would be considered less than significant. To meet the requirements of the project's forthcoming CDP, avoidance

and minimization measures are proposed within Table Q.2-2 that will ensure that all individuals are relocated out of the impact area prior to construction, and that restored areas are enhanced to contain the host plant and promote use by the species.

Mitigation Measure Q5.5-A3 proposes that a worker education program be developed, and a biologist approved by the USFWS be retained, to provide construction personnel specific instruction on general detection and avoidance of sensitive resources during construction activities, including the Morro blue butterfly. Implementation of Mitigation Measure Q5.5-A3 would ensure that adverse impacts to this species and its habitat are minimized during construction activities.

Mitigation Measure Q5.5-A10 proposes that a qualified biologist be retained to inspect host plants within the impact area prior to construction and relocate them into unaffected suitable habitat areas. The measure also proposes that all planting and restoration efforts for the project include the larval host plant within the seed palette to enhance the treatment area's ability to support the butterfly species.

Mitigation Measure Q5.5-A15 proposes habitat-based compensatory mitigation that would ensure that 72 acres of coastal dune scrub and central maritime chaparral are acquired and preserved in perpetuity on the Broderson site, and that plans are prepared and implemented for restoration and long-term management of the preserve. The coastal dune scrub and central maritime chaparral habitats support silver dune lupine and presumably the Morro blue butterfly. Implementation of this measure would fully compensate the loss of occupied habitat and promote the long-term viability of the species.

Mitigation Measure Q5.5-A16 proposes measures for restoring areas within the Broderson site that will be impacted as a result of construction and long-term maintenance of the leachfields, in addition to areas outside of the proposed leachfields that will be unaffected and preserved in perpetuity. Implementation of Mitigation Measure Q5.5-A16 would restore damaged areas and enhance preserve lands to provide functioning live-in habitat for the Morro blue butterfly as well as other sensitive species with the potential to occur in the area.

Long Term Operational Impacts

Potential long-term operational impacts to special status species resulting from the collection system for the Preferred Project would be essentially the same as those analyzed for Proposed Project 4 in the Draft EIR. It is anticipated that once the collection system elements are constructed they will not provide suitable habitat for any special status species. The large majority of the collection system will operate underground, eliminating long-term indirect impacts to wildlife species that may result from noise or lighting, or the placement of aboveground permanent structures that may present a

physical barrier for wildlife. Pump stations have been sited to incorporate setbacks from suitable habitat for plant and wildlife species, and other sensitive resources.

Wastewater facilities are a common feature of urban environments and generally are not considered to pose significant hazards. Because old and leaking septic tanks will be decommissioned and abandoned, the collection system represents a significant positive impact to the biological environment. If not properly constructed, operated, and maintained, there is the potential for breakage and leakage in the pipelines of the collection system, releasing untreated sewage into the environment. This potential impact is addressed in Section 5.7 of the Draft EIR, specifically within Impact 5.7-A.

Treatment Plant Site

Similar to Proposed Project 4 analyzed within the Draft EIR, the treatment plant site for the Preferred Project is proposed within the southeast portions of the Tonini property. Several refinements to the siting and design of the treatment plant site have been adopted for the Preferred Project based on additional geotechnical, biological and cultural resources field studies completed since the Draft EIR was completed. The additional refinements are discussed in detail within Section Q.3, and have been incorporated into a preliminary design for the Preferred Project evaluation and application of the project's forthcoming CDP. Of the additional refinements, the on-site design changes for the wastewater treatment process, appurtenances, and wet weather storage would not result in any impacts to biological resources. However, those resulting in an increase or decrease in the development footprint and treatment plant elements siting could result in impacts to biological resources that were not addressed within the Draft EIR. These refinements include the following:

- an oxidation ditch/BiolacTM treatment process as opposed to facultative ponds, and the construction of three wet weather storage ponds as opposed to one, reducing the total development footprint from approximately 32 acres down to 20 acres;
- an additional approximately 1,000 linear feet of new access road to re-align the existing access road and accommodate vehicle access to the treatment plant site and a clear line-of-sight when entering and exiting at Turri Road;
- an offsite storm drainage outfall located immediately east of the treatment plant site to accommodate excess stormwater runoff not returned to the treatment plant facility, or directed to the sprayfields or leachfields;
- riparian and grassland planting/landscaping to enhance habitat functions and values and overall aesthetics of the site; and
- a 1.5-acre staging area located south of the entrance to the facility from Turri Road.

A description of each refinement and a discussion of the existing conditions at refinement locations are provided below.

Oxidation/Biolac® Treatment Process and Storage Ponds

The treatment process and wet weather storage pond requirements for the Preferred Project are refined from that analyzed for Proposed Project 4 in the Draft EIR. Impacts to biological resources resulting from the treatment process and wet weather storage ponds for the Preferred Project are essentially the same as that which was analyzed for Proposed Project 4, with the exception of the reduction in the overall site plan development footprint. The change from facultative ponds to oxidation/Biolac™ for the treatment process results in a substantial reduction in the amount of area required for development at the treatment plant site. The total acreage of treatment plant site developments is reduced from approximately 32 acres to 20 acres for the Preferred Project. Although the number of wet weather storage ponds would increase from one pond under Proposed Project 4 to three ponds under the Preferred Project, the amount of area required for development would remain essentially the same. The acreage requirements for the Preferred Project's appurtenances would remain essentially the same as well.

The location of the treatment plant site for the Preferred Project is largely contained within the footprint for that which was analyzed for Proposed Project 4 (see Exhibit 3-9 for Proposed Project 4 from the Draft EIR, and Exhibit Q.3-1 and Q.3-2 for the Preferred Project). A detailed description of the existing conditions within those portions of the Tonini property is provided within Section 5.5 and Appendix G of the Draft EIR. Generally, the treatment plant site is proposed within a relatively flat disturbed upland area that is characterized by extensive agriculture (dry farming). The area is largely dominated by non-native herbaceous plants and does not support any natural communities, or waters or wetlands.

Similar that analyzed for Proposed Project 4, with the exception of the offsite storm drainage outfall discussed below, all construction activities and proposed developments will be restricted to upland areas that are setback a minimum of 100 feet from sensitive resources. This includes 100-foot minimum setbacks to all coastal streams, wetlands, and tributary waters to Warden Creek that occur on the Tonini property.

Access Road

Similar to that which had been planned for Proposed Project 4, the existing access road on the Tonini property will be utilized by the Preferred Project for access to the treatment plant site from Turri Road. However, refinements to the access route are required to accommodate vehicle access and allow for a clear line-of-sight when entering and exiting the Tonini property at Turri Road.

Under the Preferred Project, the proposed entrance to the Tonini property from Turri Road has been moved approximately 600 feet north of the existing entrance. This move to the north has resulted in the need for approximately 705 linear feet of new access road diverting from the existing access road in the eastern portions of the property. An addition approximately 332 linear feet of new access road will be required from the existing access road to the treatment plant. The location of the access road is displayed within Exhibit Q.3-2 for the Preferred Project. A detailed description of the existing

conditions within these portions of the Tonini property is provided within Section 5.5 and Appendix G of the Draft EIR. Similar to the treatment plant site, the access road will occur within a relatively flat disturbed upland area that is characterized by extensive agriculture (dry farming). The area is largely dominated by non-native herbaceous plants and does not support any natural communities, or waters or wetlands.

Use of an existing bridge crossing of a coastal stream and tributary water to Warden Creek will be required where the proposed access road converges with the existing access road. It is anticipated that this existing bridge crossing, in addition to another existing bridge crossing located closer to the treatment plant site, will be upgraded to accommodate larger vehicles during project construction and operation.

Offsite Storm Drainage Outfall

Similar to Proposed Project 4, the treatment plant site for the Preferred Project will require a storm drain system that will manage stormwater runoff during operation. The general components of the storm drain system are displayed within Exhibit Q.3-3 for the Preferred Project. This storm drain system is intended to catch stormwater runoff and deliver it back into the treated effluent to be disposed at either the sprayfields or leachfields. The storm drain system also includes an offsite storm drainage outfall to accommodate surface flow from behind the treatment plant. This small outfall is proposed immediately east of the treatment plant site and will discharge runoff into an adjacent drainage feature referred to as drainage T-1 in the Draft EIR. This drainage is a coastal stream and tributary water to Warden Creek that supports wetland conditions and occupied habitat for the California red-legged frog.

Riparian and Grassland Planting/Landscaping

As planned for Proposed Project 4, conceptual landscape plans have been prepared for Preferred Project that include the planting of riparian and grassland vegetation. The conceptual landscape plan is displayed within Exhibit Q.3-6 for the Preferred Project. The plant palette for the conceptual plans includes native grasses, forbs, shrubs, and trees that are prevalent within riparian and annual grassland habitats that occupy the local area. The primary objective of the landscaping is to enhance functions and values of the existing environment as habitat for plant and wildlife species, and improve the overall aesthetics of the site at build-out. Areas targeted for enhancement generally include areas along the eastern boundary of the Tonini property that front Turri Road, embankment areas along existing streams and tributary waters to Warden Creek, and areas along the eastern boundary of the treatment plant site.

Construction Staging Areas

The equipment storage and staging area to be used during construction of the treatment plant site for the Preferred Project includes a 1.5-acre area located in the eastern portions of the Tonini property. This staging area is displayed within Exhibit Q.3-2 for the Preferred Project. Similar to areas proposed for the treatment plant site and access road, the 1.5-acre staging area is proposed within a

relatively flat disturbed upland area characterized by extensive agriculture (dry farming). No impacts to biological resources are anticipated to result from the construction staging area for the Preferred Project treatment plant site.

Short Term Construction Impacts

The treatment plant site for the Preferred Project could result in significant direct and indirect short-term construction impacts to special status species. The following provides a project-specific impact analysis of the short-term construction impacts on special status plant and wildlife species for the treatment plant site for the Preferred Project.

- **Special Status Plant Species**. Impacts to special status plant species resulting from the treatment plant site component of Preferred Project would be essentially the same as those addressed for Proposed Project 4 within the Draft EIR. No special status plant species were determined to have a potential to occur within the area proposed for the treatment plant site; therefore, no impacts will occur and no mitigation measures are required.

- **Special Status Wildlife Species**. Impacts to special status wildlife species resulting from the treatment plant site component of Preferred Project would be essentially the same as those addressed for Proposed Project 4 within the Draft EIR. The Preferred Project could result in significant direct and indirect impacts to the California red-legged frog and indirect impacts to foraging raptors during construction.

  California Red-Legged Frog. A detailed description of this species recovery status, biological requirements, and critical habitat is provided within Section 5-5 and Appendix G of the Draft EIR. The treatment plant site of the Preferred Project could result in direct and indirect impacts to the federally-threatened and California State species of special concern California red-legged frog during the construction phase. Potential impacts to this species are essentially the same as those discussed in the Draft EIR and Appendix G for Proposed Project 4.

  The treatment plant site for the Preferred Project would require construction activities in the vicinity of stream, wetland, and upland habitat that could be used by California red-legged frog for breeding, dispersal, and aestivation. Any impacts resulting in "take" of individual frogs and loss of occupied habitat would be considered significant. Similar to those potential impacts discussed for the collection system, construction activities could result in injury or mortality of individuals as a result of being crushed by earth moving equipment, construction debris, and worker foot traffic. Construction noise and disturbance from instream activities could also resulting displacement of individuals from suitable habitat, including breeding and aestivation sites, as well as degradation of habitat. Improper containment and use of hazardous materials, including fuel or oil, could also result in the injury or mortality of individuals and degradation of habitat. Additionally, the improper handling,

containment, or transport of individuals, or release of individuals into unsuitable habitat could result in injury or mortality. Implementation of Mitigation Measures Q5.5-A1, Q5.5-A3, and Q5.5-A8 provided within Table Q.2-2 would minimize and reduce the level of impacts to the California red-legged frog to a less than significant level. The rationale for the level of significance after implementation of these measures is discussed above within the collection system impact analysis.

As required for all construction activities proposed in the vicinity of areas that could be occupied by California red-legged frog, minimization measures that include site-specific Best Management Practices and a Spill Prevention Plan would also be implemented and would restrict construction activities and contain potential pollutants within safe upland areas that are setback from California red-legged frog habitat. Additionally, as discussed within Impact Q5.5-C and Mitigation Measures Q5.5-C1, Q5.5-C2, and Q5.5-C3, the project will be required to obtain the appropriate permits from the USACE, RWQCB, and CDFG for impacts to waters and wetlands, and riparian-vegetated streambed associated with Los Osos Creek, Warden Creek, and tributaries to Warden Creek. Any impacts to riparian and wetland habitat shall be mitigated for through replacement mitigation at a minimum ratio of 1:1 so that there is no net loss, or at a set ratio as determined through the permitting process. Where the mitigation requirements of separate policy under the CZLUO, or the requirements of the USACE, RWQCB, and CDFG or other agency with jurisdiction over an affected area are different, the more restrictive regulations shall apply.

Raptor Foraging. A detailed discussion of the location and quality of raptor foraging habitat within the affected area, as well as the status and biological requirements of raptors with the potential to forage in the affected area are provided within Section 5.5 and Appendix G of the Draft EIR. The Preferred Project would result in the permanent loss of substantially less land that could be used by foraging raptors than that which would result from Proposed Project 4. Consistent with the findings for Proposed Project 4 in the Draft EIR, impacts to raptor foraging would be considered less than significant due to the relatively small loss of low quality raptor foraging habitat when compared to the abundance of foraging opportunities in the vicinity of the affected areas. Mitigation Measures Q5.5-A11 and Q5.5-A12 will reduce potential impacts to raptors and other bird species during their respective breeding seasons to less than significant.

Long Term Operation Impacts

The treatment plant site for the Preferred Project could result in significant indirect long term operation impacts to special status species. The following provides a project-specific impact analysis

of the long term operation impacts on special status plant and wildlife species for the treatment plant site for the Preferred Project.

- **Special Status Plant Species**. Long-term operation impacts to special status plant species resulting from the treatment plant site component of Preferred Project would be essentially the same as those addressed for Proposed Project 4 within the Draft EIR. No special status plant species were determined to have a potential to occur within the area proposed for the treatment plant site; therefore, no impacts will occur and no mitigation measures are required.

- **Special Status Wildlife Species**. Long-term operation impacts to special status wildlife species resulting from the treatment plant site component of Preferred Project would be essentially the same as those addressed for Proposed Project 4 within the Draft EIR. The Preferred Project could result in significant indirect impacts to the California red-legged frog during operation.

  California Red-Legged Frog. A detailed description of this species recovery status, biological requirements, and critical habitat is provided within Section 5-5 and Appendix G of the Draft EIR. The treatment plant site of the Preferred Project could result in indirect impacts to the California red-legged frog during operation. Potential impacts to this species during operation are essentially the same as those discussed in the Draft EIR and Appendix G for Proposed Project 4.

  Similar to that which had been analyzed for Proposed Project 4, operation of the Preferred Project would result in a number of beneficial impacts to the California red-legged frog. Through the siting of the treatment plant and proposed riparian planting/landscaping on the Tonini property, the Preferred Project is avoiding and enhancing good quality vernal marsh habitat and riparian/riverine areas that are currently occupied by California red-legged frog. The avoidance of these habitat areas represents a set aside of extant habitat that would be conserved and enhanced as a direct result of the project. The vernal marsh and riparian/riverine habitats on the Tonini property will be enhanced from their current state as a result of the land use conversion. The operation of the project and removal of grazing and agricultural activities within and around these habitats will result in an increase in water quality and stream function. Under pre-project conditions, these habitats are exposed to direct disturbance and degradation from agricultural activities (in-stream equipment use, stream course diversion, disruption of natural hydrology, etc) and cattle use (excessive trampling, direct water contact, fecal deposition, grazing, etc.). These adverse uses under pre-project conditions would no longer occur under post-project conditions. The benefits of the project would have immediate and long-term value to the California red-legged frog and other sensitive resources that occur on the Tonini property and into downstream areas discharging into Warden Creek.

Similar to that which had been planned for Proposed Project 4, the treatment plant design for the Preferred Project incorporates lighting elements that would increase nighttime lighting levels in the area when compared to pre-project conditions. As discussed, the treatment plant site is proposed in the vicinity of habitat that has been determined to be occupied by the California red-legged frog. Nighttime lighting that is directed toward suitable habitat areas may inhibit use by frogs, or have an adverse effect on behavior such that it precludes the ability to carry out vital components of their life history. In addition, the creation and operation of the wet weather storage ponds could result in the introduction of exotic species and predators of the California red-legged frog into the area. Exotic species could move into areas occupied by California red-legged frog, thereby competing for resources and potentially displacing individuals or causing mortality. The storage ponds could also result in the introduction and increase in predators such as bullfrogs, wading birds, and fishes potentially resulting in mortality. Lastly, the development and operation of the treatment plant could result in a change in the hydrologic characteristics of the local area due to permanent developments and stormwater runoff. Any impacts resulting in "take" of individual frogs and loss of occupied habitat would be considered significant.

As included within the Preferred Project design, nighttime illumination at the treatment plant site will meet the following requirements of the County's Estero Area Plan: "all lighting fixtures shall be shielded so that neither the lamp nor the related reflector interior surface is visible from adjacent properties. Light hoods shall be dark-colored." No night lighting shall be used unless necessary for active nighttime maintenance activities at the plant, or under emergency conditions. Lighting will therefore be shielded and directed away from California red-legged frog habitat, and nighttime use will be limited to that which will be absolutely necessary.

Mitigation Measure Q5.5-A8 proposes that wet weather storage ponds be maintained and monitored to prevent attracting exotics and predators. As proposed, the treatment plant site incorporates 100-foot minimum setbacks from occupied habitat areas and includes construction of perimeter fencing. The conceptual landscape plans also incorporate the planting of riparian habitat that will not only enhance the functions and values of the area, but will also provide a natural physical separation to buffer habitat from project elements and minimize indirect impacts. When coupled with the consultation requirements within Mitigation Measure Q5.5-A1, and the proposed design features and landscaping, implementation of this Mitigation Measure Q5.5-A8 would reduce long term operation impacts to the California red-legged frog to a less than significant level.

Disposal Sites

Similar to Proposed Project 4 analyzed within the Draft EIR, the disposal of treated effluent will include the use of sprayfields on the Tonini property and leachfields on the Broderson property. The treated effluent pipelines from the treatment facility to the Tonini sprayfields and Broderson leachfields are addressed above under the collection system for the Preferred Project.

The disposal sites for Preferred Project would be the same as that which is proposed for Proposed Project 4 in the Draft EIR, with additional refinements to the methodology of disposal and the size of targeted areas. The additional refinements are discussed in detail within Section Q.3. Of the refinements, the use of existing monitoring wells and details in the operation schedule and monitoring would not result in any impacts to biological resources, and therefore are not discussed further in this section. However, those refinements resulting in an increase in the size and location of areas proposed for disposal could result in impacts to biological resources that were not addressed within the Draft EIR. These refinements include the following:

- the elimination of percolation as a disposal option and expansion of the area proposed for sprayfields on the Tonini property from 175 acres to 248 acres.

A description of this refinement and discussion of the existing conditions at the proposed location is provided below, along with additional detail regarding the leachfields on the Broderson property.

Sprayfields

Similar to Proposed Project 4, the use of sprayfields and evapotranspiration on the Tonini property will be incorporated as a disposal method for the Preferred Project. As discussed in Section Q.3, the sprayfields would not operate during wet weather or at night. The area required for sprayfields under the Preferred Project encompasses all of the 175 acres analyzed for Proposed Project 4, however will require an additional 73 acres as a result of the elimination of percolation as a disposal option on the Tonini property. This results in a total of 248 acres required for the sprayfields disposal option under the Preferred Project. The additional 73 acres of sprayfields include shallow-sloping higher elevation areas in the western and northern portions of the property, and shallow-sloping lower elevation areas in the southwestern portion of the property. The entire 248-acre area is depicted on Exhibit Q.3-2. A detailed description of the existing conditions within the new 73-acre area required for sprayfields is provided in Appendix Q.8. Existing conditions for the remaining 248 acres of sprayfields analyzed for Proposed Project 4 are discussed in Section 5.5 and Appendix G of the Draft EIR. In general, the 248-acre available sprayfields area for the Preferred Project includes both flat and gently rolling upland areas that are characterized by extensive agriculture (dry farming and row crops) and actively grazed non-native grassland. The area is largely dominated by non-native herbaceous plants and does not support any natural communities, or waters or wetlands.

Similar that analyzed for Proposed Project 4, the sprayfields will be restricted to upland areas that are setback a minimum of 100 feet from sensitive resources. This includes 100-foot minimum setbacks from natural communities and native habitat types, significant sensitive plant species populations, and all coastal streams, wetlands, and tributary waters to Warden Creek that occur on the Tonini property. Additional setbacks and changes within the sprayfields area may be required prior to project operation.

The findings, impacts, and mitigation pertaining to special-status plant and wildlife species and the sprayfields are the same as that for Proposed Project 4, with the exception of those pertaining to the non-listed CNPS List 1B.1 plant species Blochman's dudleya (*Dudleya blochmaniae* ssp. *blochmaniae*), and the fully protected and critically endangered Morro Bay kangaroo rat (*Dipodomys heermanni morroensis*). Additional surveys of the sprayfields have been conducted since the preparation of the Draft EIR (See Appendix Q.8). These recent surveys have resulted in a change in the findings, impacts, and mitigation that had been proposed within the Draft EIR for Proposed Project 4. These changes, in addition to the refinements in sprayfields, have been incorporated into the impact discussions below for the Preferred Project.

Leachfields

The location and operation requirements of the leachfields on the Broderson property are the same for the Preferred Project as that which had been analyzed for the Proposed Project 4 in the Draft EIR. The findings, impacts, and mitigation pertaining to special-status plant and wildlife species are also the same as that for Proposed Project 4, with the exception of those pertaining to the listed Morro manzanita, Monterey spineflower (*Chorizanthe pungens* ssp. *pungens*), and Indian Knob mountainbalm (*Eriodictyon altissimum*). Additional botanical surveys of the leachfields have been conducted since the preparation of the Draft EIR (Appendix Q-8). These recent botanical surveys have resulted in a change in the findings, impacts, and mitigation that had been proposed within the Draft EIR for Proposed Project 4. These changes have been incorporated into the impact discussions below for the Preferred Project.

Short Term Construction Impacts

The disposal sites for the Preferred Project could result in significant direct and indirect short-term construction impacts to special status species. The following provides a project-specific impact analysis of the short-term construction impacts on special status plant and wildlife species for the disposal sites element of Preferred Project.

- **Special Status Plant Species**. Consistent with the findings for Proposed Project 4 in the Draft EIR, no special species plant species were determined likely to occur within the area proposed for construction of the sprayfields for the Preferred Project. Therefore, as determined for Proposed Project 4 in the Draft EIR, no impacts are anticipated to occur to any special status plant species as a result of construction of the sprayfields for the Preferred Project.

Also consistent with the findings for Proposed Project 4 in the Draft EIR, thirteen special status plant species and non-vascular lichens were initially determined to have a potential to occur within the area proposed for the leachfields on the Broderson property. Since the preparation of the Draft EIR, there are new survey findings for the Morro manzanita, Monterey spineflower, and Indian Knob mountainbalm that have resulted in a change in the impacts and modification of the mitigation measures proposed for the Preferred Project. The recent survey results, determinations, impacts and proposed mitigation for Morro manzanita, Monterey spineflower, and Indian Knob mountainbalm are discussed in detail below.

With the exception of those discussed below for Morro manzanita, Monterey spineflower, and Indian Knob mountainbalm, potential short term construction impacts to the remaining ten special status plant species and non-vascular lichens associated with the Preferred Project would be the same as those addressed for Proposed Project 4 in the Draft EIR. Because the remaining ten species are non-listed species that have no legal protection under federal and state endangered species laws, and due to the fact that potential impacts to these species would be limited to the removal of 8-acres of potential habitat for leachfields on the Broderson property, potential impacts are considered less than significant. Mitigation Measures Q5.5-A14, Q5.5-A15, and Q5.5-A16 will further reduce potential short term construction impacts to non-listed plant species and non-vascular lichens.

Morro Manzanita, Monterey Spineflower, and Indian Knob Mountainbalm. A detailed description of each of these species' recovery status and biological requirements is provided within Section 5-5 and Appendix G of the Draft EIR. Since the preparation of the Draft EIR, botanical surveys were conducted by the County Department of Public Works in December 2008 and January 2009 that confirmed the absence of the federally-threatened Morro manzanita and the federally- and California State-endangered Indian Knob mountainbalm within the area proposed for the leachfields on the Broderson property. Both of these species are conspicuous perennial evergreen shrubs whose positive identification can be confirmed throughout all portions of the year. Based on the recent negative survey findings, no impacts will occur to either of these two species as a result of the Preferred Project, therefore no mitigation is required.

As addressed in the Draft EIR, there is anecdotal evidence that suggests the federally-threatened Monterey spineflower occurs on the Morro Dunes Ecological Preserve east of the Broderson property, and on the Broderson property itself. Another spineflower, the common narrowleaf spineflower (*Chorizanthe angustifolia*), shares many diagnostic characteristics with the Monterey spineflower, and it is likely that the previous identification had been incorrect, confusing the common species with the federally threatened variety. Despite the anecdotal evidence, historic and known

distribution data for this species indicate that the community of Los Osos is well outside of the known range for the species. As indicated in the Draft EIR, according to the CNDDB there are no known occurrences for the Monterey spineflower within the project study area. Botanical surveys and expert identification are scheduled to occur within the Broderson property during the appropriate blooming season (April to June) to confirm the absence of this species within the Broderson property and conclusively determine if the species known range should be extended south.

Mitigation Measure Q5.5-A13 proposes minimization measures in the unlikely event that this species is found within the area proposed for the leachfields. Prior to construction, seeds will be collected from the impact area and later sown within the unaffected portions of Broderson site that will be preserved in perpetuity. This method is considered feasible for this annual herb. Implementation of mitigation Measure Q5.5-A13 would minimize and reduce potential impacts to the Monterey spineflower to less than significant levels.

- **Special Status Wildlife Species**. Impacts, determinations, and proposed mitigation pertaining to special status wildlife species resulting from the disposal sites for the Preferred Project would be essentially the same as those addressed for Proposed Project 4 within the Draft EIR, with the exception of those pertaining to the Morro Bay kangaroo rat.

There have been new findings since the preparation of the Draft EIR regarding the potential for the Morro Bay kangaroo rat to occur within an area on the Tonini property that is proposed for sprayfields. As discussed below, these findings have resulted in a change in the impact determinations and proposed mitigation for the Preferred Project that is different than that which had been analyzed and proposed for Proposed Project 4 in the Draft EIR.

Morro Bay Kangaroo Rat. A detailed description of this species recovery status, biological requirements, and critical habitat is provided within Section 5.5 and Appendix G of the Draft EIR. As referenced within Appendix Q-8, recent survey efforts headed by Dr. Francis Villablanca in conjunction with the USFWS determined that central and southern portions of the proposed sprayfield area on the Tonini property that support Pismo-Tierra complex and Tierra sandy loam soils may provide suitable conditions for the Morro Bay kangaroo rat. Protocol-level surveys and trapping, as approved by the USFWS and CDFG, are scheduled on these portions of the Tonini property.

As currently designed, a pipeline for the sprayfields area for the Preferred Project will occur within an area identified as potential habitat for the Morro Bay kangaroo rat. Therefore, construction activities associated with the installation of this pipeline could

result in significant impacts to the species. No effects to Morro Bay kangaroo rat are anticipated to occur due to the fact that this species has not been detected within any proposed impact areas to date and is not expected to occur. However, as this species is a California State fully protected and critically endangered species, additional surveys have been mandated and the Preferred Project would be required to avoid any areas occupied by this species at build-out.

Portions of the proposed sprayfield area have been subject to the first year of protocol surveys in 2008 by Dr. Villablanca which resulted in negative findings. The second year of surveys within these areas result will proceed in the spring of 2009. If the second year of surveys also result in negative findings, as expected, this species will be presumed absent from those areas. However, new suitable habitat areas were identified outside of the areas included in the first year of protocol surveys mentioned above, and these new areas will have to be surveyed for their first year beginning in the spring of 2009. If the species is not detected during the first year surveys in 2009, the second year of protocol surveys will be conducted in 2010. If the second year of surveys within the new suitable habitat areas also result in negative findings, this species will be presumed absent from all areas surveyed on the Tonini property.

Due to the fact that the Preferred Project will be constructed over multiple years prior to build-out and operation, there will be adequate time to complete the on-going surveys within the sprayfield area on the Tonini property. As proposed within Mitigation Measure Q5.5-A5, the County shall commit to avoiding any "take" and minimizing all potential adverse effects to the species. Where there was a lack of funding and recent understanding of this species current known range, this measure shall ensure that the County provide funding for on-going research efforts to benefit the species as whole. If at the end of the survey period it is determined that there are areas occupied by the Morro Bay kangaroo rat, the County shall avoid those areas in the Preferred Project design by adjusting the sprayfield boundaries to be entirely contained within areas that are not suitable for the species. This is feasible as there are enough acreages available to modify the sprayfield boundaries while achieving effluent disposal goals. Additional avoidance and minimization measures that include setbacks and exclusionary design elements shall also be implemented to prevent encroachment and potential "take" of individuals. Therefore, implementation of Mitigation Measure Q5.5-A5 would ensure that no "take" of Morro Bay kangaroo rat specimens occurs and that all potential impacts to the species are reduced to a less than significant level.

Long Term Operation Impacts

The disposal sites for the Preferred Project could result in significant direct and indirect long-term construction impacts to special status species. The following provides a project-specific impact

analysis of the long-term construction impacts on special status plant and wildlife species for the disposal sites element of Preferred Project.

Special Status Plant Species. Impacts, determinations, and proposed mitigation pertaining to special status wildlife species resulting from the disposal sites for the Preferred Project would be essentially the same as those addressed for Proposed Project 4 within the Draft EIR.

Consistent with the findings for Proposed Project 4 in Draft EIR, no federally- or State-listed plant species were determined likely to occur within the area proposed for construction of the sprayfields for the Preferred Project. Therefore, no impacts will occur to any federally- or State-listed plant species as a result of the sprayfields for the Preferred Project.

Since the preparation of the Draft EIR, there are new survey findings for Blochman's dudleya that have resulted in a change in the impacts and modification of the mitigation measures proposed for the Preferred Project. The recent survey results, determinations, impacts and adjusted project design pertaining to Blochman's dudleya are discussed in detail below.

Blochman's dudleya. Blochman's dudleya is a CNPS List 1B.1 plant. It is not protected under the FESA or CESA, however, it is rare and hence given a sensitivity ranking by the CNPS. Additional information pertaining to this species status, distribution, and biological requirements are provided within Appendix Q-8. General biological surveys conducted by the County Department of Public Works and MBA in January, February, and March of 2009 after the preparation of the Draft EIR concluded that portions of the areas proposed for sprayfields support concentrations of Blochman's dudleya, a non-listed CNPS List 1B.1 plant. The surveys identified all significant concentrations within the area, most of which are restricted to isolated rock outcroups and minor terrace escarpments located in the northern portions of the Tonini property that are supported by Diablo and Cibo clays. Based on the survey findings, the total population on the Tonini property is estimated to include approximately 1,000 individuals, with the largest concentration estimated at approximately 200 individuals. As a result of the presence of this species, the areas proposed for sprayfields have been adjusted to exclude the extreme northern portions of the property adjacent to Turri Road that support the highest concentrations of individuals. With the incorporation of this avoidance within the project design, impacts to this species resulting from the sprayfields for the Preferred Project are anticipated to be less than significant and no mitigation is required.

- **Special Status Wildlife Species**. Long-term operation impacts to special status wildlife species resulting from the disposal sites for the Preferred Project would be essentially the same as those addressed for Proposed Project 4 within the Draft EIR. Consistent with those findings

in the Draft EIR, the disposal sites for the Preferred Project could result in significant direct and indirect impacts to the Morro shoulderband snail and Morro blue butterfly during operation. Long-term maintenance required for the leachfields on the Broderson property could result in direct impacts to these species. Temporary ground disturbance that will include ripping of the area every 5 to 10 years to maintain leachfield function could result in the displacement or mortality of individuals and the temporary loss of occupied habitat. Any "take" of Morro shoulderband snails would be considered significant. Mitigation Measures Q5.5-A1, Q5.5-A3, Q5.5-A4, Q5.5-A15, and Q5.5-A16 would minimize project effects and incidental "take", and reduce impacts to the Morro shoulderband snail to a less than significant level. Although impacts to the Morro blue butterfly are considered less than significant, Mitigation Measure Q5.5-A10 includes avoidance and minimization measures to reduce impacts to individuals during disturbance activities.

There have been new findings since the preparation of the Draft EIR resulting from the general biological surveys conducted within the additional sprayfields area in January, February, and March 2009 by MBA and the County Department of Public Works (Appendix Q-8). In addition to the Blochman's dudleya discussed above for special status plant species, the surveys detected the presence of a single den that could be actively utilized by the American badger (*Taxidea taxus*), a California State species of special concern. Additional information regarding this species biological requirements is provided within Appendix G of the Draft EIR. Due to the fact that the sprayfield operation for the Preferred Project is not anticipated to result in the removal of any den structures or significant degradation of foraging habitat, impacts to this California State species of special concern are considered less than significant and no mitigation is required.

As discussed within the short term impact analysis, there have been recent survey findings pertaining to the Morro Bay kangaroot rat that have resulted in a change in the sprayfields impact analysis for the species. Further discussion is provided below.

> ***Morro Bay Kangaroo Rat.*** A detailed description of this species recovery status, biological requirements, and critical habitat is provided within Section 5.5 and Appendix G of the Draft EIR. As currently designed, portions of the sprayfields for the Preferred Project are proposed within areas that have been determined to provide suitable conditions for the species. Although the potential for the species to occur is very low and no effects are anticipated, operation of the sprayfields could result in significant direct and indirect impacts to this California Sate fully protected and critically endangered species. As discussed above within the short term impact analysis, there are on-going survey efforts that will continue through 2010 and to

confirm the absence of this species within the sprayfields area prior to build-out and operation.

As proposed within Mitigation Measure Q5.5-A5, the County shall commit to avoiding any "take" and minimizing all potential adverse effects to the species. The measure shall ensure that the County provides funding for on-going research efforts to benefit the species as whole. If at the end of the survey period it is determined that there are areas occupied by the Morro Bay kangaroo rat, the County shall avoid those areas in the Preferred Project design by adjusting the sprayfield boundaries to be entirely contained within areas that are not suitable for the species. Additional avoidance and minimization measures that include setbacks and exclusionary design elements shall also be implemented to prevent encroachment and potential "take" of individuals. Therefore, implementation of Mitigation Measure Q5.5-A5 would ensure that no "take" of Morro Bay kangaroo rat specimens occurs and that all potential impacts to the species are reduced to a less than significant level.

Combined Project Effects

Similar to that which had been analyzed for Proposed Project 4 in the Draft EIR, the construction and operation of the proposed components for the collection system, treatment plant site, and disposal sites for the Preferred Project could result in measurable combined effects on special status species and their habitat. Based on a review of the additions and modifications for the Preferred Project, there are no new elements proposed that would result in a significant change or contribution to the combined effects analyzed for Proposed Project 4.

In many regards, construction of the Preferred Project would result in a reduction of combined adverse effects to special status species due to the change in methodology for the crossing of Los Osos and Warden Creeks. Whereas open-cut trenching had been proposed for Proposed Project 4, the Preferred Project would minimize any in-stream activity through the incorporation of bridge suspension methodologies for pipeline installation. This would result in substantially less disturbance to special status species and their habitat. For all other pipelines crossing creeks and special status species habitat, combined effects would be reduced due to the fact that open-cut trenching would be restricted to periods when creeks are dry, and all affected areas would be restored to pre-project conditions immediately after construction.

As proposed within Mitigation measure Q5.5-A15, the Preferred Project would contribute a total of 72 acres of undeveloped coastal dune scrub and central maritime chaparral habitat on the Broderson property, all of which is known to be occupied and suitable for special status species. The primary intent of the measure would be to mitigate the loss of habitat and potential incidental "take" of the Morro shoulderband snail as a result of the collection system and disposal site impacts. The acquired 72 acres will be enhanced to increase overall function and value under post-project conditions, and preserved in perpetuity to be monitored and managed in the long-term. The acquisition of this habitat

represents a significant combined effect that is beneficial to both common and special status species in the long-term, most importantly, species such as the Morro Bay kangaroo rat, Morro shoulderband snail, Morro manzanita, and Morro blue butterfly. The preserve lands would establish a habitat connection between the Morro Dunes Ecological Reserve to the immediate east and the Montana De Oro State Park to the south, thereby providing for a large core habitat block in the area that would provide for the long-term sustainability of habitat and viability of special status species.

Aside from siting the treatment plant facility with setbacks and within areas of low biological value, the Preferred Project also includes the use of oxidation/Biolac™ technologies in the treatment process. This process substantially reduces the overall size of the wastewater facility developments and resulting acreage losses. Additionally, the design promotes the consolidation of development in order to maximize the surface area-to-perimeter ratio, such that developments are planned interior to any open space that abuts project boundaries and existing resources. As a result of the consolidation of treatment plant site developments, occupied habitat for the California red-legged frog will be avoided, enhanced with riparian vegetation, and conserved in the long-term as a result of the Preferred Project.

Similar to the findings for Proposed Project 4, the combined effects on special status species resulting from all components of the Preferred Project would be reduced to less than significant levels through the implementation of Mitigation Measures Q5.5-A1, Q5.5-A3 through Q5.5-A6, Q5.5-A8 through Q5.5-A16, and Q5.5-C1 through Q5.5-C3.

Cumulative Impact Analysis

As considered in the cumulative impacts analysis for Proposed Project 4 in the Draft EIR, the Los Osos Valley Road Palisades Storm Drain project represents the only project with a considerable effect on special status species that is relevant to the Preferred Project. The Los Osos Valley Road Palisades Storm Drain project involves the installation of a storm drain beneath Los Osos Valley Road from Bush Street to Palisades Avenue, and was determined to have a potential significant effect on the Morro shoulderband snail through the removal of suitable habitat and potential take of individuals. Similar to the Los Osos Valley Road Palisades Storm Drain project, the collection system and leachfield component of the Preferred Project were also determined to have potential significant effects on the Morro shoulderband snail through the removal of habitat and potential take of individuals. Based on a review of the additions and modifications for the Preferred Project, there are no new elements proposed that would result in a significant change or contribution to the cumulative effects on Morro shoulderband snail that had been analyzed for Proposed Project 4. When considered with the Los Osos Valley Road Palisades Storm Drain project impacts, impacts to this species as a result of the collection system and leachfields components for Preferred Project, including refinements, are cumulatively considerable, and would be significant. Implementation of Mitigation Measures Q5.5-A1, Q5.5-A3, Q5.5-A4, Q5.5-A15, and Q5.5-A16 would reduce cumulative impacts to the Morro shoulderband snail to less than significant.

Mitigation Measures

Project-Specific

Q5.5-A1 The proposed project may affect federally-listed species (including Morro shoulderband snail and California red-legged frog) and as such, the EPA shall initiate formal consultation with USFWS pursuant to Section 7(a)(2) of the federal ESA. All mandatory terms and conditions, and reasonable and prudent measures pertaining to incidental take prescribed within the Biological Opinion and Nationwide Permit for the project the shall be fulfilled and implemented.

Q5.5-A2 No longer required.

Q5.5-A3 A worker education program and clearly defined operations procedures shall be prepared prior to project construction. The worker education program and operations procedures shall be implemented by the County throughout the duration of construction. A biologist approved by the USFWS shall be retained to provide construction personnel specific instruction on general detection and avoidance of sensitive resources during construction. The worker education program shall include: descriptions and pictures of listed species; the provisions of the Endangered Species Act; those specific measures being implemented to conserve listed species as they relate to the project; and the project boundaries within which the work will occur.

Q5.5-A4 Prior to construction, a biologist authorized by the USWFS shall conduct intensive surveys to identify and relocate all Morro shoulderband snails within the proposed impact area on the Broderson and Mid-town properties, and all suitable habitat areas within the proposed collection system. Only USFWS authorized biologists shall survey for, monitor, handle, or relocate Morro shoulderband snails.

A biologist authorized by the USFWS shall be retained to monitor all construction activities that will take place within suitable habitat for the Morro shoulderband snail. Monitoring activities shall be required daily until completion of initial disturbance at each construction area. The monitoring biologist shall be granted full authority to stop work at his or her discretion. The monitoring biologist shall be responsible for implementing avoidance and minimization measures during construction. The monitoring biologist shall stop work if project-related activities occur outside the demarcated boundaries of the construction footprint. The monitoring biologist shall stop work if any Morro shoulderband snails are detected within the proposed construction footprint, and shall implement measures to relocate them to suitable habitat out of harms way prior to construction activities resuming. If no suitable habitat opportunities are available in the immediate vicinity of the construction footprint, salvaged and relocated specimens may also be transported to an offsite location approved by the USFWS.

The County shall provide a written report to USFWS within 90 days following the completion of the proposed project. The report must document the number of Morro shoulderband snails removed and relocated from project areas, the locations of all Morro shoulderband snail relocations, and the number of Morro shoulderband snails known to be killed or injured. The report shall contain a brief discussion of any problems encountered in implementing minimization measures, results of biological surveys, observations, and any other pertinent information such as the acreages affected and restored, or undergoing restoration, of each habitat type.

Q5.5-A5 The County shall provide funding for on-going recovery activities for the Morro Bay kangaroo rat conducted by California Polytechnic State University San Luis Obispo and the USFWS (through recovery permit holder Dr. Francis Villablanca) to ensure avoidance of the species during project construction and operation. Recovery activities on the Tonini property shall include only protocol-level surveys and trapping according methodologies approved by the USFWS and CDFG within all suitable habitat areas considered for sprayfields for the Preferred Project. If the species is determined to be present, the County shall adjust the sprayfield boundaries to avoid the habitat in accordance with a "no take agreement".

Prior to construction, the County shall formalize a "no take agreement" with the CDFG for the Morro Bay kangaroo rat. The "no take agreement" shall detail measures to avoid the species through sprayfield redesign, exclusion fencing, and other measures as necessary dependant upon the results of the protocol-level surveys and trapping conducted on the Tonini property. The "no take agreement' shall also outline a monitoring and contingency plan for the Broderson leachfield, as on-going maintenance of the leachfield may create suitable Morro Bay kangaroo rat habitat.

Q5.5-A6 All construction activities across Los Osos Creek shall be restricted to low-flow periods of June 15 through November 1. If the channel is dry, construction can occur as early as June 1. Restricting construction activities to this work window will minimize impacts to migrating adult and smolt steelhead, if present.

Prior to construction, the County shall retain a qualified biological monitor to be on site during all stream crossing activities associate with Los Osos Creek. The biological monitor will be authorized to halt construction if impacts to steelhead are evident.

Prior to construction, a spill prevention plan for potentially hazardous materials shall be prepared and implemented. The plan shall include the proper handling and storage of all potentially hazardous materials, as well as the proper procedures for

cleaning up and reporting of any spills. If necessary, containment berms shall be constructed to prevent spilled materials from reaching the creek channel.

Prior to construction, silt fencing shall be installed in all areas where construction occurs within 100 feet of known or potential steelhead habitat. All silt fencing, erosion control and landscaping specifications shall only include natural-fiber, biodegradable products for meshes and coir rolls to minimize impacts to species and the environment during use.

During construction, spoil sites shall be restricted to upland locations so they do not drain directly into Los Osos Creek. If a spoil site drains into a water body, catch basins shall be constructed to intercept sediment before it reaches the channels. If required, spoil sites shall be graded to reduce the potential for erosion.

During construction, equipment and materials shall be stored at least 50 feet from Los Osos Creek. No debris such as trash and spoils shall be deposited within 100 feet of waterways. Staging and storage areas for equipment, materials, fuels, lubricants and solvents, shall be restricted to locations outside of the stream channel and banks. Stationary equipment such as motors, pumps, generators, compressors and welders, located within or adjacent to the stream shall be positioned over drip pans at all times. Any equipment or vehicles driven and/or operated within or adjacent to the stream shall be checked and maintained daily to prevent leaks of materials that if introduced to water could be deleterious to aquatic life. Vehicles shall be moved away from the stream prior to refueling and lubrication.

During construction, proper and timely maintenance for all vehicles and equipment used shall be provided to reduce the potential for mechanical breakdowns leading to a spill of materials into or around the creek. Maintenance and fueling shall be restricted to safe areas away from Los Osos Creek that meet the criteria set forth in the spill prevention plan.

Immediately following construction, all construction work areas shall be restored to pre-construction channel conditions, including streambed composition, compaction, and gradient. If required, channel banks shall be returned to original grade slope and appropriate bank stabilization techniques shall be implemented to reduce the potential for erosion and sedimentation. A plan describing pre-project conditions and restoration methods shall be prepared prior to construction.

Immediately following construction, all appropriate construction work areas will be revegetated with an appropriate assemblage of native upland vegetation, and if necessary, riparian vegetation, suitable for the area. A plan describing pre-project

conditions, restoration and monitoring success criteria shall be prepared prior to construction.

Q5.5-A7 No longer required.

Q5.5-A8 Prior to project construction, the County shall retain a qualified biologist to conduct pre-construction surveys for the California red-legged frog according to protocol approved by the USFWS. Surveys shall be conducted within all areas that at are determined to contain suitable habitat for this species and that occur within 100 feet of proposed construction, or at a distance determined through USFWS consultation.

To avoid potential timing conflicts with the California red-legged frog breeding period, construction activities in the vicinity of California red-legged frog habitat shall be completed between April 1 and November 1. This measure shall apply to construction activities on the Tonini property, at the Turri Road bridge and Warden Creek crossing, at the Los Osos Valley Road bridge and Los Osos Creek crossing, and all other areas determined during pre-construction surveys to contain suitable habitat for the species, including areas that occur within 100 feet of proposed construction, or at a distance determined through USFWS consultation.

Prior to construction, the County shall retain a USFWS-approved biologist to permanently remove any individuals of exotic species, such as bullfrogs, crayfish, and centrarchid fishes from the project area, to the maximum extent possible. The USFWS-approved biologist will be responsible for ensuring his or her activities are in compliance with the California Fish and Game Code.

Prior to construction, the County shall retain a USFWS–approved biologist to conduct a training session for all construction personnel. At a minimum, the training shall include a description of the California red-legged frog and its habitat, the importance of the California red-legged frog and its habitat, the general measures that are being implemented to conserve the California red-legged frog as they relate to the project, and the boundaries within which the project may be accomplished.

Prior to construction, the County shall retain a USFWS-approved biologist responsible for monitoring construction activities. Ground disturbance shall not be authorized to begin until written approval is received from the USFWS that the biologist is qualified to conduct the work. Only USFWS-approved biologists will participate in activities associated with the capture, handling, and monitoring of California red-legged frog. To ensure that diseases are not conveyed between work sites by the USFWS-approved biologist, the fieldwork code of practice developed by the Declining Amphibian Populations Task Force shall be followed at all times. A

USFWS-approved biologist shall be present at the active work sites until such time that the initial survey for California red-legged frogs, instruction of workers, and (upland) habitat disturbance have been completed. After this time, the contractor or permittee shall designate a qualified person to monitor on-site compliance with all minimization measures. The USFWS-approved biologist shall ensure that this individual receives appropriate training as to the identification of frogs, potential hazards to the species, inappropriate and allowable work activities, and appropriate contacts for immediate, professional biological support.

During work activities, all trash that may attract predators shall be properly contained, removed from the work site and disposed of regularly. Following construction, all trash and construction debris shall be removed from work areas.

All fueling and maintenance of vehicles and other equipment and staging areas shall occur a minimum of 100 feet from all open water, stream, wetland, and riparian habitat. The permittee shall ensure that contamination of habitat does not occur during such operations. Prior to the onset of work, the EPA shall ensure that the permittee has prepared a plan to allow a prompt and effective response to any accidental spills.

Wet weather storage ponds shall be maintained as to not attract bullfrogs. This will include allowing the ponds to go dry during the summer to disrupt any breeding activity by bullfrogs. The County shall monitor wet weather storage ponds for bullfrog activity.

Streams and tributaries to Warden Creek on the Tonini property shall be restored to provide improved habitat for the California red-legged frog. Drainages currently devoid of riparian vegetation shall be revegetated with native riparian canopy and emergent species to provide additional shade, cover, and breeding habitat. Current practices of removing vegetation within and adjacent to the existing streams and tributary waters to Warden Creek on the Tonini property shall cease.

Q5.5-A9 The proposed project shall avoid Monarch butterfly winter roost habitats where feasible. If the proposed project will impact potential winter roost habitat, a qualified biologist with expertise in positively identifying the Monarch butterfly and winter roosting behavior shall conduct preconstruction surveys within all suitable habitat that occurs within the proposed impact area during the months of October through February. All potential roost sites that have a potential to be impacted as a result of construction activities shall be fenced and avoided. No construction activities shall be permitted in the vicinity (within 500 feet) of potential roost sites during the winter roosting months.

Q5.5-A10 Prior to construction activities on the Broderson and Mid-town properties, a qualified biologist shall be retained to identify and demarcate all host silver dune lupine (Lupinus chamissonis) shrubs that occur within the impact area. The qualified biologist shall inspect each host lupine for the presence of any Morro blue butterfly eggs, larvae, or pupae. In an effort to avoid mortality of butterfly eggs, larvae, or pupae prior to the onset of adult emergence, any host lupine specimens determined to contain eggs, larvae, or pupae shall be considered for relocation outside of the impact area and within suitable coastal dune scrub habitat on either the Broderson or Mid-town properties.

Any planting and restoration efforts proposed as mitigation for the project shall include silver dune lupine within the plant palette to encourage the species to continue to use the area.

Q5.5-A11 If any construction activities are proposed during the general bird breeding season (February 1 through August 31), a pre-construction survey shall be conducted by a qualified biologist within 10 calendar days prior to the onset of construction activities to identify any active non-raptor bird nests within 250 feet of the proposed impact area. If an active nest is identified during the pre-construction survey, a minimum no-disturbance buffer of 250 feet shall be delineated around active nests until the breeding season has ended or until a qualified biologist has determined that the birds have fledged and are no longer reliant upon the nest or parental care for survival. For sensitive species, including Allen's hummingbird, yellow warbler, and loggerhead shrike, the distance and placement of the construction avoidance shall be a minimum of 250 feet unless otherwise determined through consultation with the CDFG.

Q5.5-A12 If any construction activities are proposed during the general raptor breeding season (February 1 through August 31), a pre-construction survey shall be conducted by a qualified biologist within 10 calendar days prior to the onset of construction activities to identify any active raptor nests within 500 feet of the proposed impact area. If an active raptor nest is identified during the pre-construction survey, a minimum no-disturbance buffer of 500 feet shall be delineated around active nests until the breeding season has ended or until a qualified biologist has determined that the birds have fledged and are no longer reliant upon the nest or parental care for survival.

Pursuant to Section 2050 of the CFG Code, the CDFG will not permit any impacts to the California state fully protected raptor white-tailed kite. If an active nest or breeding territory is detected during preconstruction surveys for nesting birds, no construction activities shall take place within 500 feet of the location of the active nest. The area shall be completely avoided and fenced to allow for an adequate

buffer from construction activities. A qualified biologist shall be retained to monitor the activity of the nest during the breeding season until it is determined that the nest is no longer active (i.e. all young have fledged the nest and no individual kites are dependent on the nest).

Q5.5-A13 Prior to project construction and within all areas on the Broderson property that contain suitable habitat for the Monterey spineflower, a qualified biologist shall be retained to conduct botanical surveys to Monterey spineflower presence. Surveys shall be conducted during the local blooming period for the species, which typically occurs between April and June, and according to recommendations and guidelines prepared by the USFWS, CDFG, and CNPS. If positively identified, all specimens shall be clearly demarcated with flagging, and avoided to the maximum extent feasible during construction. A qualified monitoring biologist shall be retained to monitor all construction activities in the immediate vicinity (within 25 feet) of any flagged specimens that will not be removed as a result of construction activities. If specimens are positively identified within the leachfield impact area, the seeds of those specimens shall be collected and sown within suitable habitat located outside of the leachfield impact area and within the Broderson property.

The County shall provide a written report to USFWS within 90 days following the completion of the project. The report shall document the number of Monterey spineflower specimens removed from project areas, the locations of areas seeded with Monterey spineflower seeds, and the number of Monterey spineflower specimens found to be dead or damaged as a result of construction activities. The report shall contain a brief discussion of any problems encountered in implementing minimization measures, results of biological surveys, observations, and any other pertinent information such as the acreages affected and restored, or undergoing restoration, of each habitat type.

Q5.5-A14 The proposed project shall minimize to the maximum extent feasible any potential impacts to non-listed plant and lichen species designated as sensitive by the CNPS, including Blochman leafy daisy, saint's daisy, San Luis Obispo wallflower, curly-leafed monardella, dune almond, spiraled old man's beard, Los Osos black and white lichen, long-fringed parmotrema, and splitting yarn lichen. The County shall retain a qualified biologist to conduct botanical surveys within suitable habitat on the Broderson and Mid-town properties to identify all sensitive plant and lichen species within and in the immediate vicinity of the impact areas. Surveys shall be conducted during the local blooming periods for each species, where applicable, and according to recommendations and guidelines prepared by the USFWS, CDFG, and CNPS. All specimens shall be clearly demarcated with flagging and avoided to the maximum extent feasible during construction.

Q5.5-A15 Prior to project construction, land containing coastal dune scrub and maritime chaparral habitat shall be acquired on the Broderson property that is sufficient to compensate the loss of habitat for the Morro shoulderband snail and other sensitive species on the Broderson and Mid-town properties, and sensitive areas in the collection system. Seventy-three acres of the Broderson property not used for the proposed leachfields would be preserved in perpetuity and granted to an appropriate agency or conservation organization with the responsibility of management and monitoring the preserve as determined during agreements with USFWS, CDFG, and the County. A long-term management and monitoring program shall be prepared. The County shall be responsible for the allocation of appropriate funding for the long-term management and monitoring of the mitigation land.

Q5.5-A16 Immediately following construction of the leachfields within the Broderson property, the disturbance area and all existing and unaffected coastal sage scrub (or coastal dune scrub) within the property shall be restored, enhanced, and maintained to promote the land's function and value as suitable habitat for sensitive plants and wildlife that are local or endemic to the area. Restoration and enhancement efforts, including at minimum, seeding with native plant species and eradication of exotic non-native plant species, shall be repeated immediately following all long-term maintenance activities resulting in temporary disturbance of the leachfields. This shall be applied to the ripping and backfilling activities that will be required every 5 to 10 years to maintain the leachfield function.

Restoration activities shall be conducted according to a Restoration Plan or similar plan specifically prepared for the effort and approved by USFWS, CDFG, and/or the CNPS. The Restoration Plan shall require at minimum, a description of the prescribed restoration and methodology, feasibility and likelihood for success, and a schedule and program for maintenance, monitoring and reporting the progress of the restoration effort. All restoration activities shall be conducted by qualified personnel with expertise in restoration ecology and knowledge of sensitive plant and wildlife species in the area.

The restoration effort shall include the implementation of a seed collection program to gather seeds to be used during restoration from native sources. The seed collection program shall be prepared for approval by the County prior to project construction activities. The seed collection program shall include the use of native plants that will be removed as a result of the project, including but not limited to: mock heather (*Ericameria ericoides*), silver dune lupine (*Lupinus chamissonis*), California sagebrush (*Artemisia californica*), black sage (*Salvia mellifera*), bush monkey flower (*Mimulus aurantiacus*), and deerweed (*Lotus scoparius*). Collection shall take place

by qualified personnel with expertise in botanical resources during the appropriate time of year for seed production and harvesting.

Unless otherwise determined during consultation with the USFWS, the restoration effort shall be monitored against permanence standards for a minimum of five years, or until the first ripping event for the restored areas within the leachfield area, after which the maintenance and monitoring of the restored areas shall be covered within specific management directives contained within a Resource Management Plan. The performance standards shall include, at minimum, at least 80 percent native plant species coverage and no greater than 1 percent coverage of invasive non-native plant species (e.g. pampass grass, veldt grass). At minimum, the restored areas must demonstrate a continued ability to support the functions and values necessary to sustain the Morro shoulderband snail. Quarterly monitoring shall be conducted for the first two years of the restoration effort, with annual monitoring efforts to follow for the remaining three years. All monitoring and maintenance of restoration areas shall be conducted by qualified personnel with expertise in botanical resources and knowledge of sensitive species that occur in the local area, including the Morro shoulderband snail, Morro Bay kangaroo rat, and Morro blue butterfly.

The County shall provide annual reports to the USFWS documenting the results of all restoration and monitoring activities. Annual reports shall be provided to the USFWS for a minimum of five years or until it is determined by the USFWS that requisite performance criteria have been met. These reports should include any noted changes in the plant community structure or composition or surface hydrology down-slope of the Broderson leachfields, in addition to other requirements as determined through USFWS consultation and stipulated within permit conditions.

All on-going and long-term restoration, enhancement, and maintenance of preserve lands on the Broderson property shall be implemented according to a Resource Management Plan or similar mitigation and monitoring plan that may be developed during consultation with the USFWS. The Resource Management Plan shall include management directives that are specific to the preserve and the resources present. The Resource Management Plan shall include measures for the removal and eradication of invasive exotic plant species known to occur in the local area, including veldt grass and pampas grass. Activities that involve the removal of invasive species should not result in unnecessary trampling or removal of native species, and techniques for invasive removal shall be least damaging to native species.

Cumulative

Mitigation Measures Q5.5-A1, Q5.5-A3, Q5.5-A4, Q5.5-A15, and Q5.5-A16.

Level of Significance After Mitigation

Project-Specific

Less than significant.

Cumulative

Less than significant.

Riparian Habitat

Impact Q5.5-B:	**The project would have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service.**

Short-term Construction Impacts

Similar to that which had been analyzed for Proposed Project 4 in the Draft EIR, construction of the collection system for the Preferred Project would result in temporary impacts to riparian habitat associated with Los Osos Creek, Warden Creek, and tributary waters to Warden Creek referred to as drainages W-3, W-4, W-5, W-5b in the Draft EIR. Temporary impacts to riparian habitat would be considered significant. As a standard condition within Mitigation Measures Q5.5-C3, the Preferred Project would be required to obtain a Streambed Alteration Agreement from the CDFG for all impacts to riparian-vegetated streambed pursuant to Section 1600 et seq of the California Fish and Game Code. If required, the agreement will include measures to compensate the temporary loss of riparian habitat. Therefore, implementation of Mitigation Measure Q5.5-C3 would reduce impacts to riparian habitat to less than significant levels.

Similar to that which had been determined for the Proposed Project 4 in the Draft EIR, no impacts to riparian habitat are anticipated to result from the construction of the treatment plant site or the disposal site, with the exception of the beneficial effects resulting from the change in land use and treatment plant site landscape plans for the Preferred Project. The landscape plans will include the creation and enhancement of riparian habitat within unaffected areas on the Tonini property, thereby contributing to compensation efforts to mitigate the temporary loss of riparian habitat. The coastal streams on the Tonini property also contain good quality functioning vernal marsh habitat that will be avoided and enhanced by the change in land use (i.e. removal of agricultural practices and grazing).

Also similar to that which had been determined for the Proposed Project 4 in the Draft EIR, construction of the Preferred Project would not result in impacts to any other sensitive natural communities. The central maritime chaparral that occurs within the Broderson property will be completely avoided in the leachfield design for the Preferred Project. In addition, unlike previous iterations of the project, the Preferred Project has incorporated a design that minimizes impacts to coastal dune scrub habitat, particularly on the Mid-town property. As discussed within Impact Q5.5-A, the coastal dune scrub on the Mid-town property is recovering from the previous grading and clearing that took place during construction of the previous iteration of the project in 2005. The

Preferred Project would only result in the loss of 0.25 acre of the costal dune scrub habitat on the Mid-town property. The remaining portions of the property would be unaffected by the Preferred Project and conserved in their current state of recovery. As discussed within Impact Q5.5-A, the Preferred Project includes measures to acquire and preserve in perpetuity 72 acres of coastal dune scrub and central maritime chaparral on the Broderson property. The preservation of this habitat represents a beneficial effect to natural communities in the local area.

Long-term Operational Impacts

Similar to that which had been determined for the Proposed Project 4 in the Draft EIR, no significant impacts to riparian habitat or sensitive natural communities are anticipated to result from the long-term operation of the Preferred Project. The Preferred Project design incorporates adequate setbacks from riparian habitat and sensitive natural communities, and design features that minimize potential indirect impacts. No additional mitigation is required.

Combined Project Effects

Similar to that which had been analyzed for Proposed Project 4 in the Draft EIR, the construction and operation of the collection system and treatment plant site for the Preferred Project could result in a measurable combined effect on riparian habitat. The collection system would result in temporary construction impacts to riparian habitat through the installation of components within and adjacent to Los Osos Creek, Warden Creek, and tributaries to Warden Creek located along Los Osos Valley Road and within the Tonini property. Impacts would be temporary and would not result in a substantial removal, alteration, or degradation of riparian habitat. Based on a review of the additions and modifications for the Preferred Project, there are no new elements proposed that would result in a significant contribution to the combined effects analyzed for Proposed Project 4.

Similar to that discussed under Impact Q5.5-A, the proposed bridge suspension for installation of pipelines across Los Osos and Warden Creeks would result in a substantial reduction of temporary impacts to riparian habitat. Temporary impacts that would require permitting with the regulatory agencies would be fully mitigated through the permit process. As discussed above for the treatment plant site, the change in land use on the Tonini property will result in the removal of agricultural practices and grazing, thereby enhancing the function and quality of riparian habitat on-site and downstream within Warden Creek. In addition, the Preferred Project design incorporates landscape plans for the installation and planting of riparian vegetation within the coastal streams on the Tonini property, thereby creating riparian habitat and enhancing functions and values within the targeted areas and downstream.

As discussed within Impact Q5.5-A, the permanent loss of other upland natural communities, namely coastal dune scrub as a result of the collection system, would be fully mitigated through the implementation of Mitigation Measure Q5.5-A15. This measure proposes the acquisition of 72 acres of native coastal dune scrub and central maritime chaparral that is known to be occupied by special

status species. In addition, Mitigation Measure Q5.5-A16 would provide for the short- and long-term restoration, enhancement, monitoring and management of the areas preserved in perpetuity.

The combined effects on riparian habitats and sensitive natural communities resulting from all components of the Preferred Project would be reduced to less than significant levels through the implementation of Mitigation Measures Q5.5-A6, Q5.5-A8, Q5.5-A15, Q5.5-A16, and Q5.5-C3.

Cumulative Impact Analysis

Similar to that which had been analyzed for Proposed Project 4 in the Draft EIR, of the projects considered for the cumulative impacts analysis, none were determined to have considerable effect on riparian habitat that is relevant to the Preferred Project. When considered against the cumulative setting, the cumulative impacts to riparian habitat would be limited to that which may result from the Preferred Project. Therefore, no mitigation is required beyond that which is proposed for project-specific impacts.

Mitigation Measures

Project-Specific

See Mitigation Measures Q5.5-C1 through Q5.5-C3 below for Impact Q5.5-C. See also Mitigation Measures Q5.5-A6, Q5.5-A8, Q5.5-A15, and Q5.5-A16.

Cumulative

No mitigation measures are required.

Level of Significance After Mitigation

Project-Specific

Less than significant.

Cumulative

Less than significant.

Federally Protected Wetlands

Impact Q5.5-C:	**The project would have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.**

Short-term Construction Impacts

Similar to that which had been analyzed for Proposed Project 4 in the Draft EIR, construction of the collection system and the effluent pipelines for the sprayfields for the Preferred Project would result in the temporary fill of federally-regulated waters and wetlands. These impacts would be considered significant.

As required for all project elements, runoff during construction will be maintained through the implementation of project specific stormwater runoff Best Management Practices (BMPs), in accordance with objectives outlined in the County of San Luis Obispo Storm Water Management Plan. Adherence to the Storm Water Management Plan would ensure that water quality standards and waste discharge requirements are not violated and the project is in compliance with National Pollutant Discharge Elimination System and Central Coast Regional Water Quality Control Board requirements. A Storm Water Pollution Prevention Plan shall also be prepared in accordance with the guidelines and requirements provided by the State Water Resources Control Board. The project would also adhere to the requirements outlined in the project specific Sedimentation and Erosion Control Plan.

Similar to that which had been determined for the Proposed Project 4 in the Draft EIR, no impacts to federally-regulated waters and wetlands are anticipated to result from the construction of the disposal sites for the Preferred Project. No additional mitigation is required. As proposed in the siting and design for Proposed Project 4, the Preferred Project incorporates maximum avoidance of jurisdictional waters, wetlands, and riparian vegetated streambed, including those that exist along the Los Osos Valley Road right-of-way. Based on a review of the refinements for the Preferred Project, although not eliminated, construction-related temporary impacts would be reduced as a result in the change in methodology for conveyance pipeline installation across Los Osos and Warden Creeks. As opposed to the open-cut trenching methodologies for Proposed Project 4, the Preferred Project proposes to suspend and install pipelines on the existing bridge structures that cross Los Osos and Warden Creek. A detailed discussion of the bridge suspension methodologies is provided within Impact Q5.5-A. As a result in the change in methodologies, the Preferred Project would result in substantially less disturbance to federally-regulated waters and wetlands. The installation of pipelines within the Los Osos Valley Road right-of-way will be restricted to upland areas within the road margin and setback from federally-regulated waters and wetlands. Where impacts are unavoidable, installation would involve open-cut methodologies during the dry time of the year. Construction and operation of the treatment plant site for the Preferred Project would require the improvements to existing drainage crossings to vehicular access. Due to the size and flow capacity of the drainages that will be crossed, it is anticipated that only minor improvements for bridge-widening and reinforcement would be required.

As a standard condition within Mitigation Measure Q5.5-C1, the Preferred Project would be required to obtain a Nationwide or Individual Permit from the USACE for all impacts to federally-regulated waters and wetlands pursuant to Section 404 of the Clean Water Act. If required, the permit will include measures to fully compensate the temporary loss of waters and wetlands. Therefore, implementation of Mitigation Measure Q5.5-C1 would reduce impacts to federally-regulated waters and wetlands to less than significant levels. Mitigation Measure Q5.5-C2 includes standard conditions to obtain a Water Quality Certificate from the Central Coast Regional Water Quality Control Board. Compliance with these and other standard conditions during construction would

prevent indirect runoff-related impacts to all federally-regulated and State-regulated waters and wetlands. State-regulated waters and wetlands protected under the CZLUO are addressed under Impact Q5.5-E.

Long-term Operational Impacts

Similar to that which had been determined for the Proposed Project 4 in the Draft EIR, no significant impacts to federally-regulated waters and wetlands are anticipated to result from the operation of the Preferred Project. The Preferred Project design incorporates adequate setbacks of permanent aboveground structures from all federally-regulated waters and wetlands, and design features that minimize the potential for indirect impacts. The treatment plant site for the Preferred Project includes the development of a storm drain system to manage local stormwater flows during operation. The system will include a collection channel that will collect stormwater flows running off and discharging from areas immediately upslope from the treatment plant site and the existing access road for the property. The collection channel will divert sheet flows around the treatment plant site and discharge them into an offsite storm drainage outfall located immediately east of the site. Flows entering the offsite storm drainage outfall would discharge into an existing natural drainage feature (T-1) which was determined to contain federally- and State-regulated waters and wetlands.

Natural flows discharging into drainage T-1 under pre-project conditions will be largely conserved through the storm drain system under post-project conditions. The Preferred Project would not result in a significant increase or decrease of flows entering drainage T-l. Water entering the storm drain system would be derived from precipitation and sheet flows running off the natural land, and therefore would not contain any pollutants or impairments that would result in adverse effects to water quality. Therefore, indirect impacts resulting from the operation of treatment plant site and storm drain system are anticipated to be less than significant, and no mitigation is required beyond that which is proposed within Mitigation Measure Q5.5-C2.

The Preferred Project would result in significant beneficial impacts to federally- and State-regulated waters and wetlands during operation. Aside from providing obvious benefits to groundwater and surface drainage resources as a result of septic tank decommissioning, among other beneficial effects, the change in land use on the Tonini property represents a significant beneficial impact to federally- and State-regulated waters and wetlands that occur throughout the property as tributaries to Warden Creek. As discussed above within Impact Q5.5-A, under current conditions, the existing agricultural activities and intensive grazing have resulted in adverse physical disturbances and impairments to the tributaries to Warden Creek on the Tonini property. Perhaps most significant include those resulting from in-stream equipment use, and cattle trampling, grazing, and fecal deposition. The Preferred Project would eliminate these adverse land uses and enhance the functions and values of the existing tributaries to Warden Creek on the Tonini property and the resources they support, thereby resulting in a significant beneficial impact.

Combined Project Effects

Similar to that which had been analyzed for Proposed Project 4 in the Draft EIR, the construction and operation of the collection system and treatment plant site for the Preferred Project could result in a measurable combined effect on federally- and State-regulated waters and wetlands. The collection system would result in temporary construction impacts to waters and wetlands through the installation of components within and adjacent to Los Osos Creek, Warden Creek, and tributaries to Warden Creek located along Los Osos Valley Road and within the Tonini property. Impacts would be temporary and would not result in a substantial removal, alteration, or degradation of riparian habitat. Based on a review of the additions and modifications for the Preferred Project, there are no new elements proposed that would result in a significant contribution to the combined effects analyzed for Proposed Project 4.

Similar to that discussed under Impact Q5.5-A, the proposed bridge suspension for installation of pipelines across Los Osos and Warden Creeks would result in a substantial reduction of temporary impacts to waters and wetlands. Temporary impacts that would require permitting with the regulatory agencies would be fully mitigated through the permit process. The change in land use on the Tonini property will result in the removal of agricultural practices and grazing, thereby improving water quality and stream function within the property and downstream into Warden Creek.

The combined effects on federally- and State-regulated waters and wetlands resulting from all components of the Preferred Project would be reduced to less than significant levels through the implementation of Mitigation Measures Q5.5-C1 through Q5.5-C3, in addition to the construction avoidance and minimization measures proposed within Mitigation Measures Q5.5-A6 and Q5.5-A8.

Cumulative Impact Analysis

Similar to that which had been analyzed for Proposed Project 4 in the Draft EIR, of the projects considered for the cumulative impacts analysis, none were determined to have considerable effect on federally- and State-regulated waters and wetlands that is relevant to the Preferred Project. When considered against the cumulative setting, the cumulative impacts would be limited to that which may result from the Preferred Project. Therefore, no mitigation is required beyond that which is proposed for project-specific impacts.

Mitigation Measures

Project-Specific

Q5.5-C1 Prior to construction, an application for a Nationwide or Individual Permit shall be submitted by the County to the United States Army Corps of Engineers (USACE) pursuant to Section 404 of the Clean Water Act (CWA). If required, the County shall obtain a Nationwide or Individual Permit from the USACE for any impacts, temporary and permanent, to any areas within the proposed project which are determined to qualify as jurisdictional waters and wetlands of the U.S. The County

shall implement all required conditions and special considerations stipulated within the Nationwide or Individual Permit during all relevant phases of development.

Q5.5-C2 Prior to construction, an application for a Water Quality Certification shall be submitted by the County to the Central Coast RWQCB pursuant to Section 401 of the CWA and State Porter-Cologne Water Quality Act. If required, a Water Quality Certification shall be obtained from the Central Coast RWQCB for any impacts, temporary and permanent, to any areas within the proposed project which are determined to qualify as jurisdictional waters of the State. The County shall implement all required conditions and special considerations stipulated within the Water Quality Certification during all relevant phases of development.

Q5.5-C3 Prior to construction, a Notification of Lake or Streambed Alteration shall be submitted by the County to the CDFG pursuant to CFG Code Section 1602. If required, a Streambed Alteration Agreement shall be obtained from the CDFG for any impacts, temporary and permanent, to any areas within the proposed project which are determined to qualify as jurisdictional streambed or riparian habitat. The County shall implement all required conditions and special considerations stipulated within the Streambed Alteration Agreement during all relevant phases of development.

Cumulative

No mitigation measures are required.

Level of Significance After Mitigation

Project-Specific

Less than significant.

Cumulative

Less than significant.

Wildlife Corridors and Nursery Sites

Impact Q5.5-D: **The project would interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of wildlife nursery sites.**

Short-term Construction Impacts

Similar to that which had been analyzed for Proposed Project 4 in the Draft EIR, construction of the collection system and the pipelines for the sprayfields for the Preferred Project would result in temporary impacts to linear habitat and drainage features that may function to facilitate wildlife movement for both common and special status species.

As addressed for Proposed Project 4 in the Draft EIR and discussed within Impact Q5.5-A for the Preferred Project, the portion of Los Osos Creek that is proposed for pipeline crossing represents a significant corridor for southern steelhead potentially migrating to and from spawning sites located upstream. As discussed within Impact Q5.5-A, impacts associated with the installation of pipelines across Los Osos Creek for the Preferred Project will be temporary and would not result in any permanent developments or fish barriers. If conducted during times of the year when steelhead are present, constructed and installed without prudence, or left un-restored after installation, the temporary impacts to steelhead migratory habitat within Los Osos Creek would be significant. Implementation of Mitigation Measures Q5.5-A3 and Q5.5-A6 provided within Table Q.2-2 would minimize and reduce temporary impacts to Los Osos Creek and steelhead to less than significant levels. Implementation of standard BMPs during construction in accordance with objectives outlined in the County of San Luis Obispo Storm Water Management Plan, as well as implementation of Mitigation Measures Q5.5-C1 through Q5.5-C3 would further reduce impacts.

As addressed for Proposed Project 4 in the Draft EIR and discussed within Impact Q5.5-A for the Preferred Project, the installation of pipelines will occur within coastal streams that contain suitable and occupied habitat for California red-legged frog. These areas represent significant corridors that provide dispersal opportunities and access to and from aquatic breeding sites. Impacts associated with the installation of pipelines will be temporary and would not result in any permanent developments within any areas that are suitable or occupied by California red-legged frog. If conducted during times of the year when California red-legged frog are present, constructed and installed without prudence, or left un-restored after installation, the temporary impacts to dispersal habitat and corridors for this species would be significant. Implementation of Mitigation Measures Q5.5-A1, Q5.5-A3, and Q5.5-A8 provided within Table Q.2-2 would minimize and reduce temporary impacts to the California red-legged frog dispersal habitat and corridors to a less than significant level. Implementation of standard BMPs during construction in accordance with objectives outlined in the County of San Luis Obispo Storm Water Management Plan, as well as implementation of Mitigation Measures Q5.5-C1 through Q5.5-C3 would further reduce impacts.

Similar to that which had been analyzed for Proposed Project 4 in the Draft EIR, no portions of the proposed treatment plant or disposal sites for the Preferred Project occur within any habitat that functions as a potential wildlife corridor or nursery site. Therefore, no impacts to wildlife corridors and nursery sites would result from the construction of the Preferred Project's treatment plant or disposal sites.

Long-term Operational Impacts

Similar to that which had been analyzed for Proposed Project 4 in the Draft EIR, the long-term operation of the collection system and disposal sites for the Preferred Project would not result in any impacts to wildlife corridors and nursery sites. Collection and conveyance pipelines would be buried underground and areas affected during construction will be restored to pre-project conditions.

Potential long-term indirect impacts to areas used for California red-legged frog dispersal and movement to and from aquatic breeding sites could result from the Preferred Project's treatment plant site on the Tonini property. As discussed within Impact Q5.5-A, the siting of treatment plant site developments for the Preferred Project incorporates minimum 100-foot setbacks from dispersal and corridor areas that are suitable and occupied by the California red-legged frog. These setbacks would reduce potential indirect impacts from the operation of the treatment plant site, including those related to noise, lighting, and anthropogenic-related activities. Additionally, the Preferred Project design incorporates design features to require that all lighting fixtures at the treatment plant site are properly shielded and directed away from sensitive areas in order to reduce and minimize potential adverse affects resulting from nighttime lighting. The Preferred Project also includes the implementation of a landscape plan that would enhance the functions and values of California red-legged frog habitat within the property and provide natural features to block and minimize potential indirect impacts from the treatment plant site. As discussed within Impact Q5.5-C, pre-project flows entering drainage T-1 would be conserved by the storm drain system for the Preferred Project's treatment plant site, thereby ensuring that there are no major disruptions in the local hydrology regime that contributes to California red-legged frog habitat.

Implementation of Mitigation Measure Q5.5-A8 would ensure that areas occupied by California red-legged frog are protected from the introduction of exotic species and predators. When coupled with the consultation requirements within Mitigation Measure Q5.5-A1, and the proposed design features and landscaping, implementation of this measure would reduce long-term operation impacts to California red-legged frog corridors and access to and from aquatic breeding sites to a less than significant level.

Combined Project Effects

Similar to that which had been analyzed for Proposed Project 4 in the Draft EIR, the construction and operation of the collection system and treatment plant site for the Preferred Project could result in a measurable combined effect on wildlife corridors and nursery sites. The collection system would result in temporary construction impacts to coastal streams and linear habitat used in migration and dispersal to and from nursery sites by the southern steelhead and California red-legged frog. Impacts would result from the installation of components within and adjacent to Los Osos Creek, Warden Creek, and tributaries to Warden Creek located along Los Osos Valley Road and within the Tonini property. Impacts would be temporary and would not result in a substantial removal, alteration, or degradation of habitat. Based on a review of the additions and modifications for the Preferred Project, there are no new elements proposed that would result in a significant contribution to the combined effects analyzed for Proposed Project 4. The combined effects resulting from all components of the Preferred Project would be reduced to a less than significant level through the implementation of Mitigation Measures Q5.5-A1, Q5.5-A6, Q5.5-A8, and Q5.5-C1 through Q5.5-C3.

Cumulative Impact Analysis

Similar to that which had been analyzed for Proposed Project 4 in the Draft EIR, of the projects considered for the cumulative impacts analysis, none were determined to have considerable effect on wildlife corridors and nursery sites that is relevant to the Preferred Project. When considered against the cumulative setting, the cumulative impacts would be limited to that which may result from the Preferred Project. Therefore, no mitigation is required beyond that which is proposed for project-specific impacts.

Mitigation Measures

Project-Specific

See mitigation measures Q5.5-A1, Q5.5-A3, Q5.5-A6 and Q5.5-A8. See also mitigation measures Q5.5-C1 through Q5.5-C3.

Cumulative

No mitigation measures are required.

Level of Significance After Mitigation

Project-Specific

Less than significant.

Cumulative

Less than significant.

Local Policies or Ordinances Protecting Biological Resources

Q5.5-E:	**The project would conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.**

Short-term Construction Impacts

Similar to that which had been analyzed for Proposed Project 4 in the Draft EIR, installation of collection and conveyance pipelines for the Preferred Project would result in temporary and permanent construction impacts to areas identified as Sensitive Resources Areas (SRA), and coastal stream, wetland, and riparian vegetation Environmentally Sensitive Habitat Areas (ESHA) protected under the CZLUO. Essentially all of the SRA and ESHA to be impacted correspond to coastal stream, wetland, and riparian vegetation resources that have been addressed above within Impact Q5.5-A, Impact Q5.5-B and Impact Q5.5-C, and also for Proposed Project 4 within the Draft EIR. Based on a review of the additions and modifications for the Preferred Project, although not eliminated, construction impacts would be largely temporary and reduced as a result of a change in pipeline installation methodologies and incorporation of setbacks from SRA and ESHA. Similar the findings for Proposed Project 4 in the Draft EIR, without mitigation, these temporary impacts would result in conflicts with local policies and ordinances pertaining to biological resources.

As opposed to the open-cut trenching methodologies for Proposed Project 4, the Preferred Project proposes to suspend and install pipelines on the existing bridge structures that cross Los Osos and Warden Creeks. As discussed within Impact Q5.5-A, Impact Q5.5-B and Impact Q5.5-C, these methodologies would result in substantially less disturbance to coastal stream, wetland, and riparian vegetation contained within Los Osos and Warden Creeks. As discussed within Impact Q5.5-C, the installation of pipelines within the Los Osos Valley Road right-of-way will be restricted to upland areas within the road margin and will be setback from coastal streams, and areas supporting wetland conditions and riparian vegetation. Where unavoidable and at existing culverts, installation of these pipelines would involve open-cut methodologies during the dry time of the year, with affected areas restored to pre-project conditions immediately following installation. A short pipeline and series of distribution lines all contained within the Tonini property will convey treated effluent to the sprayfields. These pipelines will cross coastal stream ESHA at five locations on the Tonini property. Installation of these pipelines would also involve open-cut methodologies during the dry time of the year, with affected areas restored to pre-project conditions immediately following installation.

Construction of the Mid-town pump station would result in the loss of 0.25 acres of coastal dune scrub habitat that is potentially occupied by special status species. This 0.25-acre area could be considered terrestrial habitat ESHA protected under the CZLUO. The development of the Mid-town pump station has been sited and designed to minimize disruption of this habitat.

Construction and operation of the treatment plant site for the Preferred Project would require improvements to two existing drainage crossings to provide vehicular and equipment access. The two drainages to be crossed are coastal stream ESHA and tributaries to Warden Creek. Due to the size and flow capacity of the drainages that will be crossed, it is anticipated that only minor improvements for bridge-widening and reinforcement would be required. Aside from these improvements, no additional impacts to SRA or ESHA would occur as a result of the construction of the treatment plant site for the Preferred Project.

Construction and operation of the leachfields would result in the loss of 8 acres of coastal dune scrub habitat that is potentially occupied by special status species. This 8-acre area could be considered terrestrial habitat ESHA protected under the CZLUO. The development of the leachfields have been sited and designed to minimize disruption of this habitat.

Implementation of Mitigation Measures Q5.5-A1, Q5.5-A3, Q5.5-A4, Q5.5-A6, Q5.5-A8, Q5.5-A9, Q5.5-A10, Q5.5-A13, Q5.5-A14, Q5.5-A15, Q5.5-A16, and Q5.5-C1 through Q5.5-C3 would reduce impacts to SRA, and terrestrial habitat, coastal stream, wetland, and riparian vegetation less than significant levels, and ensure consistency of the Preferred Project with the CZLUO.

Long-term Operational Impacts

The treatment plant site for the Preferred Project incorporates a storm drainage system and offsite outfall that would result in the discharge of stormwater into a coastal stream ESHA. As discussed

within Impact Q5.5-C, natural pre-project flows would be conserved by the storm drain system and ensure that there are no major disruptions in the local hydrology regime that contributes to the coastal stream. The Preferred Project would not result in a significant increase or decrease of flows entering the coastal stream. Water entering the storm drain system would be derived from precipitation and sheet flows running off the natural land, and therefore would not contain any pollutants or impairments that would result in adverse effects to water quality. The indirect impacts to coastal stream ESHA resulting from the operation of treatment plant site and storm drain system are anticipated to be less than significant, and no mitigation is required beyond that which is proposed within Mitigation Measure Q5.5-C2.

As discussed within the impacts above, the removal of agricultural practices and grazing on the Tonini property would result in significant beneficial effects to ESHA both on-site and downstream. The change in land use would benefit the coastal stream ESHA and tributaries to Warden Creek on the Tonini property by improving surface drainage water quality, eliminating in-stream trampling and agricultural equipment use, eliminating habitat destruction and degradation, and enhancing the overall function and value of the streams and habitat they support.

As discussed within Impact Q5.5-A, the leachfields will require maintenance every 5 to 10 years that will entail ripping and backfilling the 8-acre area. This 8-acre area could be considered terrestrial habitat ESHA protected under the CZLUO. The loss of this habitat would be fully mitigated through on-site in-kind compensatory mitigation. In addition, the area would be restored with native vegetation consistent with CZLUO policies.

Combined Project Effects

Similar to that which had been analyzed for Proposed Project 4 in the Draft EIR, the construction and operation of the proposed components for the collection system and leachfields of Proposed Project 4 could result in a measurable combined effect on resources protected under local policies and ordinances. Based on a review of the additions and modifications for the Preferred Project, there are no new elements proposed that would result in a significant contribution to the combined effects analyzed for Proposed Project 4.

The Preferred Project has incorporated the goals and development standards identified in the CZLUO for siting and design that ensure avoidance and minimization of impacts to SRA and ESHA in the short- and long-term. The majority of the combined effects on SRA and ESHA will be temporary in nature as a result of the installation of bride-suspended or belowground pipelines. As required, pump station and treatment plant siting for the Preferred Project incorporates adequate setbacks from sensitive resource areas and design features that minimize potential indirect impacts, and enhance the surrounding environment.

Implementation of Mitigation Measures Q5.5-A1, Q5.5-A3, Q5.5-A4, Q5.5-A6, Q5.5-A8, Q5.5-A9, Q5.5-A10, Q5.5-A13, Q5.5-A14, Q5.5-A15, Q5.5-A16, and Q5.5-C1 through Q5.5-C3 would reduce

combined impacts to SRA, and terrestrial habitat, coastal stream, wetland, and riparian vegetation less than significant levels, and ensure consistency of the Preferred Project with the CZLUO.

Cumulative Impact Analysis

Similar to that which had been analyzed for Proposed Project 4 in the Draft EIR, of the projects considered for the cumulative impacts analysis, none were determined to have considerable effect on local policies or ordinances protecting biological resources that is relevant to the Preferred Project. When considered against the cumulative setting, the cumulative impacts would be limited to that which may result from the Preferred Project. Therefore, no mitigation is required beyond that which is proposed for project-specific impacts.

Mitigation Measures

Project-Specific

Mitigation Measures Q5.5-A1, Q5.5-A3, Q5.5-A4, Q5.5-A6, Q5.5-A8, Q5.5-A9, Q5.5-A10, Q5.5-A13, Q5.5-A14, Q5.5-A15, and Q5.5-A16. See also mitigation measures Q5.5-C1 through Q5.5-C3.

Cumulative

No mitigation measures are required.

Level of Significance After Mitigation

Project-Specific

Less than significant. Project is consistent with applicable local policies and ordinances.

Cumulative

Less than significant.

Conservation Plans

5.5-F:	**The project would not conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.**

Project-Specific Impact Analysis

No impact.

Similar to that which had been determined for Proposed Project 4 in the Draft EIR, the Preferred Project would not conflict with the provisions of any adopted Habitat Conservation Plan, Natural Community Conservation Plan, or any other approved local, regional, or state habitat conservation plan. The Preferred Project occurs within the boundaries of the Draft Los Osos Habitat Conservation Plan. This plan has not been approved or implemented to date.

Implementation of the Preferred Project would result in the acquisition of 72 acres of mitigation lands on the Broderson property. These mitigation lands in addition to those lands on the Tonini property that will be avoided and conserved could contribute to the future assembly of a preserve system for

any forthcoming adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

Cumulative Impact Analysis

No impact.

Mitigation Measures

Project-Specific

No mitigation is required.

Cumulative

No mitigation is required.

Level of Significance After Mitigation

Project-Specific

No Impact.

Cumulative

No impact.

Q.5.6 - Cultural Resources

The following impact evaluation is based on the environmental setting, regulatory setting, and thresholds of significance discussions provided for the proposed projects in Draft EIR Section 5.6, Cultural Resources, and in Appendix H-1, Expanded Cultural Resources Analysis. These previous discussions are not repeated in the following evaluation. The evaluation is a comparative analysis between the Preferred Project and Proposed Project 4. Additional archaeological surveys were conducted by Far Western Anthropological Research Group, Inc, in March 2009 to identify the potential for additional cultural resources in the sprayfields at the Tonini site (See Appendix Q8). These surveys were necessary a part of the additional sprayfield acreage discussed in the Preferred Project description (Appendix Q3). A letter report on the results of the survey and subsurface trenching associated with the Los Osos Valley Road and Turri Road intersection, identified as an area with a high sensitivity for buried archaeological resources within Proposed Project 4 (Exhibit 5.6-8 of the Draft EIR) was examined through five, 20 feet long, 3 feet wide, and 1.8 meters deep trenches.

Historic Resource

Q5.6-A: **The project would not cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5.**

Project Specific Impact Analysis

This same wastewater gravity collection system design discussed in the Draft EIR has been adopted for the Preferred Project, with additional refinements that meet the conditions of the Coastal Development Permit issued for the previous iteration of the project, as well as the new engineering demands in delivering wastewater out to the Tonini site.

Minor changes with the collection system occurred between the release of the Draft EIR and preparation of this document. These changes with the collection system are generally refinements and additional engineering information that was not available during the Draft EIR preparation. The additional refinements are discussed in detail within Section Q3 (see Exhibit Q3-2) and include the following:

- A change in location of the Mid-town pump station from the southeast corner to the southwest corner of the Mid-town site;
- A sewage gravity collection line, pocket pump, and a force main along Palisades Avenue to collect sewage and convey back to the Mid-town Pump Station along Los Osos Valley Road;
- The addition of the Solano pump station and force main along Solano Street and Skyline Drive;
- A connection to an existing standby power station for the Baywood and West Paso pump stations located near the corner of 8th Street and El Moro Street;
- A connection to a new standby power station for the Mountain View pump station located at the nearby LOCSD South Bay well site;

- An update to the on-site design of the nine submersible pump stations, including pump and valve vault locations; water, gas and electrical connections; and above ground standby power stations and electrical panels or transformers.

Collection System

The Preferred Project, like Project 4 assumes that the collection system's pipelines will be constructed underground and within the existing right-of-way for streets, thereby having no effect on adjacent architectural resources.

The collection system for the Preferred Project includes septic tank abandonment and installation of a network of sewer collection pipelines and force main lines, nine pump stations (Mid-town, six duplex, two triplex), thirteen pocket pump stations, two standby power buildings, and a wastewater conveyance pipeline to the treatment facility.

Pumps associated with the collection system, including grinder pumps and pump stations, will be constructed with a design/build alternative. Locations for all the pumps have been identified, but could vary with the design/build method. All of these facilities will be placed in underground vaults, ranging in size from 10 to 12-foot in diameter and buried at depths of 10 to 20 feet below the existing ground surface.

The proposed project also assumes that the connections from the collection system pipelines to the source properties (residences, businesses, etc.) will be underground and connect to existing plumbing, thereby having no impact on architectural resources. Any disturbance to vegetation or landscaping that may contribute to the significance of a historic property will be temporary and restored to its pre-construction appearance and according to the Secretary of the Interior's Standards for repair, restoration, rehabilitation, and reconstruction.

As discussed in Section Q3, the wastewater gravity collection system within the Urban Reserve Line evaluated in the Draft EIR was originally designed for the previous iteration of the project that was approved by the California Coastal Commission (CCC) and issued a Coastal Development Permit (CDP).

The collection system for Preferred Project would be the same as that which is proposed for Proposed Project 4 in the Draft EIR, with the addition of the new refinements listed above. Of the additional refinements, the on-site design changes for pump stations and standby power facilities would not result in any impacts to any buildings, sites, or objects that meet the criteria to be considered historical resources under CEQA; therefore, the Preferred Project will have no impact on historic architectural features. These refinements are expanded upon in the following discussion.

Sewer Collection Pipelines and Force Main Lines

Similar to that analyzed for Proposed Project 4 in the Draft EIR, the sewer collection pipelines and force main lines for the Preferred Project will be contained within disturbed and developed portions of surface street right-of-ways throughout the community of Los Osos. The network of sewer collection pipelines and force main lines is displayed on Exhibit Q3-1. The Preferred Project incorporates refinements to the sewer collection pipelines and force main line layout that include the installation of an additional sewer collection line along Palisades Road north of Los Osos Valley Road, the installation of a force main along Palisades Road north of Los Osos Valley Road, the installation of a force main along Los Osos Valley Road running west from Palisades Road to the Mid-town pump station, and the installation of a force main from the Solano pump station south along Solano Street and east along Skyline Drive. Additionally, lateral lines will run from the sewer collection pipelines to each property lines being served by the collection system. It is expected that the majority of the sewer collection pipeline, force main line, and lateral line installation would occur within disturbed and developed portions of surface street right-of-ways. The technical study related to historic architectural resources (Appendix H-3 of the Draft EIR) found no buildings, sites, or objects in the collection system that meet the criteria to be considered historical resources under CEQA; therefore, the proposed project will have no impact.

Pocket Pump Stations

The Preferred Project includes thirteen unnamed pocket pump stations required within individual low-elevation locations of the collection system. This is one more pocket pump than associated with Proposed Project 4. These pocket pump station locations are displayed on Exhibit Q3-1 and labeled with the letter "P". All pocket pump stations will occur in disturbed and developed areas contained primarily within surface street right-of-ways. The refinements call out the need for an additional pocket pump station located at the northern terminus of Palisades Avenue. The pocket pump station development will require the additional force main along Palisades Avenue north of Los Osos Valley road that was addressed above under the sewer collection pipelines and force main lines discussion. The new pocket pump station will be contained within disturbed and developed portions of Palisades Avenue and the pocket pump station would be below ground and would not have any impact of any historic architectural resources.

Pump Stations

The Preferred Project includes a total of nine pump stations referred to as the Mid-town, Solano, Lupine, West Paso, Baywood, East Ysabel, East Paso, Mountain View, and Sunny Oaks pump stations. These pump stations are displayed on Exhibit Q3-1 and are referred to as either pump stations with (PSS) or without (PS) on-site standby power buildings. It should be noted that all pump stations would occur within a variety of disturbed and developed areas. The 0.03-acre Baywood pump station and 0.03-acre Mountain View pump station will be entirely contained within paved asphalt portions of El Morro Avenue and Mountain View Drive.

Of the nine pump stations, only a single pump station, the Solano pump station, was not addressed in the Draft EIR under Proposed Project 4. This pump station is addressed below. Additionally, the change in location and size of the Mid-town pump station was not addressed in the Draft EIR. The change in location of the Mid-town pump station is also addressed below.

***Solano Pump Station*:** The Solano pump station will occur within an approximately 0.07-acre area located on the east side of Solano Street, immediately south of the eastern terminus of Butte Drive adjacent to the Sea Pines Golf Resort in western Los Osos. The pump station development will require the additional force mains along Solano Street and Skyline Drive that were addressed above under the sewer collection pipelines and force main lines discussion. The 0.07-acre area is contained within a flat disturbed lot that is currently being used for storage, presumably by the Sea Pines Golf Resort. No buildings, sites, or objects at the Solano pump station that meet the criteria to be considered historical resources under CEQA are present; therefore, the Preferred Project will have no impact any historic architectural resources.

***Mid-town Pump Station*:** The location of the Mid-town pump station has been changed from the location identified in the Draft EIR due to the hydraulic characteristics and requirements of the proposed collection system. The new proposed location encompasses a 0.25-acre area (rather than 0.1 acre) near the southwest corner of the Mid-town property (Exhibit Q3-1). As discussed in the Draft EIR, the Mid-town pump station is proposed within land that had been cleared in 2005 for the previously approved iteration of the project. The historic architecture -related impacts associated with the new location are essentially the same as those associated with the previous location and analyzed for Proposed Project 4.

Treatment Plant Site

The technical study related to historic architectural resources found no buildings, sites, or objects at the treatment plant site that meet the criteria to be considered historical resources under CEQA under Proposed Project 4. There was no change in the Preferred Project and therefore, the Preferred Project would have no impact proposed project will have no significant impact to any historic architectural resources.

Disposal Sites

The technical study related to historic architectural resources found no buildings, sites, or objects at the disposal sites that meet the criteria to be considered historical resources under CEQA; therefore, the proposed project will have no impact.

Combined Project Effects

The proposed project will have a less than significant impact on historical resources.

Cumulative Impact Analysis

As defined by CEQA, cumulative impacts refer to two or more individual affects which, when considered together, compound or increase other environmental impacts. There are no cumulative impact differences between Proposed Project 4 and the Preferred Project.

Project Specific

Mitigation Measures

No mitigation measures are necessary for either Proposed Project 4 or the Preferred Project.

Level of Significance After Mitigation

Less than significant for either Proposed Project 4 or the Preferred Project.

Cumulative

Mitigation Measures

No mitigation measures are necessary for either Proposed Project 4 or the Preferred Project.

Level of Significance After Mitigation

Less than significant for either Proposed Project 4 or the Preferred Project.

Archaeological Resources

Q5.6-B:	**The project would cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5.**

Project Specific Impact Analysis

The collection system in Los Osos for both Project 4 and the Preferred Project has the potential to impact many known, eligible archaeological sites if the design plan differs from the 2005 plan. However, the collection system plans do not vary substantially from the 2005 plan and therefore, there is little potential for impact to significant archaeological resources within the collection system. The raw wastewater and treated effluent lines from the Mid-town pump station to the treatment plant and sprayfields at Tonini would not impact any archaeological resources under the Preferred Project plans. The placement of the pipelines on the south side of Los Osos Valley Road and in the shoulder of the road in many locations to avoid other resources would result in a substantial reduction in impacts to archaeological resources. The raw wastewater and treated effluent pipelines along Los Osos Valley Road associated with Project 4 would encounter four potentially significant deposits: SLO-2569, SLO-4, SLO-462, and SLO-1512. Recorded sites that would not be adversely affected based on prior evaluation as non-contributing include SLO-1212, SLO-1795, and SLO-2007. A portion of Los Osos Valley Road from Los Osos Creek eastward to the Cemetery parcel is of high sensitivity for buried archaeological sites that might also be affected by trenching. With the placement of the pipelines on the south side of Los Osos Valley Road for the Preferred Project, no known significant deposits would be impacted. Project 4 would also would have potential effects on two prehistoric archaeological sites (SLO-2571 and SLO-2573) at the treatment plant site at Tonini

and the sprayfields proposed for the Tonini parcel would affect one additional prehistoric site (SLO-2572) and one historic-era site (SLO-2574H). There is a moderate to high potential for buried archaeological deposits on a portion of the sprayfields. The Preferred Project has been designed to avoid all of the archaeological sites on the property with designed buffer of 100 feet around the boundaries of all of the known sites.

Collection System

The collection system within the community of Los Osos extends across areas of high archaeological sensitivity where trenching would have a significant impact, primarily on the dense midden deposits rimming the bay. This impact would remain unchanged between Project 4 and the Preferred Project. Based on a review of Exhibits 5.6-4 and 5.6-8 of the Draft EIR, the addition of the Solano pump station and Palisades pocket pump and their associated collection lines fall outside of any sensitive areas for archaeology or high potential for buried archaeological resources.

The gravity collection systems allow some flexibility in the placement of the laterals across private property. In areas of high archaeological sensitivity (e.g., within site boundaries or in the vicinity of known human burials) it may be possible to bore beneath the deposit for placement of the lateral. There are potential significant impacts the archaeological resources for both Proposed Project 4 and the Preferred Project.

The raw wastewater and treated effluent pipelines along Los Osos Valley Road to the Tonini parcel associated with Proposed Project 4 would encounter four potentially significant deposits: SLO-2569, SLO-4, SLO-462, and SLO-1512 under Project 4. Recorded sites that would not be adversely affected based on prior evaluation as non-contributing include SLO-1212, SLO-1795, and SLO-2007. A portion of the north side of Los Osos Valley Road from Los Osos Creek eastward to the Cemetery parcel is of high sensitivity for buried archaeological sites that might also be affected by trenching. The Proposed Project 4 design included placement of the raw wastewater line on the north side of Los Osos Valley Road between the road shoulder and the right-of-way edge. The treated effluent line was proposed to be placed on the south side of Los Osos Valley Road; again between the road shoulder and the right-of-way edge. There are potential significant impacts associated with the construction of Proposed Project 4 on the conveyance pipelines between the Mid-town pump station and the treatment plant and the treatment plant and the Broderson leachfields.

Under the Preferred Project, all of the known archaeological resources associated with the conveyance system would be avoided through a design strategy that includes placement of both the raw wastewater and treated effluent pipelines on the south side of Los Osos Valley Road and within the existing paved road shoulder, thus avoiding all impact to significant archaeological resources.

Treatment Plant Site

Placement of the treatment plant on the Tonini parcel under Proposed Project 4 would have potential effect on two prehistoric archaeological sites (SLO-2571 and SLO-2573). The Preferred Project

design avoids these sites by placing the treatment plant more than 100 feet outside of the boundaries of SLO-2571 and SLO-2573.

Disposal Sites

Sprayfields proposed for the Tonini parcel under Proposed Project 4 would affect five prehistoric sites (SLO-2571, SLO-2572, SLO-2573, T-? and T-?) and one multi-component site (SLO-2574H). There was a moderate to high potential for buried archaeological deposits on a portion of the sprayfields near Turri Road in the southern portion of the parcel. Far Western placed five test trenches in this area (See Appendix Q9) and no subsurface archaeological remains were encountered.

Under the Preferred Project, all six sites would be avoided with a 100-foot buffer around the boundaries of the sites to prevent either direct impact from the sprayfield lines and/or indirect impacts from spray from the disposal practices.

Combined Project Effects

Proposed Project 4 would potentially affect 14-recorded archaeological sites and would encounter areas of high archaeological sensitivity surrounding the bay, and would cross one area of high sensitivity for potential buried resources: along Los Osos Valley Road near the Cemetery site. The Preferred Project would also impact the area of high archaeological sensitivity surrounding the bay, but would avoid all 14 sites and the sensitivity for buried resources at the Turri Road and the Tonini Parcel would be reduced to moderate based on the testing results.

Cumulative Impact Analysis

It is not possible to predict all future impacts to cultural resources within the Los Osos Wastewater Project area. As defined by CEQA, cumulative impacts refer to two or more individual affects which, when considered together, compound or increase other environmental impacts. Since Proposed Project 4 has the potential to impact 14 more archaeological resources than the Preferred Project. Once construction of the treatment plant, collection pipelines, pump stations, and standby power facilities are completed, likely no continued or cumulative impacts would occur to cultural resources within the Project Area of Potential Effects from these aspects of the system.

An unknown amount of impacts to archaeological resources could occur as a result of the Los Osos Valley Road Palisades Storm Drain Project; however, Exhibits 5.6-1 and 5.6-2 do not place the storm drain project in an area with a high sensitivity. Potential impacts associated with the Los Osos Community Service District Water Pipeline Replacement should not result in any further impacts to cultural resources.

Project Specific
Mitigation Measures

This section recommends measures to mitigate potential impacts to archaeological resources that could result from implementation of the Preferred Project.

Q5.6-B1 Avoidance of cultural resources is the paramount mitigation measure to protect cultural resources potentially impacted during project development.

Q5.6-B2 A Treatment Plan shall be prepared that would detail the extensive scope of the proposed project, establish site types with corresponding levels of effort for mitigation, and detail data recovery and monitoring plans for the extent of the proposed project. The former Treatment Plan (Far Western 2001) prepared for the wastewater project shall be adapted and modified where appropriate for the current project.

Q5.6-B3 No longer required.

Q5.6-B4 If avoidance of recorded archaeological sites within any portion of the approved project design (Draft EIR Exhibit 5.6-4 and Exhibit 5.6-8) is not possible through project redesign, a phased program of site testing shall be undertaken to establish boundaries and evaluate the resources' potential eligibility to the California Register of Historical Resources under CEQA and the National Register of Historic Places under NEPA. If a site is determined ineligible, no further work is required. If a site is determined eligible, data recovery excavations shall be required to mitigate adverse effects incurred from project development.

Q5.6-B5 No longer required.

Q5.6-B6 Preconstruction monitoring shall occur in areas ranked as high in sensitivity for buried deposits. Mechanical backhoe trenching shall be conducted within the sensitive areas where any construction impacts will occur and shall be monitored by a qualified geoarchaeologist. Any identified intact deposits will be evaluated, and any deposits determined to be eligible to the California Register and/or National Register shall require project redesign to avoid impacts, or data recovery to mitigate unavoidable impacts.

Q5.6-B7 While prior survey, excavation, and monitoring have been conducted for the majority of the collection system in the community of Los Osos, redesign in the placement of pipelines and location of pump stations and other facilities requires additional consideration. Areas of high archaeological sensitivity, including the locations of human burials, have been identified. Continued avoidance or addition testing, monitoring, and/or data recovery shall be required to reduce impacts to a less-than-significant level.

Q5.6-B8 As full analysis, processing, documentation, curation, and reporting of the project collections were not achieved because of the stop-work order on the 2005 wastewater

project. These tasks shall be completed by qualified archaeologists as an important mitigation effort for overall project impacts and to fulfill requirements associated with past Section 106 consultations. Study findings shall be made available to the general public and local Native Americans, as well as to the scientific community.

Level of Significance After Mitigation

Less than significant for either Proposed Project 4 or the Preferred Project

Cumulative

Mitigation Measures

Mitigation Measure Q5.6-B1, Q5.6-B2, Q5.6-B4, Q5.6-B7, and Q5.6-B8.

Level of Significance After Mitigation

Less than significant for either Proposed Project 4 or the Preferred Project.

Paleontological Resource or Geologic Feature

Q5.6-C:	**The project would not directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.**

Project Specific Impact Analysis

The geologic map for this area (Hall et al., 1979) indicates that the project is situated upon Holocene eolian and alluvial deposits, the late Pliocene Careaga Sandstone, and metamorphic rocks of the Cretaceous Franciscan Complex. The only unit of paleontologic potential is the Careaga Sandstone, which was deposited in a relatively shallow, nearshore marine environment probably not more than 200 feet deep. Careaga sands could have incorporated the remains of marine vertebrates (i.e., fish, birds, and mammals) and terrestrial vertebrates transported offshore. This unit, mapped south of Los Osos and on the south side of Los Osos Valley Road, is likely to be below the young eolian and alluvial deposits that blanket much of the area to the north. There are no changes in any conditions between Proposed Project 4 and the Preferred Project with regard to Paleontologic Resources.

Collection System

The entire collection systems within the community extends across areas of recent eolian and alluvial deposits and have an extremely low potential to contain fossils. Although potential for fossil-bearing deposits in the area is low, the Proposed Project 4 and Preferred Project facilities may significantly affect such resources equally.

Treatment Plant Site

The placement of the treatment plant would have no effect on paleontologic resources. The shallow depths of foundations would be well above the depths to the fossil bearing deposits in the valley and would have no impact on any potential fossil-bearing deposits.

Disposal Sites

The leachfields at Broderson and sprayfields proposed for the Tonini parcel would not extend deeper than 6.5 feet and would have no impact on any potential fossil-bearing deposits.

Combined Project Effects

Although the project is not expected to impact any fossil-bearing deposits, the proposed facilities may have a significant impact on paleontological resources.

Cumulative Impact Analysis

Once construction of the treatment plant, conveyance pipelines, pump stations, and standby power facilities are completed, there is likely to be no continued or cumulative impacts to paleontological resources within the Project Area of Potential Effects from these aspects of the system.

Project Specific

Mitigation Measures

Q5.6-C1 Although unlikely, should any vertebrate fossils or potentially significant finds (e.g., numerous well-preserved invertebrate or plant fossils) be encountered by anyone working on the site, all activities in the immediate vicinity of the find are to cease until a qualified paleontologist evaluates the find for its scientific value. If deemed significant, the paleontological resource(s) shall be salvaged and deposited in an accredited and permanent scientific institution where they will be properly curated and preserved for the benefit of current and future generations.

Level of Significance After Mitigation

Less than significant for both Proposed Project 4 and the Preferred Project.

Cumulative

Mitigation Measures

Mitigation Measure Q5.6-C1.

Level of Significance After Mitigation

Less than significant for either Proposed Project 4 or the Preferred Project.

Human Remains

Q5.6-D **The project would disturb human remains, including those interred outside of formal cemeteries.**

Project Specific Impact Analysis

The collection system in Los Osos for both Project 4 and the Preferred Project has the potential to impact many known, eligible archaeological sites if the design plan differs from the 2005 plan. However, the collection system plans do not vary substantially from the 2005 plan and therefore,

there is little potential for impact to significant archaeological resources within the collection system. The raw wastewater and treated effluent lines from the Mid-town pump station to the treatment plant and sprayfields at Tonini would not impact any archaeological resources under the Preferred Project plans. The placement of the pipelines on the south side of Los Osos Valley Road and in the shoulder of the road in many locations to avoid other resources would result in a substantial reduction in impacts to archaeological resources. The raw wastewater and treated effluent pipelines along Los Osos Valley Road associated with Project 4 would encounter four potentially significant deposits: SLO-2569, SLO-4, SLO-462, and SLO-1512. Recorded sites that would not be adversely affected based on prior evaluation as non-contributing include SLO-1212, SLO-1795, and SLO-2007. A portion of Los Osos Valley Road from Los Osos Creek eastward to the Cemetery parcel is of high sensitivity for buried archaeological sites that might also be affected by trenching. With the placement of the pipelines on the south side of Los Osos Valley Road for the Preferred Project, no known significant deposits would be impacted. Project 4 would also would have potential effects on two prehistoric archaeological sites (SLO-2571 and SLO-2573) at the treatment plant site at Tonini and the sprayfields proposed for the Tonini parcel would affect one additional prehistoric site (SLO-2572) and one historic-era site (SLO-2574H). There is a moderate to high potential for buried archaeological deposits on a portion of the sprayfields. The Preferred Project has been designed to avoid all of the archaeological sites on the property with designed buffer of 100 feet around the boundaries of all of the known sites.

Collection System

The collection system would disturb human remains within the identified sensitive areas of the community of Los Osos. Human remains have been identified during data recovery excavations undertaken for the previously proposed wastewater project. These were located around the bay and Sweet Springs; proposed collection lines and pump stations are within these areas. For the prior project, burials were left in place, to be avoided by construction, and isolated human remains were placed with the burials; new alignments were cleared for human remains during data recovery. If the design plan varies in any way from the proposed 2005 plan, human remains will be disturbed. The collection system within the community of Los Osos extends across areas of high archaeological sensitivity where trenching would have a significant impact, primarily on the dense midden deposits rimming the bay. This impact would remain unchanged between Project 4 and the Preferred Project.

Based on a review of Exhibits 5.6-4 and 5.6-8 of the Draft EIR, the addition of the Solano pump station and Palisades pocket pump and their associated collection lines for the Preferred Project fall outside of any sensitive areas for archaeology or high potential for buried archaeological resources. The potential for encountering human remains is therefore considered low.

The raw wastewater and treated effluent pipelines from the Mid-town pump station to the Tonini Parcel for treatment and disposal at both the Tonini sprayfields and Broderson leachfields would not impact any known sites with the potential for human remains under Project 4 or the Preferred Project.

In areas of high archaeological sensitivity (e.g., within site boundaries or in the vicinity of known human burials) it may be possible to bore beneath the deposit for placement of the laterals associated with connections to individual properties under either the Proposed Project 4 or the Preferred Project.

Treatment Plant Site

There are no known sites that would be likely to contain human remains within the proposed Treatment Plant location for either Proposed Project 4 or the Preferred Project.

Disposal Sites

No sites within the sprayfield locations at Tonini are likely to have human remains, as they are all identified as flake scatters. No known sites have been identified at the Broderson leachfield site, so the area is unlikely to contain human remains.

Combined Project Effects

Human remains would be disturbed at several sites within the Collection system, rimming the bay and Sweet Springs, and one site has the potential for human remains. No other known sites have the potential for human remains on Project 4 or the Preferred Project.

Cumulative Impact Analysis

Once construction of the treatment plant, conveyance pipelines, pump stations, and standby power facilities are completed, there is likely to be no continued or cumulative impacts to human remains within the Project Area of Potential Effects from these aspects of the system. However, attachment of the laterals that extend from private property to the street, and potential placement of new septic tanks on such properties, may impact human remains.

Project Specific Mitigation Measures

Q5.6-D1 A Memorandum of Agreement has been prepared for the treatment and disposition of human remains and associated burial items. This document lays out the procedures agreed upon by interested local Native Americans and stipulated under State law, including proper and respectful handling of remains, identification of reburial areas, acceptable analyses, and resolution of conflicts. It includes a list of Most Likely Descendents approved by the Native American Heritage Commission; these individuals are signatories on the Agreement.

Q5.6-D2 For sites with known human remains or which have a potential for human remains, pre-construction excavations shall take place within the direct impact areas to insure that no human remains are present.

Q5.6-D3 If human remains are encountered within the project area, the County shall be responsible for complying with provisions of Public Resources Code Sections

5097.98 and 5097.99, and 7050.5 of the California Health and Safety Code, as amended by Assembly Bill 2641. Restrictions or procedures for excavation, treatment, or handling of human remains shall be established in consultation with the individuals designated by the Native American Heritage Commission as the Most Likely Descendents.

Level of Significance After Mitigation

Less than significant impact for either Proposed Project 4 or the Preferred Project.

Cumulative

Mitigation Measures

Mitigation Measures Q5.6-D1 through Q5.6-D3

Level of Significance After Mitigation

Less than significant for either Proposed Project 4 or the Preferred Project.

Local Policies or Ordinances Protecting Cultural Resources

Q5.6-E The project would conflict with the California Coastal Act of 1976, Section 30244.

Project Specific Impact Analysis

Collection System

The collection system within the community of Los Osos extends across areas of high archaeological sensitivity where trenching would have a significant impact, primarily on the dense midden deposits rimming the bay. This impact would remain unchanged between Project 4 and the Preferred Project. Based on a review of Exhibits 5.6-4 and 5.6-8 of the Draft EIR, the addition of the Solano pump station and Palisades pocket pump and their associated collection lines fall outside of any sensitive areas for archaeology or high potential for buried archaeological resources.

The gravity collection systems allow some flexibility in the placement of the laterals across private property. In areas of high archaeological sensitivity (e.g., within site boundaries or in the vicinity of known human burials) it may be possible to bore beneath the deposit for placement of the lateral. There are potential significant impacts the archaeological resources for both Proposed Project 4 and the Preferred Project.

The raw wastewater and treated effluent pipelines along Los Osos Valley Road to the Tonini parcel associated with Proposed Project 4 would encounter four potentially significant deposits: SLO-2569, SLO-4, SLO-462, and SLO-1512 under Project 4. Recorded sites that would not be adversely affected based on prior evaluation as non-contributing include SLO-1212, SLO-1795, and SLO-2007. A portion of the north side of Los Osos Valley Road from Los Osos Creek eastward to the Cemetery parcel is of high sensitivity for buried archaeological sites that might also be affected by trenching. The Proposed Project 4 design included placement of the raw wastewater line on the north side of Los

Osos Valley Road between the road shoulder and the right-of-way edge. The treated effluent line was proposed to be placed on the south side of Los Osos Valley Road; again between the road shoulder and the right-of-way edge. There are potential significant impacts associated with the construction of Proposed Project 4 on the conveyance pipelines between the Mid-town pump station and the treatment plant and the treatment plant and the Broderson leachfields.

Under the Preferred Project, all of the known archaeological resources associated with the conveyance system would be avoided through a design strategy that includes placement of both the raw wastewater and treated effluent pipelines on the south side of Los Osos Valley Road and within the existing paved road shoulder, thus avoiding all impact to significant archaeological resources.

Placement of the treatment plant on the Tonini parcel under Proposed Project 4 would have potential effect on two prehistoric archaeological sites (SLO-2571 and SLO-2573). The Preferred Project design avoids these sites by placing the treatment plant more than 100 feet outside of the boundaries of SLO-2571 and SLO-2573.

Disposal Sites

Sprayfields proposed for the Tonini parcel under Proposed Project 4 would affect five prehistoric sites (SLO-2571, SLO-2572, SLO-2573, T-? and T-?) and one multi-component site (SLO-2574H). There was a moderate to high potential for buried archaeological deposits on a portion of the sprayfields near Turri Road in the southern portion of the parcel. Far Western placed five test trenches in this area (See Appendix Q9) and no subsurface archaeological remains were encountered.

Under the Preferred Project, all six sites would be avoided with a 100-foot buffer around the boundaries of the sites to prevent either direct impact from the sprayfield lines and/or indirect impacts from spray from the disposal practices.

Proposed Project 4 would potentially affect 14-recorded archaeological sites and would encounter areas of high archaeological sensitivity surrounding the bay, and would cross one area of high sensitivity for potential buried resources: along Los Osos Valley Road near the Cemetery site. The Preferred Project would also impact the area of high archaeological sensitivity surrounding the bay, but would avoid all 14 sites and the sensitivity for buried resources at the Turri Road and the Tonini Parcel would be reduced to moderate based on the testing results.

Cumulative Impact Analysis

It is not possible to predict all future impacts to cultural resources within the Los Osos Wastewater Project area. As defined by CEQA, cumulative impacts refer to two or more individual affects which, when considered together, compound or increase other environmental impacts. Since Proposed Project 4 has the potential to impact 14 more archaeological resources than the Preferred Project. Once construction of the treatment plant, collection pipelines, pump stations, and standby power

facilities are completed, likely no continued or cumulative impacts would occur to cultural resources within the Project Area of Potential Effects from these aspects of the system.

An unknown amount of impacts to archaeological resources could occur as a result of the Los Osos Valley Road Palisades Storm Drain Project; however, Exhibits 5.6-1 and 5.6-2 do not place the storm drain project in an area with a high sensitivity. Potential impacts associated with the Los Osos Community Service District Water Pipeline Replacement should not result in any further impacts to cultural resources.

Project Specific

Mitigation Measures

This section recommends measures to mitigate potential impacts to archaeological resources that could result from implementation of the Preferred Project. Mitigation Measures 5.6-B-1 through 5.6-B-8 will provide adequate protection to cultural resources. This protection is further afforded since SHPO consultation is a part of the process under Section 106.

Q5.6-B1 Avoidance of cultural resources is the paramount mitigation measure to protect cultural resources potentially impacted during project development.

Q5.6-B2 A Treatment Plan shall be prepared that would detail the extensive scope of the proposed project, establish site types with corresponding levels of effort for mitigation, and detail data recovery and monitoring plans for the extent of the proposed project. The former Treatment Plan (Far Western 2001) prepared for the wastewater project shall be adapted and modified where appropriate for the current project.

Q5.6-B3 No longer required.

Q5.6-B4 If avoidance of recorded archaeological sites within any portion of the approved project design (Draft EIR Exhibit 5.6-4 and Exhibit 5.6-8) is not possible through project redesign, a phased program of site testing shall be undertaken to establish boundaries and evaluate the resources' potential eligibility to the California Register of Historical Resources under CEQA and the National Register of Historic Places under NEPA. If a site is determined ineligible, no further work is required. If a site is determined eligible, data recovery excavations shall be required to mitigate adverse effects incurred from project development.

Q5.6-B5 No longer required.

Q5.6-B6 Preconstruction monitoring shall occur in areas ranked as high in sensitivity for buried deposits. Mechanical backhoe trenching shall be conducted within the sensitive areas where any construction impacts will occur and shall be monitored by a

qualified geoarchaeologist. Any identified intact deposits will be evaluated, and any deposits determined to be eligible to the California Register and/or National Register shall require project redesign to avoid impacts, or data recovery to mitigate unavoidable impacts.

Q5.6-B7 While prior survey, excavation, and monitoring have been conducted for the majority of the collection system in the community of Los Osos, redesign in the placement of pipelines and location of pump stations and other facilities requires additional consideration. Areas of high archaeological sensitivity, including the locations of human burials, have been identified. Continued avoidance or addition testing, monitoring, and/or data recovery shall be required to reduce impacts to a less-than-significant level.

Q5.6-B8 As full analysis, processing, documentation, curation, and reporting of the project collections were not achieved because of the stop-work order on the 2005 wastewater project. These tasks shall be completed by qualified archaeologists as an important mitigation effort for overall project impacts and to fulfill requirements associated with past Section 106 consultations. Study findings shall be made available to the general public and local Native Americans, as well as to the scientific community.

Level of Significance After Mitigation

Less than significant impact

Cumulative

Mitigation Measures

Mitigation Measures Q5.6-B1 through Q5.6-B8

Level of Significance After Mitigation

Less than significant for either Proposed Project 4 or the Preferred Project.

Q.5.7 - Public Health and Safety

The following impact evaluation is based on the environmental setting, regulatory setting, and thresholds of significance discussions provided for the proposed projects in Draft EIR Section 5.7, Public Health and Safety, and in Appendix I-1, Expanded Public Health and Safety Analysis. These previous discussions are not repeated in the following evaluation. The evaluation is a comparative analysis between the Preferred Project and Proposed Project 4.

Construction Activities

Q5.7-A:	**The proposed project could result in exposing residents, visitors, and construction personnel to health hazards from the routine transport, use, or disposal of hazardous materials during construction activities.**

Project Specific Impact Analysis

Similar to Proposed Project 4, grading and construction activities may involve limited transport, storage, usage, or disposal of hazardous materials, such as the use of petroleum products for fueling/servicing of construction equipment. As described in Table Q.5-1, the Preferred Project includes additional collection system facilities such as pump stations, standby power stations, and pipelines, as well as modifications to specific locations and size of facilities such as the central pump station, pipelines within streets, and pipelines crossing creeks compared to Proposed Project 4. In addition, the Preferred Project will include an Oxidation Ditch or Biolac® facility. Based on a review of the additions and modifications of the collection system and treatment plant facilities, the construction activities associated with these facilities would be similar to the facilities identified in Proposed Project 4 and the construction activities would be required to comply with the applicable regulations and laws pertaining to transport, storage, use, and disposal of potentially hazardous materials. Therefore, similar to Proposed Project 4, the Preferred Project would result in less than significant health hazards from construction activities.

Similar to Proposed Project 4, the treatment plant site under the Preferred Project Past has been used for agricultural production in which agricultural chemicals could have been used. As with Proposed Project 4, construction activities associated with the Preferred Project could experience potential hazardous impacts from the potential past application of chemicals to the site, and this potential impact is considered to be potentially significant.

Cumulative Impact Analysis

Similar to Proposed Project 4, the Preferred Project would not contribute to cumulative impacts on public health and safety related to the routine transport, use, or disposal of hazardous materials during construction activities because there are no related projects that would contribute to cumulative impacts.

Mitigation Measures

Project-Specific

5.7.A.1 Prior to any onsite construction activities at the proposed treatment plant sites, soils shall be sampled and analyzed by a licensed engineer or geologist approved by the County of San Luis Obispo Health Department to determine the level of residue for pesticides, herbicides, chemicals, and associated metals. If residues are found to be within acceptable amounts in accordance with the San Luis Obispo County Health Department (SLOCHD) and Environmental Protection Agency/Department of Toxic Substance Control (DTSC) standards, then grading and construction may begin. If the residue is found to be greater than the SLOCHD and DTSC standards, all contaminated soils exceeding the acceptable limits shall be remediated and/or properly disposed of in accordance with SLOCHD and DTSC requirements. An appropriate verification closure letter from SLOCHD and DTSC shall be obtained and submitted to the County of San Luis Obispo Health Department. Depending on the extent of contaminated soils, a verification closure letter from the California Regional Water Quality Control Board may also need to be submitted to the County of Health Department. Site remediation can occur by the use of onsite transportable thermal treatment units or bio-remediation. The soil can also be excavated and shipped offsite to fixed incineration or bio-remediation facilities.

Cumulative

No mitigation measures are required.

Level of Significance After Mitigation

Project-Specific

Less than significant.

Cumulative

No impact.

Operational Activities

Q5.7-B: The proposed wastewater facilities could result in exposing offsite residents and visitors to health hazards from the routine transport, use, or disposal of hazardous materials.

Project Specific Impact Analysis

Collection System

Similar to Proposed Project 4, the collection system under the Preferred Project is a gravity system. As described in Table Q.5-1, the Preferred Project includes additional collection system facilities such as pump stations, standby power stations, and pipelines, as well as modifications to specific locations and size of facilities such as the central pump station, pipelines within streets, and pipelines crossing creeks compared to Proposed Project 4. Based on a review of the additions and modifications of the

collection system facilities, the Preferred Project would pose the same less than significant public health and safety impacts as Proposed Project 4 from transporting potentially hazardous materials throughout the community because wastewater facilities are a common feature of urban environments.

Treatment Plant Site

Similar to Proposed Project 4, the proposed treatment plant facilities under the Preferred Project include treatment facilities, appurtenant structures and storage facilities located on the Tonini parcel. As described in Table Q.5-1, the Preferred Project will include an Oxidation Ditch or Biolac® facility. The operation and maintenance of the treatment facility would include the storage, handling, and use of such hazardous materials as sodium hydroxide, which is corrosive and can cause severe irritation to eyes, skin, and mucous membranes, and sodium hypochlorine, which can result in a pronounced irritant effect and may cause severe burns to skin and eyes. As described under Proposed Projects 2 and 3, these hazardous materials could result in potentially significant impacts from the storage, handling, and use.

Disposal Sites

Similar to Proposed Project 4, the proposed disposal systems under the Preferred Project include sprayfields at the Tonini parcel and leachfields at the Broderson parcel. Under the Preferred Project, the type of spray was revised to exclude percolation and as a result approximately 73 more acres of sprayfields are necessary to accommodate the 842 acre-feet of spray at Tonini compared to Proposed Project 4. The Preferred Project also includes setbacks from Turri Road and the property south of Tonini, and Proposed Project 4 did not include setbacks. Similar to Proposed Project 4, the Preferred Project would include the placement of a fence around the sprayfields as stated in PDF 5.7.B-1 to reduce potential permanent and temporary public health and safety impacts due to the effluent disposed at the sprayfields not meeting Title 22 tertiary treatment standards.

In addition, due to the revision to the type of spray irrigation that would occur on the Tonini property, berms within the 100-foot setback from the onsite streams are no longer required because surface water runoff from spray irrigation is not expected. Furthermore, the application of effluent in the subsurface features on Broderson would not require berms around the leachfields because the disposed effluent would not surface to the ground and result in surface water runoff.

The proposed sprayfields at the Tonini site are located in the vicinity of existing agricultural fields. Similar to Proposed Project 4, the use of pesticides within the adjacent farming areas would be controlled through the issuance of Restricted Materials Permits. Because of the limitations on pesticide near non-agricultural land uses, adherence to these regulations would reduce potential health hazards associated with pesticide use from agricultural activities to less than significant.

Combined Project Effects

A wastewater treatment system by its nature collects, transports, treats and disposes of hazardous material. Under the Preferred Project, the treatment process may require transport, storage, and use of

polymers, sodium hydroxide and sodium hypochlorite. Similar to the findings for Proposed Project 4, the hazardous materials impacts of the Preferred Project are potentially significant. Similar to Proposed Project 4, the long-term operational activities associated with the proposed facilities under the Preferred Project would result in a combined potentially significant effect related to public health and safety.

Cumulative Impact Analysis

Similar to Proposed Project 4, since there are no related projects that would contribute to cumulative impacts, implementation of the Preferred Project would not contribute to cumulative impacts on public health and safety related to the routine transport, use, or disposal of hazardous materials.

Mitigation Measures

Project-Specific

5.7.B.1 Prior to operation of the wastewater project, 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 at the proposed wastewater facilities and their characteristics; storage, handling, training procedures, and spill contingency procedures. Additionally, the Hazardous Materials Management Plan shall identify procedures in the event of accidents such as the release of raw wastewater or secondary treated water into watercourses such as Los Osos Creek. These procedures shall include immediate response personnel to limit public access to spill areas, potentially shutting down pump stations, creating berms, use of vacuum trucks, and use of water booms to contain spills within open water areas. Furthermore, the Plan shall address response and containment of fuel at pump station sites.

Cumulative

No mitigation measures are required.

Level of Significance After Mitigation

Project-Specific

Less than significant.

Cumulative

No impact.

Accident Conditions

Q5.7-C: **The project could create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the hazardous materials into the environment.**

Project Specific Impact Analysis

Similar to Proposed Project 4, the proposed collection system piping may experience a break and result in an accidental release of raw wastewater. As described in Table Q.5-1, the Preferred Project includes additional collection system facilities that may experience a break. The potential accidental releases could occur within streets or at creek crossings. Similar to Proposed Project 4, this untreated wastewater under the Preferred Project is considered hazardous; therefore, if there is a break, this potential impact is considered significant. Under the Preferred Project, the collection system piping would be placed on the bridges that cross the creeks; however, the potential for an accidental break on the bridge is similar to an accidental break under the creek with Proposed Project 4.

In addition, as described in Table Q.5-1, the Preferred Project includes additional pump stations that could contribute to potential accidental releases due to a break or malfunction of the collection system at the pump station. The potential significant public health and safety impacts identified under Proposed Project 4 are the same for the Preferred Project.

Furthermore, the revision to include an oxidation ditch or Biolac® under the Preferred Project would result in a negligible potential for accidental releases of untreated effluent similar to Proposed Project 4. Therefore, this potential is considered less than significant.

Finally, with the revision to exclude berms from the sprayfields and leachfields, the potential for releases of secondary treated water from these sites is still considered less than significant due to the revision or the spray application on the sprayfield and the disposal of the effluent to subsurface facilities at the leachfields.

Cumulative Impact Analysis

Similar to Proposed Project 4, the Preferred Project would result in less than significant health and safety impacts due to accident conditions. Since there are no related projects that would contribute to cumulative impacts, the Preferred Project would not contribute to cumulative impacts on public health and safety related to an accidental release of hazardous materials during construction and/or operational activities.

Mitigation Measures

Project-Specific

Implementation of Mitigation Measure 5.7.B.1 is required.

Cumulative

No mitigation measures are required.

Level of Significance After Mitigation

Project-Specific

Less than significant.

Cumulative

No impact.

Other Accident Conditions

Q5.7-D:	**The project may create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions.**

Project Specific Impact Analysis

Similar to Proposed Project 4, the Preferred Project may create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions. The additional facilities as well as the modifications identified in Table Q.5-1 for the Preferred Project would result in similar construction activities as Proposed Project 4. These facilities could result in an accidental break in a main water supply line that could create a localized loss of water for firefighting. Therefore, similar to Proposed Project 4, the Preferred Project could result in a potential significant impact.

In addition, similar to Proposed Project 4, construction activities associated with the Preferred Project may increase calls for emergency personnel and may require specialized safety and rescue training and equipment. Because Contractors associated with construction activities are required to follow specific safety and rescue procedures in accordance with the California Division of Occupational Safety and Health, the increase in emergency calls that are due to construction activities would be considered less than significant.

Cumulative Impact Analysis

Similar to Proposed Project 4, the Preferred Project would result in less than significant health and safety impacts due to accident conditions to water mains. Since there are no related projects that would contribute to cumulative impacts, the Preferred Project would not contribute to cumulative impacts on public health and safety related to accident conditions to water mains.

Mitigation Measures

Project-Specific

5.7.D.1 To reduce the potential temporary loss of water for firefighting that may occur as a result of construction activities, either of the following shall occur: (1) acquiring a water tender, to the satisfaction of the County Fire Chief; or (2) compensating for the potential temporary loss of water through some other equivalent means as determined by the County Fire Chief.

Cumulative

No mitigation measures are required.

Level of Significance After Mitigation

Project-Specific

Less than significant.

Cumulative

No impact.

Schools

Q5.7-E:	**The project could emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school.**

Project Specific Impact Analysis

As described in Table Q.5-1, the Preferred Project includes additional collection system facilities such as pump stations, standby power stations, and pipelines, as well as modifications to specific locations and size of facilities such as the central pump station, pipelines within streets, and pipelines crossing creeks compared to Proposed Project 4. Similar to Proposed Project 4, the Preferred Project would include pipelines along roadways that are within 0.25-mile from an existing school. In the event of any leakage from a pipeline, there is a potential for an accidental release of untreated wastewater. Similar to Proposed Project 4, the potential health and safety impact under the Preferred Project is potentially significant.

Cumulative Impact Analysis

Similar to Proposed Project 4, the Preferred Project would result in a potential significant health and safety impact related to an accidental release of untreated wastewater within 0.25-mile of an existing school. Since there are no related projects that would contribute to cumulative impacts, the Preferred Project would not contribute to cumulative impacts on public health and safety related to an accidental release of untreated wastewater within 0.25-mile of an existing school.

Mitigation Measures

Project-Specific

Implementation of Mitigation Measure 5.7.B.1 is required.

Cumulative

No mitigation measures are required.

Level of Significance After Mitigation

Project-Specific

Less than significant.

Cumulative

No impact.

Hazardous Materials Site Listing

Q5.7-F:	**The project would not be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would not create a significant hazard to the public or the environment.**

Project Specific Impact Analysis

As described in Table Q.5-1, the Preferred Project includes additional facilities as well as modifications to facilities compared to Proposed Project 4. The database search that was conducted for the project encompassed the additions and modifications to the facilities as identified under the Preferred Project. Based on the database search that was conducted for the project, there are no hazardous materials sites that are located in any area proposed for facilities that are on the Cortese list. The sites identified on the Cortese list are those compiled pursuant to Government Code Section 65962.5. Therefore, similar to Proposed Project 4, the implementation of the Preferred Project would not create a hazard to the public or the environment related to existing listed hazardous waste sites compiled pursuant to Government Code Section 65962.5.

Cumulative Impact Analysis

Similar to Proposed Project 4, the proposed facilities within the Preferred Project are not located on a site that is on a regulatory list of hazardous materials compiled pursuant to Government Code Section 65962.5. Therefore, implementation of the Preferred Project will not contribute to a cumulative impact in relation to Government Code Section 65962.5.

Mitigation Measures

Project-Specific

No mitigation measures are required.

Cumulative

No mitigation measures are required.

Level of Significance After Mitigation

Project-Specific

No impact.

Cumulative

No impact.

Airports

Q5.7-G:	**For a project located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, the project would not result in a safety hazard for people residing or working in the project area.**

Project Specific Impact Analysis

Similar to Proposed Project 4, the facilities associated with the Preferred Project are not located within an airport land use plan or within 2 miles of a public airport or public use airport.

Cumulative Impact Analysis

There would be no cumulative health hazard impacts related to proximity to a public airport or public use airport because the project is not located within an airport land use plan or within 2 miles of a public airport or public use airport.

Mitigation Measures

Project-Specific

No mitigation measures are required.

Cumulative

No mitigation measures are required.

Level of Significance After Mitigation

Project-Specific

No impact.

Cumulative

No impact.

Private Airstrip

Q5.7-H:	**For a project within the vicinity of a private airstrip, the project would not result in a safety hazard for people residing or working in the project area.**

Project Specific Impact Analysis

Similar to Proposed Project 4, the facilities associated with the Preferred Project are not located in the vicinity of a private airstrip; therefore, there would be no associated safety hazard related to people residing or working in the project area.

Cumulative Impact Analysis

There would be no cumulative health hazard impacts related to proximity to a private airstrip because there are no private strips in the vicinity of the project site.

Mitigation Measures

Project-Specific

No mitigation measures are required.

Cumulative

No mitigation measures are required.

Level of Significance After Mitigation

Project-Specific

No impact.

Cumulative

No impact.

Emergency Plans

Q5.7-I:	**The project would not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.**

Project Specific Impact Analysis

Similar to Proposed Project 4, construction and operational activities associated with the facilities under the Preferred Project would not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.

Cumulative Impact Analysis

Similar to Proposed Project 4, the Preferred Project would not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan. Since the Preferred Project would not contribute to impacts on emergency plans, the Preferred Project would not contribute to cumulative impacts on emergency plans.

Mitigation Measures

Project-Specific

No mitigation measures are required.

Cumulative

No mitigation measures are required.

Level of Significance After Mitigation

Project-Specific

No impact.

Cumulative

No impact.

Wildland Fires

Q5.7-J: **The project would not expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands.**

Project Specific Impact Analysis

The Preferred Project includes additional collection facilities, modified collection system, a new treatment process, and additional sprayfields compared to Proposed Project 4. These facilities would result in a similar risk of wildland fire as the facilities identified under Proposed Project 4. Although the risk of damage to the proposed treatment structures under the Preferred Project exists due to their location in open agricultural areas, their proximity to roads and easy accessibility to firefighting personnel and equipment reduce the risk to structures to less than significant similar to Proposed Project 4.

Cumulative Impact Analysis

Similar to Proposed Project 4, the Preferred Project would result in less than significant impacts related to wildland fires. Since there are no related projects that would contribute to cumulative impacts, implementation of the Preferred Project would not contribute to cumulative impacts on public health and safety related to the exposure of people and structures to wildland fires.

Mitigation Measures

Project-Specific

No mitigation measures are required.

Cumulative

No mitigation measures are required.

Level of Significance After Mitigation

Project-Specific

Less than significant.

Cumulative

No impact.

Consistency with Local Goals and Policies Related to Public Health and Safety

Q5.7-K: **The proposed projects would not conflict with local goals and policies relating to public health and safety.**

Project Specific Impact Analysis

As described in Table Q.5-1, the Preferred Project includes additional facilities as well as modifications to facilities compared to Proposed Project 4. Based on a review of the County of San Luis Obispo goals and policies related to hazardous materials, the additional and modified facilities associated with the Preferred Project would result in the same finding of "no impact" to existing local

goals and policies related to public health and safety (hazardous materials) as the finding of Proposed Project 4.

Cumulative Impact Analysis

Similar to Proposed Project 4, the Preferred Project would result in no impacts to existing local goals and policies related to public health and safety (hazardous materials). Therefore, implementation of the Preferred Project would not contribute to cumulative impacts to existing local goals and policies related to public health and safety (hazardous materials).

Mitigation Measures

Project-Specific

No mitigation measures are required.

Cumulative

No mitigation measures are required.

Level of Significance After Mitigation

Project-Specific

No impact.

Cumulative

No impact.

Q.5.8 - Traffic and Circulation

The following impact evaluation is based on the environmental setting, regulatory setting, and thresholds of significance discussions provided for the proposed projects in Draft EIR Section 5.8, Traffic and Circulation, and in Appendix J-1, Expanded Traffic and Circulation Analysis. These previous discussions are not repeated in the following evaluation. The evaluation is a comparative analysis between the Preferred Project and Proposed Project 4.

Traffic Increase and Level of Service Standards

Q5.8-A:	**The project could cause an increase in traffic, which is substantial in relation to the existing traffic load and capacity of the street system or either individually or cumulatively exceed a level of service standard established by the county congestion management agency for designated roads or highways.**

Project Specific Impact Analysis

Short-term Construction Impacts

Similar to Proposed Project 4, construction of the collection system, facilities at the treatment plant site and disposal site facilities under the Preferred Project would generate additional traffic on the roadways and intersections within the community of Los Osos. As shown in Table Q.5-1, the Preferred Project includes the addition of pump stations and pipelines, modifications to pipelines, alteration of the treatment process to oxidation ditch or Biolac®, and the addition of spray area for disposal at Tonini compared to Proposed Project 4. These additions and modifications would not alter the construction periods for the collection system, treatment plant, or disposal facilities that are estimated under Proposed Project 4. Under the Preferred Project, the modifications to the pipelines would result in some nominal increases and decreases in construction trips. The addition of pump stations and pipelines would nominally increase the total construction trips associated with the collection system. The modification of treatment process to Oxidation Ditch or Biolac® would substantially reduce excavation volumes and would nominally reduce construction traffic on public roads because excavated material would be balanced onsite. Furthermore, a nominal increase in construction traffic would occur with the additional spray area that requires additional preparation. Based on a review of the additions and modifications under the Preferred Project, construction traffic would nominally change compared to the construction traffic associated with Proposed Project 4. Trips generated by the construction activities would still include employees traveling to and from the construction sites and material/equipment deliveries. Similar to Proposed Project 4, the construction material and equipment deliveries associated with the Preferred Project would result in temporary lane closures and limited access to residences and businesses that may cause short-term significant impacts on the existing capacity of the roadways and intersections.

Long-term Operational Impacts

Similar to Proposed Project 4, operational activities associated with the collection system, facilities at the treatment plant site, and disposal site facilities under the Preferred Project would generate additional traffic on the roadways and intersections within the community of Los Osos. The addition of pump stations and pipelines as well as the additional spray area may result in a nominal increase in

traffic, but this increase would be for periodic maintenance and would not require a daily maintenance trip. The revision of the treatment process to Oxidation Ditch/Biolac® would require an additional 0.5 full time employee; however, trips associated with a 0.5 full time employee is nominal. Lastly, this revised treatment process would decrease the annual maintenance needs; however, this decrease would be periodic and would be less than one daily trip per day. Overall, the additions and modifications under the Preferred Project would nominally change operational traffic compared to Proposed Project 4. Since traffic associated with Proposed Project 4 would result in less than significant impacts on study area intersections based on County standards and traffic associated with the Preferred Project would nominally change long-term daily traffic, the Preferred Project would result in a similar less than significant impact finding as Proposed Project 4.

Cumulative Impact Analysis

Similar to Proposed Project 4, the Preferred Project may result in short-term significant impacts on the existing capacity of the roadways and intersections within Los Osos. Since there are no related projects that would contribute to cumulative impacts, the Preferred Project would not contribute to short-term cumulative construction traffic impacts. Under Proposed Project 4, traffic growth rates in the vicinity of the Los Osos Community were evaluated to assess potential long-term traffic impacts. These growth rates may reflect increases in population without new development. Based on a review of the growth rates, a one percent annual growth factor was used to forecast future traffic volumes for the Los Osos area in order to account for potential growth in the surrounding areas. The growth factor was developed based on historical traffic growth in the Los Osos area and applied for a period of 10 years to represent cumulative conditions.

Based on the findings above that the proposed additions and modifications under the Preferred Project would nominally change traffic volumes and the findings under Proposed Project 4 that less than significant cumulative impacts to roadways and intersections would occur, the Preferred Project would result in similar finding of less than significant compared to Proposed Project 4.

Mitigation Measures

Project-Specific

5.8-A1 Prior to construction, a traffic management plan shall be prepared for review and approval by the County of San Luis Obispo Transportation Division. The traffic management plan shall be based on the type of roadway, traffic conditions, duration of construction, physical constraints, nearness of the work zone to traffic and other facilities (bicycle, pedestrian, driveway access, etc.). The traffic management plan shall include:

a) Advertisement. An advertisement campaign informing the public of the proposed construction activities should be developed. Advertisements

should occur prior to beginning work and periodically during the course of project construction.

b) Property Access. Access to parcels along the construction area shall be maintained to the greatest extent feasible. Affected property owners shall receive advance notice of work adjacent to their property access and when driveways would be potentially closed.

c) Schools. Any construction adjacent to schools shall ensure that access is maintained for vehicles, pedestrians, and bicyclists, particularly at the beginning and end of the school day.

d) Buses, Bicycles and Pedestrians. The work zone shall provide for passage by buses, bicyclists and pedestrians, particularly in the vicinity of schools.

e) Intersections. Traffic control (i.e. use of flag men) shall be used at intersections that are determined to be unacceptably congested due to construction traffic.

Cumulative

No mitigation measures are required.

Level of Significance After Mitigation

Project-Specific

Less than significant.

Cumulative

Less than significant.

Air Traffic Patterns

Q5.8-B:	**The project would not result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks.**

Project Specific Impact Analysis

Similar to Proposed Project 4, the nearest airport to the Preferred Project is the San Luis Obispo County Airport located approximately 14 miles to the east. The Preferred Project would not result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks similar to Proposed Project 4.

Cumulative Impact Analysis

Similar to Proposed Project 4, the Preferred Project would not result in a change in air traffic patterns, including either an increase in traffic levels or change in locations that result in substantial safety risks. Since the Preferred Project would not contribute to impacts on air traffic patterns, the Preferred Project would not contribute to any cumulative impact on air traffic patterns.

Mitigation Measures

Project-Specific

No mitigation measures are required.

Cumulative

No mitigation measures are required.

Level of Significance After Mitigation

Project-Specific

No impact.

Cumulative

No impact.

Traffic Hazards

Q5.8-C: The project may substantially increase traffic hazards.

Project Specific Impact Analysis

As described in Table Q.5-1, the Preferred Project includes additional and modified facilities compared to Proposed Project 4. The proposed facilities do not include any hazardous features and implementation of the Preferred Project would not affect public safety or increase hazards due to a design feature or incompatible uses. However, similar to Proposed Project 4, the construction of pipelines along roadways under the Preferred Project may generate short-term hazards to motorists and cyclists due to temporary lane closures, limited access to residences and businesses, and increase project truck traffic. It is noted that construction of the pipeline would affect limited areas for relatively short time periods (i.e. construction would not affect the entire street system within the community for the entire 2-year period). Therefore, similar to Proposed Project 4, short-term significant traffic impacts could occur during relatively short time periods at any one location during construction activities.

Cumulative Impact Analysis

Similar to Proposed Project 4, the Preferred Project would not contribute to cumulative traffic hazard impacts because there are no related projects that would contribute to cumulative construction traffic hazard impacts.

Mitigation Measures

Project-Specific

Implementation of Mitigation Measure 5.8-A1 is required.

Cumulative

No mitigation measures are required.

Level of Significance After Mitigation

Project-Specific

Less than significant.

Cumulative

No impact.

Emergency Access

Q5.8-D: The project would result in adequate emergency access.

Project Specific Impact Analysis

Similar to Proposed Project 4, long-term operational activities associated with the facilities under the Preferred Project would not result in inadequate emergency access. However, the construction of pipelines along roadways may limit emergency access, due to temporary lane closures and limited access to residences and businesses. It is noted that construction of the pipeline would affect limited areas for relatively short time periods (i.e. construction would not affect the entire street system within the community for the entire 2-year period). Therefore, similar to Proposed Project 4, potential impacts to emergency access during construction activities would be considered less than significant.

Cumulative Impact Analysis

Similar to Proposed Project 4, the Preferred Project would not result in inadequate emergency access. Since the Preferred Project would not contribute to impacts on emergency access, the Preferred Project would not contribute to cumulative impacts on emergency access.

Mitigation Measures

Project-Specific

No mitigation measures are required.

Cumulative

No mitigation measures are required.

Level of Significance After Mitigation

Project-Specific

Less than significant.

Cumulative

No impact.

Parking Capacity

Q5.8-E: The project would result in adequate parking capacity.

Project Specific Impact Analysis

Similar to Proposed Project 4, the proposed treatment plant facilities under the Preferred Project include treatment facilities, appurtenant structures and storage facilities located on the Tonini parcel. As described in Table Q.5-1, the Preferred Project will include an Oxidation Ditch or Biolac® facility. Similar to Proposed Project 4, nominal parking facilities would be required at the proposed treatment facilities, and the design of these facilities would include adequate parking for the Preferred Project. Detailed plans for the proposed facilities would include parking that will comply with the San Luis Obispo Municipal Code. Therefore, the Preferred Project would result in no impacts on future parking facilities.

Cumulative Impact Analysis

Similar to Proposed Project 4, since there are no related projects that would contribute to cumulative impacts, implementation of the Preferred Project would provide adequate parking facilities and would not contribute to potential cumulative impacts on parking.

Mitigation Measures

Project-Specific

No mitigation measures are required.

Cumulative

No mitigation measures are required.

Level of Significance After Mitigation

Project-Specific

No impact.

Cumulative

No impact.

Conflict with Alternative Transportation

Q5.8-F: The project may conflict with adopted policies, plans, or programs supporting alternative transportation (e.g. bus turnouts, bicycle racks).

Project Specific Impact Analysis

Similar to Proposed Project 4, the construction of pipelines along roadways under the Preferred Project may conflict with the Route 12 bus route, due to temporary lane closures and short-term closures or displacement of bus stops. It has been noted that construction of the pipeline would affect limited areas for relatively short time periods (i.e. construction would not affect the entire street

system within the community for the entire 2-year period). These impacts on existing bus stops along Route 12 would be temporary; however, they are considered potentially significant.

Cumulative Impact Analysis

Since there are no related projects that would contribute to cumulative impacts, implementation of the Preferred Project would not contribute to cumulative impacts on alternative transportation systems such as the bus system similar to Proposed Project 4. Therefore, the Preferred Project would result in no cumulative impacts on alternative transportation systems.

Mitigation Measures

Project-Specific

Implementation of Mitigation Measures 5.8-A1 is required.

Cumulative

No mitigation measures are required.

Level of Significance After Mitigation

Project-Specific

Less than significant.

Cumulative

No impact.

Conflict with Local Goals and Policies

Q5.8-G:	**The project may conflict with local goals and policies relating to traffic and transportation.**

Project Specific Impact Analysis

As described in Table Q.5-1, the Preferred Project includes additional facilities as well as modifications to facilities compared to Proposed Project 4. Based on a review of the County of San Luis Obispo goals and policies related to traffic and transportation, the Preferred Project may not be consistent with the applicable goals and policies without mitigation, due to impacts associated with construction activities. This finding is similar to the finding for Proposed Project 4.

Cumulative Impact Analysis

Since there are no related projects that would contribute to cumulative impacts on transportation and traffic goals and policies, implementation of the Preferred Project would not contribute to cumulative impacts on transportation and traffic goals and policies similar to Proposed Project 4.

Mitigation Measures

Project-Specific

Implementation of Mitigation Measures 5.8-A1 is required.

Cumulative

No mitigation measures are required.

Level of Significance After Mitigation

Project-Specific

Less than significant.

Cumulative

No impact.

Q.5.9 - Air Quality

The following impact evaluation is based on the environmental setting, regulatory setting, and thresholds of significance discussions provided for the proposed projects in Draft EIR Section 5.9, Air Quality, and in Appendix K-1, Expanded Air Quality Analysis. These previous discussions are not repeated in the following evaluation. The evaluation is a comparative analysis between the Preferred Project and Proposed Project 4.

Air Quality Plan

Q5.9-A:	**The project would not conflict with or obstruct implementation of the applicable air quality plan.**

Project Specific Impact Analysis

Collection System

Similar to Proposed Project 4, the Preferred Project includes the construction and operation of a wastewater system. As shown in Table Q.5-1, the Preferred Project includes the addition of pump stations and pipelines, modifications to pipelines, alteration of the treatment process to oxidation ditch or Biolac®, and the addition of spray area for disposal at Tonini compared to Proposed Project 4. With the additions and modifications identified in Table Q.5-1, the Preferred Project would result in a similar finding of no conflict with or no obstruction with the implementation of the adopted Clean Air Plan similar to Proposed Project 4.

Cumulative Impact Analysis

Similar to Proposed Project 4, the Preferred Project would result in no impacts relating to being in conflict with or obstructing the implementation of the adopted Clean Air Plan. Therefore, the Preferred Project would not contribute to any potential cumulative impacts on the implementation of the applicable air quality plan.

Mitigation Measures

Project-Specific

No mitigation measures are required.

Cumulative

No mitigation measures are required.

Level of Significance After Mitigation

Project-Specific

No Impact.

Cumulative

No Impact.

Air Quality Standards / Violations

Q5.9-B: **The project would not violate any air quality standard or contribute substantially to an existing or projected air quality violation.**

Project Specific Impact Analysis

Similar to Proposed Project 4, the Preferred Project would include a relative short-term time frame (i.e., 2 years) for the construction of the proposed facilities. Due to this short-term construction time frame as well as the low level of operational emissions as discussed in Impact 5.9-C, the Preferred Project would not exceed the District's concentration standards. Therefore, similar to Proposed Project 4, the Preferred Project would result in less than significant impacts related to the District concentration standards.

Cumulative Impact Analysis

Similar to Proposed Project 4, the Preferred Project would result in less than significant impacts relating to exceeding the District's pollutant concentration standards. Therefore, the Preferred Project's contribution to potential cumulative impacts related to the District's concentration standards is less than cumulatively considerable.

Mitigation Measures

Project-Specific

No mitigation measures are required.

Cumulative

No mitigation measures are required.

Level of Significance After Mitigation

Project-Specific

Less than significant.

Cumulative

Less than significant.

Criteria Pollutant

Q5.9-C: **The project may result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or State ambient air quality standard (including releasing emissions, which exceed quantitative thresholds for ozone precursors).**

Project Specific Impact Analysis

Construction

Daily and quarterly construction air emissions of criteria pollutants associated with the Preferred Project would be similar to the emissions associated with Proposed Project 4. The Preferred Project

would result in the addition of pump stations and pipelines, modifications to pipelines, alteration of the treatment process to oxidation ditch or Biolac®, and the addition of spray area for disposal at Tonini compared to Proposed Project 4. The change from facultative ponds to an oxidation ditch or Biolac® would require substantially less excavation, and thereby reducing emissions. The addition of pump stations and spray area (requiring contour plowing) would increase emissions. Overall, the emissions associated with the Preferred Project would be similar to Proposed Project 4. As with Proposed Project 4, the construction air emissions associated with the Preferred Project would contribute to the potential to exceed the District's NO_X pounds per day and tons per quarter thresholds and the District's PM_{10} tons per quarter threshold. Therefore, similar to Proposed Project 4, the Preferred Project would contribute to potential significant NO_X and PM_{10} emissions impacts during construction of the facilities.

Operational

Similar to Proposed Project 4, long-term air emissions associated with the collection system, treatment plant site, and disposal sites would be generated by the Preferred Project. The Preferred Project's daily operational emissions of criteria pollutants would be less than the District's thresholds similar to Proposed Project 4. Therefore, long-term emissions of criteria pollutants would be less than significant.

Cumulative Impact Analysis

Similar to Proposed Project 4, the Preferred Project would result in potentially significant NO_x and PM_{10} impacts relating to short-term construction emissions. Therefore, the Preferred Project could contribute to potential cumulatively considerable net increases in NO_x and PM_{10} emissions; thus, resulting in significant impacts.

Mitigation Measures

Project-Specific

5.9-C1 Prior to issuance of grading permits, the applicant shall submit a Construction Activities Management Plan for the review and approval of the SLOAPCD. This plan shall include but not be limited to the following Best Available Control Technologies for construction equipment:

a. Minimize the number of large pieces of construction equipment operating during any given period.
b. Schedule construction related truck/equipment trips during non-peak hours to reduce peak-hour emissions.
c. Properly maintain and tune all construction equipment according to manufacturer's specifications.
d. Fuel all off-road and portable diesel powered equipment including but not limited to: bulldozers, graders, cranes, loaders, scrapers, backhoes,

generators, compressors, auxiliary power units, with CARB motor vehicle diesel fuel.

e. Use 1996 or newer heavy duty off road vehicles to the extent feasible.
f. Use Caterpillar pre-chamber diesel engines (or equivalent) together with proper maintenance and operation to reduce emissions of NOX.
g. Electrify equipment where possible.
h. Use Compressed Natural Gas (CNG), liquefied natural gas (LNG), biodiesel, or propane for on-site mobile equipment instead of diesel- powered equipment.

5.9-C2 Prior to initiating grading activities, the proponent's contractor or engineer shall:

a. Include the following specifications on all project plans: One catalyzed diesel particulate filter (CDPF) shall be used on the piece of equipment estimated to generate the greatest emissions. If a CDPF is unsuitable for the potential equipment to be controlled, five diesel oxidation catalysts (DOC) shall be used.
b. Identify equipment to be operated during construction as early as possible in order to place the order for the appropriate filter and avoid any project delays. This is necessary so that contractors bidding on the project can include the purchase, proper installation, and maintenance costs in their bids.
c. Contact the SLOAPCD Compliance Division to initiate implementation of this mitigation measure at least two months prior to start of construction.

5.9-C3 Prior to initiating grading activities, if it is determined that portable engines and portable equipment would be utilized, the contractor shall contact the SLOAPCD and obtain a permit to operate portable engines or portable equipment, and shall be registered in the statewide portable equipment registration program. The SLOAPCD Compliance Division shall be contacted in order to determine the requirements of this mitigation measure.

5.9-C4 Project contract documents would include the following dust control measures:

a. Reduce the amount of the disturbed area where possible,
b. Use water trucks or sprinkler systems in sufficient quantities to prevent airborne dust from leaving the site. Increased watering frequency will be required whenever wind speeds exceed 15 mph. Reclaimed (non-potable) water should be used whenever possible.
c. All dirt stockpile areas will be sprayed daily as needed,

d. Permanent dust control measures identified in the revegetation and landscape plans will be implemented as soon as possible following completion of any soil disturbing activities.
e. Exposed ground areas that are planned to be reworked at dates greater than one month after initial grading will be sown with a fast germinating native grass seed and watered until vegetation is established.
f. All disturbed soil areas not subject to revegetation will be stabilized using approved chemical soil binders, jute netting, or other methods approved in advance by the SLOAPCD.
g. All roadways, driveways, sidewalks, etc. to be paved will be completed as soon as possible. In addition, building pads will be laid as soon as possible after grading unless seeding or soil binders are used.
h. Vehicle speed for all construction vehicles will not exceed 15 mph on any unpaved surface at the construction site.
i. All trucks hauling dirt, sand, soil, or other loose materials are to be covered or will maintain at least two feet of freeboard (minimum vertical distance between top of load and top of trailer) in accordance with California Vehicle Code (CVC) Section 23114.
j. Install wheel washers where vehicles enter and exit unpaved roads onto streets, or wash off trucks and equipment leaving the site.
k. Sweep streets at the end of each day if visible soil material is carried onto adjacent paved roads. Water sweepers with reclaimed water should be used where feasible.
l. If visible emissions of fugitive dust persist beyond a distance of 200 feet from the boundary of the construction site, all feasible measures shall be implemented to eliminate potential nuisance conditions at off-site receptors (e.g., increase frequency of watering or dust suppression, install temporary wind breaks where appropriate, suspend excavation and grading activity when winds exceed 25 mph)
m. The contractor will designate a person or persons to monitor the dust control program and to order increased watering, as necessary, to prevent transport of dust offsite. Their duties will include holidays and weekend periods when work may not be in progress. The name and telephone number of such persons will be provided to the SLOAPCD prior to the start of construction.

5.9-C5 If the above mitigation measures do not bring the construction emissions below the thresholds, off-site mitigation funds can be used to secure emission reductions from projects located in close proximity to this construction site. In this instance, emissions in excess of construction phase thresholds are multiplied by the cost effectiveness value defined in the State's current Carl Moyer Incentive Program

Guidelines to determine the off-site mitigation amount associated with the construction period. Examples of off-site emission reduction measures are contained in Section 5.9 of the 2003 CEQA Air Quality Handbook. The actual mix of mitigation measures that would be required to meet the reduction in NO_X to less than a total of 185 lbs per day or 6.0 tons per quarter over the term of construction, would be finalized and mutually agreed to by the Project Proponent and appropriate staff of the SLOAPCD prior to commencement of construction of the project.

Cumulative

Implementation of Mitigation Measures 5.9-C1 through 5.9-C5 are required.

Level of Significance After Mitigation

Project-Specific

Less than significant.

Cumulative

Less than significant.

Sensitive Receptors

Q5.9-D: The project may expose sensitive receptors to substantial pollutant concentrations.

Project Specific Impact Analysis

Collection System

Similar to Proposed Project 4, the collection system under the Preferred Project is a gravity system that consists of a combination of conventional gravity sewers (GS) and low-pressure grinder pumps (LPGP). As described in Table Q.5-1, the Preferred Project includes additional collection system facilities such as pump stations, standby power stations, and pipelines, as well as modifications to specific locations and size of facilities such as the central pump station, pipelines within streets, and pipelines crossing creeks compared to Proposed Project 4. Construction activities would occur on properties throughout the community that include sensitive land uses such as residential as well as along roadways that are adjacent to sensitive land uses. Similar to Proposed Project 4, the construction activities associated with the Preferred Project have the potential to expose sensitive receptors to substantial pollutant concentrations during the construction phase. Although the Preferred Project would be adding facilities, the addition to pollutant concentrations is nominal to the project as a whole, therefore, short-term exposure during construction activities is still considered potentially significant.

Similar to Proposed Project 4, during operation of the Preferred Project, the collection system would be primarily underground and would not have the potential to expose sensitive receptors to substantial pollutant concentrations. Therefore, the sensitive receptors that are located near the collection system

would experience less than significant impacts related to the long-term exposure to substantial pollutant concentrations.

Treatment Plant Site

Similar to Proposed Project 4, the proposed treatment plant facilities under the Preferred Project include treatment facilities, appurtenant structures and storage facilities located on the Tonini parcel. As described in Table Q.5-1, the Preferred Project will include an Oxidation Ditch or Biolac® facility that encompasses less area and requires substantially less grading than the facultative ponds proposed under Proposed Project 4. Due to the site's remoteness from sensitive receptors, construction activities associated with the proposed treatment plant facilities would not have a potential to expose nearby sensitive receptors to substantial pollutant concentrations. Therefore, similar to Proposed Project 4, construction activities associated with the proposed facilities at the treatment plant site under the Preferred Project would result in a less than significant impact related to the short-term exposure of sensitive receptors to substantial pollutant concentrations.

Since the operation of the treatment plant would not result in the generation of substantial pollutants as shown in Table 5.9-8 of the Draft EIR, no substantial pollutant concentrations would occur. Therefore, similar to Proposed Project 4, long-term operational activities would result in less than significant impacts related to the exposure of sensitive receptors to substantial pollutant concentrations generated under the Preferred Project.

Disposal Sites

Similar to Proposed Project 4, the proposed disposal systems under the Preferred Project include sprayfields at the Tonini parcel and leachfields at the Broderson parcel. Under the Preferred Project, the type of spray was revised to exclude percolation and as a result, approximately 73 more acres of sprayfields are proposed to accommodate the 842 acre-feet of spray at Tonini compared to Proposed Project 4.

Similar to Proposed Project 4, construction activities associated with the proposed sprayfield facilities at Tonini would not have a potential to expose nearby sensitive receptors to substantial pollutant concentrations due to the site's remoteness from sensitive receptors. Therefore, sprayfield construction activities would result a less than significant impact to sensitive receptors.

Similar to Proposed Project 4, the operation of the disposal site at Tonini under the Preferred Project would not result in the generation of substantial pollutants because no substantial pollutant concentrations would occur. Therefore, the sensitive receptors that are located in the vicinity of Tonini would experience less than significant impacts related to the long-term operations.

Combined Project Effects

Similar to Proposed Project 4, the proposed facilities at the treatment plant and sprayfields under the Preferred Project would be located on the Tonini parcel. The combination of the two facilities on the Tonini parcel could increase pollutant concentrations in the project vicinity, but due to the site's

remoteness from sensitive receptors, construction and operational activities would result in a less than significant pollutant concentrations impact to sensitive receptors.

Cumulative Impact Analysis

Similar to Proposed Project 4, the Preferred Project would not contribute to any cumulative exposure of pollutant concentrations during construction because there are no cumulative projects that would expose the same sensitive receptors as the Preferred Project.

Mitigation Measures

Project-Specific

Mitigation Measures 5.9-C1, 5.9-C2, and 5.9-C4 are required.

Cumulative

No mitigation measures are required.

Level of Significance After Mitigation

Project-Specific

Less than significant.

Cumulative

Less than significant.

Odors

Q5.9-E:	**The project would not create objectionable odors affecting a substantial number of people.**

Project Specific Impact Analysis

Collection System

Similar to Proposed Project 4, the collection system under the Preferred Project is a gravity system. As described in Table Q.5-1, the Preferred Project includes additional collection system facilities such as pump stations, standby power stations, and pipelines, as well as modifications to specific locations and size of facilities such as the central pump station, pipelines within streets, and pipelines crossing creeks compared to Proposed Project 4. Although additions and modifications are proposed under the Preferred Project, the potential for odor would be the same as Proposed Project 4. During construction activities under the Preferred Project, off-road diesel equipment would be operated in close proximity to residences during the installation of the underground conveyance. Diesel exhaust could be emitted during construction, which may be objectionable to some; however, emissions would disperse rapidly from the project site. Therefore, similar to Proposed Project 4, odor impacts associated with construction activities of the Preferred Project would be less than significant.

In addition, similar to Proposed Project 4, the collection system associated with the Preferred Project has the potential for long-term operational odors at the pump stations. However, the pump stations are below ground and would include an odor control element to control odor. Therefore, similar to Proposed Project 4, the Preferred Project would result in less than significant odor impacts from the operation of the collection system.

Treatment Plant Site

Similar to Proposed Project 4, the proposed treatment plant facilities under the Preferred Project include treatment facilities, appurtenant structures and storage facilities located on the Tonini parcel. As described in Table Q.5-1, the Preferred Project will include an Oxidation Ditch or Biolac® facility. Similar to the collection system, the construction of the treatment plant would have off-road diesel equipment would be operated in close proximity to residences during construction of the treatment plant. Diesel exhaust could be emitted during construction, which may be objectionable to some; however, emissions would disperse rapidly from the project site. Therefore, similar to Proposed Project 4, odor impacts associated with the treatment plant construction activities of the Preferred Project would be less than significant.

Odor controls are a typical part of treatment plant facilities. Under Proposed Project 4, the method of odor control is a system based on inorganic media. Under the Preferred Project which includes the Oxidation Ditch or Biolac® facility, odor controls are also part of the treatment plant facility. The solids processing equipment would be enclosed within a building and an inorganic media air scrubber would trap and scrub the interior foul air before releasing it to the outside air. The headworks for the Oxidation Ditch or Biolac® system include a de-gritting system that typically involve enclosed tanks to prevent release of odors and for the safety of operations staff. The washed grit collected in the hopper is still a source of odors, but it is only localized that would be noticeable to onsite staff. It is unlikely that the washed grit collected in the hopper would produce sufficient odor to affect offsite receptors. Odor from the washed grit is not expected to be detectable at a distance of 200 feet from the hopper. Since the nearest residence is approximately 350 feet from the Tonini site, odor impacts on residences from the headworks would be less than significant. This less than significant finding is the same as the finding for potential odor impacts from the treatment plant facility proposed under Proposed Project 4.

Disposal Sites

Similar to Proposed Project 4, the proposed disposal systems under the Preferred Project include sprayfields at the Tonini parcel and leachfields at the Broderson parcel. Under the Preferred Project, the type of spray was revised to exclude percolation and as a result, approximately 73 more acres of sprayfields are necessary to accommodate the 842 acre-feet of spray at Tonini compared to Proposed Project 4. The Preferred Project also includes setbacks from Turri Road and the property south of Tonini, and Proposed Project 4 did not include setbacks. Although additional sprayfield areas are included under the Preferred Project, these additional sprayfield areas are located further from residences than the sprayfield areas under Proposed Project 4. Therefore, similar to Proposed Project

4, the construction and operation of the disposal facilities under the Preferred Project would result in less than significant odor impacts.

Combined Project Effects

Similar to Proposed Project 4, the operations of the proposed collection, treatment plant, and disposal facilities under the Preferred Project are designed to minimize odors throughout the system. In addition, construction activities would include diesel equipment, but the diesel exhaust would disperse rapidly and would not be at a level to induce a negative response. Therefore, similar to Proposed Project 4, the potential for operational and construction odor impacts under the Preferred Project would be less than significant.

Cumulative Impact Analysis

Similar to Proposed Project 4, the Preferred Project would result in less than significant odor impacts due to normal operations and construction. Since there are no related projects that would contribute to cumulative impacts, the Preferred Project would not contribute to cumulative impacts on creating objectionable odors.

Mitigation Measures

Project-Specific

No mitigation measures are required.

Cumulative

No mitigation measures are required.

Level of Significance After Mitigation

Project-Specific

Less than significant.

Cumulative

Less than significant.

Greenhouse Gas Emissions

Q5.9-F:	**The project would not result in an increase in greenhouse gas emissions that would significantly hinder or delay the State's ability to meet the reduction targets contained in AB 32.**

Project Specific Impact Analysis

Construction

Similar to Proposed Project 4 and as amended in the Information Update dated December 19, 2008, greenhouse gas (GHG) emissions would be generated during construction activities of the Preferred Project's proposed collection system, treatment plant facilities, and disposal facilities. The largest change in GHG emissions from Proposed Project 4 (i.e., facultative ponds) would occur with the

reduced grading and construction activities associated with the Oxidation Ditch or Biolac® system. This change would result in a reduced amount of GHG emissions. The Preferred Project also includes additions and modifications to the collection system as well as the increased area of the sprayfield that would result in an increase in GHG emissions. Overall, the GHG construction emissions associated with the Preferred Project are expected to be less than the GHG emissions associated with Proposed Project 4. Similar to Proposed Project 4, the Preferred Project would result in a less than significant GHG impact during construction.

Operational

As with Proposed Project 4 and as amended in the Information Update dated December 19, 2008, GHG emissions associated with the Preferred Project would be generated during the operation of the collection system and treatment plant facilities. Similar to construction GHG emissions, the largest operational change in GHG emissions for the Preferred Project is the inclusion of the Oxidation Ditch or Biolac® system compared to a facultative pond system under Proposed Project 4. This change would result in less GHG emissions at the treatment plant under the Preferred Project compared to Proposed Project 4. The Preferred Project also included additions and modifications to the collection system; however, the GHG emissions associated with these changes would still result in an overall reduction of operational GHG emissions for the Preferred Project compared to Proposed Project 4. Unlike Proposed Project 4 as amended in the Information Update dated December 19, 2008, the operational activities of the facilities associated with the Preferred Project would contribute to a beneficial impact on GHG emissions because these emissions would be less than the operational emissions associated with the existing system.

Cumulative Impact Analysis

Similar to Proposed Project 4, the Preferred Project would increase GHG emissions during construction activities and reduce operational GHG emissions compared to the existing wastewater system. Therefore, the Preferred Project's overall contribution to GHG emissions is considered less than cumulatively considerable similar to Proposed Project and as amended in the Information Update dated December 19, 2008. Thus, similar to Proposed Project 4, the Preferred Project would result in a less than significant impact on cumulative GHG emissions.

Mitigation Measures

Project-Specific

No mitigation measures are required.

Cumulative

No mitigation measures are required.

Level of Significance After Mitigation

Project-Specific

Less than significant.

Cumulative

Less than significant.

Conflict with Local Goals and Policies

Q5.9-G: The project would not conflict with local goals and policies in the General Plan.

Project Specific Impact Analysis

The County of San Luis Obispo does not have any air quality goals or policies in the current adopted General Plan that are relevant to Preferred Project. Therefore, similar to Proposed Project 4, the Preferred Project would not impact any County General Plan air quality goals or policies.

Cumulative Impact Analysis

Similar to Proposed Project 4, the Preferred Project would not impact currently adopted General Plan air quality goals or policies, and therefore, would not contribute to cumulative impacts on air quality goals or policies.

Mitigation Measures

Project-Specific

No mitigation measures are required.

Cumulative

No mitigation measures are required.

Level of Significance After Mitigation

Project-Specific

No impact.

Cumulative

No impact.

Q.5.10 - Noise

The following impact evaluation is based on the environmental setting, regulatory setting, and thresholds of significance discussions provided for the proposed projects in Draft EIR Section 5.10, Noise, and in Appendix L-1, Expanded Noise Analysis. These previous discussions are not repeated in the following evaluation. The evaluation is a comparative analysis between the Preferred Project and Proposed Project 4.

Noise Levels in Excess of Standards and Substantial (Permanent) Increase in Noise Levels

Q5.10-A:	**The project would result in exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies and result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project.**

Project Specific Impact Analysis

Collection System

Similar to Proposed Project 4, the collection system under the Preferred Project is a gravity system that consists of a combination of conventional gravity sewers (GS) and low-pressure grinder pumps (LPGP). As described in Table Q.5-1, the Preferred Project includes additional collection system facilities such as pump stations, standby power stations, and pipelines, as well as modifications to specific locations and size of facilities such as the central pump station, pipelines within streets, and pipelines crossing creeks compared to Proposed Project 4. Based on a review of the additions and modifications of the collection system facilities, the Preferred Project could expose persons to long-term noise levels in excess of standards similar to Proposed Project 4.

The addition of collection system facilities under the Preferred Project compared to Proposed Project 4 would result in a similar noise levels during on-going operation and maintenance activities for on-lot improvements. With the addition and modifications of pipelines within the in-town collection system, the Preferred Project could create significant impacts from on-going operations of back-up diesel generators used for the collection system. Similar to Proposed Project 4, noise levels created by back-up diesel generators could be significant. Furthermore, similar to Proposed project 4, stationary noise associated with the on-going operations of the out of town conveyance system would be less than significant under the Preferred Project.

Treatment Plant Site

Similar to Proposed Project 4, the proposed treatment plant facilities under the Preferred Project include treatment facilities, appurtenant structures and storage facilities located on the Tonini parcel. As described in Table Q.5-1, the Preferred Project will include an Oxidation Ditch or Biolac® facility. In addition, a 30,000-gallon water storage tank and enclosed diesel water pump would be installed under the new project. Based on the analysis under the Proposed Project 4, the Preferred Project would have similar long-term noise impacts to exposing persons to noise levels exceeding

existing standards. Therefore, the Preferred Project may have a significant impact from noise generated by the treatment facilities, similar to Proposed Project 4.

Disposal Sites

The effluent disposal for the Preferred Project would be the same system as described for Proposed Project 4. Therefore, the Preferred Project's operational noise impacts would be similar to what was calculated above for Proposed Project 4, which found that the stationary noise impacts associated with the on-going operations of the Broderson Leachfield and Tonini Sprayfield would be less than significant.

Combined Project Effects

The stationary noise created by the simultaneous on-going operations of multiple portions of the Preferred Project would not create a noticeable increase over the operational noise levels for the different sites. However, the on-going operations associated with each site would produce additional on-road vehicular traffic, which may create a combined traffic noise impact. The combined on-going operations of the collection system, treatment plant site, and disposal site for the Preferred Project would generate long-term traffic noise levels; however, due to the nominal change in traffic with the Preferred Project compared to Proposed Project 4, noise level would be nominally different. As a result, similar to Proposed Project 4, the Preferred Project would result in less than significant long-term traffic noise.

Cumulative Impact Analysis

Since the Preferred Project would result in a nominal change in traffic compared to Proposed Project 4, the cumulative impacts identified for Proposed Project 4 would be similar to the Preferred Project. Based on the contribution of traffic noise levels of Proposed Project 4 to cumulative noise level were 1.5 dB or less, the implementation of the Preferred Project would be similar. Since, the County's threshold of significance includes a 3 dBA CNEL increase, the traffic noise levels associated with the Preferred Project would be less than significant which is similar to the finding for Proposed Project 4.

Mitigation Measures

Project-Specific

5.10-A1 The project applicant shall require that the treatment plant be designed so that the mechanical aeration system is located a minimum of 250 feet away from the nearest residence.

5.10-A2 The project applicant shall require that the treatment plant be designed so that the backup diesel generator is enclosed in a structure and is located a minimum of 250 feet away from the nearest residence.

5.10-A3 The County will require that the backup power facility structures for the in-town collection system be designed so that the noise created from the backup diesel generator that would be located inside the structure would not exceed 45 dBA Leq at

the nearest property line. The noise from the backup diesel generator may be attenuated through the use of a "manufacturer enclosure" or through incorporation of noise attenuation design features into the backup power facility structure.

Cumulative

No mitigation measures are required.

Level of Significance After Mitigation

Project-Specific

Less than significant.

Cumulative

Less than significant.

Excessive Groundborne Vibration

Q5.10-B:	**The project could expose people to or generation of excess groundborne vibration or groundborne noise levels.**

Project Specific Impact Analysis

Collection System

Similar to Proposed Project 4, the collection system under the Preferred Project is a gravity system. As described in Table Q.5-1, the Preferred Project includes additional collection system facilities such as pump stations, standby power stations, and pipelines, as well as modifications to specific locations and size of facilities such as the central pump station, pipelines within streets, and pipelines crossing creeks compared to Proposed Project 4. Similar to Proposed Project 4, the proposed construction of the Preferred Project will consist of pile driving which may cause significant groundborne vibrations. Based on a review of the additions and modifications of the collection system facilities, the Preferred Project could pose the same significant vibration impacts during construction of the collection system as the impacts that could occur with Proposed Project 4.

Treatment Plant Site

The treatment of the raw wastewater for the Preferred Project would consist of raw wastewater being transported to the Tonini site where the raw wastewater would then be treated through the use of Biolac® systems or an Oxidation Ditch as described in Table Q.5-1. The greatest construction vibration impacts are anticipated to occur during the grading operations when the simultaneous operation of earthmovers and other grading equipment occurs. Since the Preferred Project would require less excavation for the treatment facility compared to Proposed Project 4, less over all vibration would occur, but daily vibration levels could be similar. Since vibration levels associated with the Preferred Project would be similar to Proposed Project 4, the potential vibration impacts for the Preferred Project would be less than significant, similar to Proposed Project 4.

Disposal Sites

The effluent disposal for Proposed Project 4 would be the same system as described for the Preferred Project. Although the Preferred Project includes approximately 73 more acres of sprayfields, this increase would not alter the level of vibration expected at the Tonini site that were identified for the Proposed Project. Therefore, vibration impacts during construction of the disposal sites for the Preferred Project would be less than significant, similar to Proposed Project 4.

Combined Project Effects

Similar to Proposed Project 4, the proposed facilities for the treatment and sprayfields under the Preferred Project would be located on the Tonini parcel. The combination of the two facilities on the Tonini parcel would encompass approximately 262 acres of the approximate 650-acre parcel. The combined project on-going operations vibration impacts for the Preferred Project would be similar as described for Proposed Project 4, and would result in less than significant impacts. Since vibration impacts during construction of the collection system could be significant, combined project vibration effects could be significant.

Cumulative Impact Analysis

Since there are no related projects that would contribute to cumulative vibration impacts, implementation of the Preferred Project would not contribute to cumulative vibration impacts.

Mitigation Measures

Project-Specific

5.10-B1 Prior to initiation of construction of the collection system, the contractor/designer shall identify all areas where pile driving, or other construction methods that would result in severe ground vibrations, could occur. Deep pile foundation designs shall favor techniques that can be constructed with minimal vibration effects. Prior to construction, the contractor shall calculate the vibration effects of pile driving and other high vibration activities using the Peak Particle Velocity (PPV) metric, and shall ensure that the PPV does not exceed the following thresholds at any affected building: 0.5 at modern industrial/commercial or residential buildings; 0.3 for any building composed of masonry, unreinforced concrete, lath & plaster interiors or of similar construction; and 0.25 for any building identified as particularly sensitive to vibration impacts. Alternative design and/or construction methods shall be used to meet these limits. In addition, the construction contractor shall notify all property owners and tenants adjacent to the proposed pile driving or other vibration inducing activities of the days and hours of operation. Prior to construction activities associated with this type of work, the construction contractor shall inspect all structures within 100 feet of the proposed work to document existing characteristics of the structures. If damages to structures (e.g., residences, pools) occur during the work, the property owner shall be fairly compensated for the cost of remediating damages.

Cumulative

No mitigation measures are required.

Level of Significance After Mitigation

Project-Specific

Less than significant.

Cumulative

No impact.

Temporary or Periodic Increase in Ambient Noise Levels

Q5.10-C:	**The project could result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.**

Project Specific Impact Analysis

Collection System

Similar to Proposed Project 4, the collection system under the Preferred Project is a gravity system. As described in Table Q.5-1, the Preferred Project includes additional collection system facilities such as pump stations, standby power stations, and pipelines, as well as modifications to specific locations and size of facilities such as the central pump station, pipelines within streets, and pipelines crossing creeks compared to Proposed Project 4. Based on a review of the additions and modifications of the collection system facilities, the Preferred Project could create significant temporary impacts to ambient noise levels during construction activities, similar to Proposed Project 4. Specifically, pile driving associated with the installation of pump stations has the potential to cause a significant temporary noise impact.

Treatment Plant Site

Similar to Proposed Project 4, the proposed treatment plant facilities under the Preferred Project include treatment facilities, appurtenant structures and storage facilities located on the Tonini parcel. As described in Table Q.5-1, the Preferred Project will include an Oxidation Ditch or Biolac® facility that encompasses less area and requires substantially less grading than the facultative ponds proposed under Proposed Project 4. Approximately 20-acres of the Tonini site would be disturbed during construction of the treatment plant site and would include excavation for the new facilities, site grading for stormwater drainage and the access road, and 1.5 acres for the staging areas for construction equipment and supplies. The greatest construction noise impacts are anticipated to occur during the grading operations when the simultaneous operation of earthmovers and other grading equipment may operate simultaneously.

With the Preferred Project, construction noise impacts onto the nearby sensitive receptors are expected to be similar as the impacts under Proposed Project 4. The nearest residence is located approximately 350 feet south of the Tonini site. The construction noise could exceed the County

stationary noise standard of 50 dBA L_{eq}, therefore a significant temporary noise impact would occur, similar to Proposed Project 4.

Disposal Sites

Similar to Proposed Project 4, the proposed disposal systems under the Preferred Project include sprayfields at the Tonini parcel and leachfields at the Broderson parcel. Under the Preferred Project, the type of spray was revised to exclude percolation and as a result approximately 73 more acres of sprayfields are necessary to accommodate the 842 acre-feet of spray at Tonini compared to Proposed Project 4. The analysis of the Preferred Project found that the greatest noise impacts associated with the construction of the disposal sites would occur during construction of the Broderson Leachfield. Therefore, with the Preferred Project, a significant temporary noise impact would occur, similar to Proposed Project 4.

Combined Project Effects

The collection system, treatment plant site, and disposal sites for the most part are not near one another. However, all three components would, individually, cause a temporary significant impact to ambient noise levels during construction of the facilities. These impacts are similar to Proposed Project 4.

Cumulative Impact Analysis

Since there are no related projects that would contribute to cumulative noise impacts, implementation of the Preferred Project would not contribute to cumulative temporary and periodic noise impacts.

Mitigation Measures

Project-Specific

5.10-C1 The project applicant shall require construction contractors to adhere to the following noise attenuation requirements:

- Construction activities shall be limited to between the hours of 7 a.m. to 9 p.m. on any day except Saturday or Sunday or between the hours of 8 a.m. to 5 p.m. on Saturday or Sunday.
- All construction equipment shall use noise-reduction features (e.g., mufflers and engine shrouds) that are no less effective than those originally installed by the manufacturer.
- Construction staging and heavy equipment maintenance activities shall be performed a minimum distance of 300 feet from the nearest residence, unless safety or technical factors take precedence.
- Stationary combustion equipment such as pumps or generators operating within 100 feet of any residence shall be shielded with a noise protection barrier.

5.10-C2 The construction contractor shall notify all property owners and tenants adjacent to the proposed pile driving activities of the days and hours of operation. The construction contractor shall also require that a noise damper be utilized between the pile driver and the object that is being driven into the ground.

Cumulative

No mitigation measures are required.

Level of Significance After Mitigation

Project-Specific

Less than significant.

Cumulative

No impact.

Airport Noise Levels

Q5.10-D: **For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, the project would not expose people residing or working in the project area to excessive noise levels.**

Project Specific Impact Analysis

The San Luis Obispo County Regional Airport would not expose people residing in the project area to excessive noise levels. The San Luis Obispo County Regional Airport is located approximately 14 miles Southeast of Los Osos. Los Osos is not within the flight plan area of the San Luis Obispo County Regional Airport and is therefore not at risk for any excessive noise levels. As a result, the operations of the facilities under the Preferred Project would not be impacted by airport noise similar to Proposed Project 4.

Cumulative Impact Analysis

Since the operational activities of the Preferred Project would not be exposed to any excessive aircraft noise levels, the project would not add to any potential cumulative impact associated with excessive aircraft noise levels. This finding for the Preferred Project is the same findings for Proposed Project 4.

Mitigation Measures

Project-Specific

No mitigation measures are required.

Cumulative

No mitigation measures are required.

Level of Significance After Mitigation

Project-Specific

No impact.

Cumulative

No impact.

Private Airstrip Noise Levels

Q5.10-E:	**For a project within the vicinity of a private airstrip, the project would not expose people residing or working in the project area to excessive noise levels.**

Project Specific Impact Analysis

Similar to Proposed Project 4, the Preferred Project is not within the vicinity of any private airstrips and therefore would not expose people residing in the proposed area to excessive noise levels.

Cumulative Impact Analysis

The Preferred Project would not result in the risk of any excessive aircraft noise levels from a private airport and the project would not add to any potential cumulative impact associated with excessive aircraft noise levels.

Mitigation Measures

Project-Specific

No mitigation measures are required.

Cumulative

No mitigation measures are required.

Level of Significance After Mitigation

Project-Specific

No impact.

Cumulative

No impact.

Consistency with General Plan Goals and Policies

Q5.10-F:	**The project would be consistent with the General Plan goals and policies.**

Project Specific Impact Analysis

As described in Table Q.5-1, the Preferred Project includes additional facilities as well as modifications to facilities compared to Proposed Project 4. Based on a review of the County of San Luis Obispo goals and policies related to noise, the additional and modified facilities associated with the Preferred Project would result in the same finding of "potentially significant impact" to existing local noise goals and policies as the finding for Proposed Project 4.

Cumulative Impact Analysis

Similar to Proposed Project 4, the Preferred Project would result in potentially significant impacts to existing local goals and policies related to noise. However, since there are no related projects that could contribute to cumulative noise impacts, implementation of the Preferred Project would not contribute to cumulative noise impacts to existing local noise goals and policies.

Mitigation Measures

Project-Specific

Implementation of Mitigation Measures 5.10-A1, 5.10-A2, and 5.10-A3 are required.

Cumulative

No mitigation measures are required.

Level of Significance After Mitigation

Project-Specific

Less than significant.

Cumulative

No impact.

Q.5.11 - Agricultural Resources

The following impact evaluation is based on the environmental setting, regulatory setting, and thresholds of significance discussions provided for the proposed projects in Draft EIR Section 5.11, Agricultural Resources, and in Appendix M-1 Expanded Agricultural Resources Analysis. These previous discussions are not repeated in the following evaluation. The evaluation is a comparative analysis between the Preferred Project and Proposed Project 4.

Convert Farmland to Non-Agricultural Use

Q5.11-A:	**The project would convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance, as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use, and pursuant to standards established by the California Coastal Commission.**

Project Specific Impact Analysis

Collection System

Similar to Proposed Project 4, the collection system under the Preferred Project is a gravity system. As described in Table Q.5-1, the Preferred Project includes additional collection system facilities such as pump stations, standby power stations, and pipelines, as well as modifications to specific locations and size of facilities such as the central pump station, pipelines within streets, and pipelines crossing creeks compared to Proposed Project 4. Based on a review of the additions and modifications of the collection system facilities, the Preferred Project would not convert any agricultural lands to non agricultural use similar to the finding for Proposed Project 4.

Treatment Plant Site

Similar to Proposed Project 4, the proposed treatment plant facilities under the Preferred Project include treatment facilities, appurtenant structures and storage facilities located on the Tonini parcel. As described in Table Q.5-1, the Preferred Project will include an Oxidation Ditch or Biolac® facility that encompasses less area and requires substantially less grading than the facultative ponds proposed under Proposed Project 4. Based on the revision to the proposed treatment plant facilities, the Preferred Project would convert less agricultural lands to a non-agricultural use (i.e., 20 acres) compared to Proposed Project 4 (32 acres); however, both the Preferred Project and Proposed Project 4 would result in the same potential significant farmland conversion impact.

Disposal Sites

Similar to Proposed Project 4, the proposed disposal systems under the Preferred Project include sprayfields at the Tonini parcel and leachfields at the Broderson parcel. Under the Preferred Project, the type of spray was revised to exclude percolation and as a result approximately 73 more acres of sprayfields are proposed to accommodate the 842 acre-feet of spray at Tonini compared to Proposed Project 4. Through a more detailed design, the Preferred Project includes setbacks from various environmental constraints (i.e., coastal streams, sensitive resource areas, along Turri Road, and on the southern boundary of the site). With these setbacks, the sprayfields within the Preferred Project

would result in direct impacts on 86 acres of land that is or could be used for crops and indirect impacts on 93 acres of land that is or could be used for crops. The total impact area of land that is or could be used for crops is 179 acres. In addition to land used for crops, the Preferred Project would result in direct impacts on 162 acres of land that is used for grazing and indirect impacts on 85 acres of land that is used for grazing. The total impact area of land that is used for grazing is 247 acres. Altogether, the disposal area that is or could be used for crops and grazing is 347 acres. As with Proposed Project 4, the proposed sprayfields would convert areas that are or could be used for crops and grazing to non-agricultural land. This conversion of land would result in a revenue loss of approximately $1,056,558 which is approximately 21 percent higher than the revenue loss projected for Proposed Project 4 as revised in the Section 4, Errata/Minor Revisions, in the Final EIR/Response to Comment document. The implementation of sprayfields at the Tonini site that are within the Preferred Project and Proposed Project 4 would result in a potential significant farmland conversion impact.

Combined Project Effects

Similar to Proposed Project 4, the proposed facilities for the treatment and sprayfields under the Preferred Project would be located on the Tonini parcel. The combination of the two facilities on the Tonini parcel would encompass approximately 268 acres of the approximate 650-acre parcel. Through a more detailed design, the Preferred Project includes setbacks from various environmental constraints (i.e., coastal streams, sensitive resource areas, along Turri Road, and on the southern boundary of the site). With these setbacks, the proposed sprayfields and treatment plant facilities within the Preferred Project would result in direct impacts on 106 acres of land that is or could be used for crops and indirect impacts on 73 acres of land that is or could be used for crops. The total impact area of land that is or could be used for crops is 179 acres. In addition to land used for crops, the Preferred Project would result in direct impacts on 162 acres of land that is used for grazing and indirect impacts on 85 acres of land that is used for grazing. The total impact area of land that is used for grazing is 247 acres. Altogether, the treatment plant and disposal areas that are or could be used for crops and grazing is 347 acres. As with Proposed Project 4, the proposed sprayfields would convert areas that are or could be used for crops and grazing to non-agricultural land. This conversion of land would result in a revenue loss of approximately $1,056,558 which is approximately 5 percent higher than the revenue loss projected for Proposed Project 4 as revised in the Section 4, Errata/Minor Revisions, in the Final EIR/Response to Comment document. The implementation of treatment plant facilities and sprayfields at the Tonini site that are within the Preferred Project and Proposed Project 4 would result in a potential significant farmland conversion impact.

Cumulative Impact Analysis

Similar to Proposed Project 4, the Preferred Project would result in potentially significant impacts relating to conversion of agricultural lands to a non agricultural use. Therefore, as with Proposed

Project 4, the Preferred Project would contribute to a significant cumulative agricultural conversion impact.

Mitigation Measures

Project-Specific

5.11-A1: Within two years of the start of operation of the facility, the County Department of Public Works shall provide evidence to the County Planning and Building Department that a farmland conservation easement, a farmland deed restriction, or other farmland conservation mechanism has been granted in perpetuity to the County or a qualifying entity approved by the County Agricultural Commissioner (or designee). The easement shall provide conservation acreage at a ratio of 1:1 for direct impacts and 0.5:1 for indirect impacts. Additionally, the project proponent shall provide appropriate funds (as determined by the County Planning Department) to compensate for reasonable administrative costs incurred by the easement holder. The area conserved shall be minimally sized at 347 acres, and shall be of a quality that is reasonably (as determined by the County Agricultural Commissioner or designee) similar to that of the farmland within the project limits. The area to be conserved shall be located within San Luis Obispo County within reasonable proximity to the project site.

Cumulative

Implementation of Mitigation Measure 5.11-A1 is required.

Level of Significance After Mitigation

Project-Specific

Significant and unavoidable.

Cumulative

Significant and unavoidable.

Conflict with Existing Zoning or Williamson Act Contract

Q5.11-B:	**The project would not conflict with existing zoning for agricultural use, or a Williamson Act contract.**

Project Specific Impact Analysis

Collection System

Similar to Proposed Project 4, the collection system under the Preferred Project is a gravity system. As described in Table Q.5-1, the Preferred Project includes additional collection system facilities such as pump stations, standby power stations, and pipelines, as well as modifications to specific locations and size of facilities such as the central pump station, pipelines within streets, and pipelines crossing creeks compared to Proposed Project 4. Based on a review of the additions and modifications of the

collection system facilities, the Preferred Project would not conflict with agricultural zoning or a Willamson Act contract similar to the finding for Proposed Project 4.

Treatment Plant Site

Similar to Proposed Project 4, the proposed treatment plant facilities under the Preferred Project include treatment facilities, appurtenant structures and storage facilities located on the Tonini parcel. As described in Table Q.5-1, the Preferred Project will include an Oxidation Ditch or Biolac® facility that encompasses less area and requires substantially less grading than the facultative ponds proposed under Proposed Project 4. Based on the revision to the proposed treatment plant facilities, the Preferred Project would conflict with a Willamson Act contract similar to the finding provided for Proposed Project 4. Therefore, similar to Proposed Project 4, the Preferred Project would result in a significant and unavoidable impact on the loss of Williamson Act contract land.

Disposal Sites

Similar to Proposed Project 4, the proposed disposal systems under the Preferred Project include sprayfields at the Tonini parcel and leachfields at the Broderson parcel. Under the Preferred Project, the type of spray was revised to exclude percolation and as a result approximately 73 more acres of sprayfields are necessary to accommodate the 842 acre-feet of spray at Tonini compared to Proposed Project 4. The Preferred Project also includes setbacks from Turri Road and the property south of Tonini, and Proposed Project 4 did not include setbacks. Based on a review of the increase in sprayfield area the proposed facilities would conflict with a Willamson Act contract. This impact finding is greater than the finding for Proposed Project 4, since the sprayfields would increase by 73 acres under the Preferred Project. Therefore, similar to Proposed Project 4, the Preferred Project would result in a significant and unavoidable impact on the loss of Williamson Act contract land.

Combined Project Effects

Similar to Proposed Project 4, the proposed facilities for the treatment plant and sprayfields under the Preferred Project would be located on the Tonini parcel. The combination of the two facilities on the Tonini parcel would encompass approximately 268 acres of the approximate 650-acre parcel. Similar to Proposed Project 4, the location of the treatment plant and sprayfields would conflict with a Williamson Act contract. This would be a potentially significant impact. Since the sprayfields would increase by 73 acres under the Preferred Project, this impact finding would be greater than that for Proposed Project 4 and remain a significant and unavoidable impact on the loss of Williamson Act contract land.

Cumulative Impact Analysis

Although the Preferred Project would result in a greater impact on Williamson Act contract land compared to Proposed Project 4, both would still result in significant and unavoidable impacts.

Mitigation Measures

Project-Specific

5.11-B1: Provide fencing of areas currently grazed on the Tonini parcel, and a buffer between the boundary of the disposal area and areas currently grazed. The width of the buffer shall be determined in consultation with the San Luis Obispo County Agricultural Commissioner's office.

Cumulative

Implementation of Mitigation Measure 5.11-B1 is required.

Level of Significance After Mitigation

Project-Specific

Significant and unavoidable.

Cumulative

Significant and unavoidable.

Other Changes Resulting in Farmland Conversion to Non-Agricultural Use

Q5.11-C: **The project would not involve other changes in the existing environment, which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use.**

Project Specific Impact Analysis

Collection System

Similar to Proposed Project 4, the collection system under the Preferred Project is a gravity system. As described in Table Q.5-1, the Preferred Project includes additional collection system facilities such as pump stations, standby power stations, and pipelines, as well as modifications to specific locations and size of facilities such as the central pump station, pipelines within streets, and pipelines crossing creeks compared to Proposed Project 4. The Preferred Project would result in no other changes that convert land to a non agriculture use, and therefore no impacts. This finding is similar to the finding for Proposed Project 4.

Treatment Plant Site

Similar to Proposed Project 4, the proposed treatment plant facilities under the Preferred Project include treatment facilities, appurtenant structures and storage facilities located on the Tonini parcel. As described in Table Q.5-1, the Preferred Project will include an Oxidation Ditch or Biolac® facility that encompasses less area and requires substantially less grading than the facultative ponds proposed under Proposed Project 4. The Preferred Project would result in no other changes that convert land to a non agriculture use, and therefore no impacts. This finding is similar to the finding for Proposed Project 4.

Disposal Sites

Similar to Proposed Project 4, the proposed disposal systems under the Preferred Project include sprayfields at the Tonini parcel and leachfields at the Broderson parcel. Under the Preferred Project, the type of spray was revised to exclude percolation and as a result approximately 73 more acres of sprayfields are necessary to accommodate the 842 acre-feet of spray at Tonini compared to Proposed Project 4. The Preferred Project also includes setbacks from Turri Road and the property south of Tonini, and Proposed Project 4 did not include setbacks. Similar to Proposed Project 4, the Preferred Project would not result in other land use changes that would convert agricultural land use to a non-agricultural land use. Therefore, there would be no impact similar to Proposed Project 4.

Combined Project Effects

Similar to Proposed Project 4, the proposed facilities for the treatment and sprayfields under the Preferred Project would be located on the Tonini parcel. The combination of the two facilities on the Tonini parcel would encompass approximately 268 acres of the approximate 650-acre parcel. Although the Preferred Project would include an additional 73 acres of sprayfields compared to Proposed Project 4, the additional sprayfield area would not result in any other land use changes that would convert agricultural land use to a non-agricultural land use. Therefore, there would be no impact similar to Proposed Project 4.

Cumulative Impact Analysis

Although the Preferred Project would include an increase in the size of the sprayfields compared to Proposed Project 4, the facilities associated with the Preferred Project would not result in other land use changes that would convert agricultural land use to a non-agricultural land use. Therefore, there would be no cumulative impact similar to Proposed Project 4.

Mitigation Measures

Project-Specific

No mitigation measures are required.

Cumulative

No mitigation measures are required.

Level of Significance After Mitigation

Project-Specific

No impact..

Cumulative

No impact.

Local Goals and Policies Protecting Agricultural Resources.

Q5.11-D: **The proposed project would not conflict with the local goals and policies protecting agricultural resources.**

Project Specific Impact Analysis

Collection System

Similar to Proposed Project 4, the collection system under the Preferred Project is a gravity system. As described in Table Q.5-1, the Preferred Project includes additional collection system facilities such as pump stations, standby power stations, and pipelines, as well as modifications to specific locations and size of facilities such as the central pump station, pipelines within streets, and pipelines crossing creeks compared to Proposed Project 4. The Preferred Project would not conflict with local goals, policies, or ordinances pertaining to agricultural resources. Therefore, there would be no impacts. This finding is similar to the finding for Proposed Project 4.

Treatment Plant Site

Similar to Proposed Project 4, the proposed treatment plant facilities under the Preferred Project include treatment facilities, appurtenant structures and storage facilities located on the Tonini parcel. As described in Table Q.5-1, the Preferred Project will include an Oxidation Ditch or Biolac® facility that encompasses less area and requires substantially less grading than the facultative ponds proposed under Proposed Project 4. The Preferred Project would not result in any conflicts with local goals, policies, and ordinances pertaining to agricultural resources. Therefore, there would be no impacts. This finding is similar to the finding for Proposed Project 4.

Disposal Sites

Similar to Proposed Project 4, the proposed disposal systems under the Preferred Project include sprayfields at the Tonini parcel and leachfields at the Broderson parcel. Under the Preferred Project, the type of spray was revised to exclude percolation and as a result approximately 73 more acres of sprayfields are necessary to accommodate the 842 acre-feet of spray at Tonini compared to Proposed Project 4. The Preferred Project also includes setbacks from Turri Road and the property south of Tonini, and Proposed Project 4 did not include setbacks. The Preferred Project would result in changes that convert land to a non agriculture use; however, there are not other feasible alternative locations for sprayfields as discussed in Section 5.1 in the Draft EIR and Section Q.5.1 of this Response to Comment document.. Similar to Proposed Project 4, the facilities that are part of the Preferred Project would be consistent with applicable policies in the San Luis Obispo County General Plan and the applicable goals and policies in the Estero Area Plan. Therefore, similar to Proposed Project 4, the Preferred Project would result in no impacts to local agricultural goals and policies.

Combined Project Effects

Similar to Proposed Project 4, the proposed facilities for the treatment and sprayfields under the Preferred Project would be located on the Tonini parcel. The combination of the two facilities on the Tonini parcel would encompass approximately 268 acres of the approximate 650-acre parcel. The Preferred Project would still be consistent with local goals, policies, and ordinances since there are no

other feasible locations for sprayfields. Therefore, similar to Proposed Project 4, the Preferred Project would result in no impacts to local agricultural goals and policies.

Cumulative Impact Analysis

Since there would not be a conflict with goals, policies, and ordinances pertaining to agricultural resources, the Preferred Project would result in no cumulative impact similar to Proposed Project 4.

Mitigation Measures

Project-Specific

No mitigation measures are required.

Cumulative

No impact.

Level of Significance After Mitigation

Project-Specific

No impact.

Cumulative

No impact.

Q.5.12 - Visual Resources

The following impact evaluation is based on the environmental setting, regulatory setting, and thresholds of significance discussions provided for the proposed projects in Draft EIR Section 5.12, Visual Resources, and in Appendix N-1, Expanded Visual Resources Analysis. These previous discussions are not repeated in the following evaluation. The evaluation is a comparative analysis between the Preferred Project and Proposed Project 4.

Scenic Vista

Q5.12-A: The project would not have a substantial adverse effect on a scenic vista.

Project Specific Impact Analysis

Collection System

Similar to Proposed Project 4, the collection system under the Preferred Project is a gravity system. As described in Table Q.5-1, the Preferred Project includes additional collection system facilities such as pump stations, standby power stations, and pipelines, as well as modifications to specific locations and size of facilities such as the central pump station, pipelines within streets, and pipelines crossing creeks compared to Proposed Project 4. Based on a review of the additions and modifications of the collection system facilities, the Preferred Project would not have a substantial adverse effect on a scenic vista similar to the finding for Proposed Project 4. Therefore, similar to Proposed Project 4, the Preferred Project would have a less than significant impact on a scenic vista.

Treatment Plant Site

Similar to Proposed Project 4, the proposed treatment plant facilities under the Preferred Project include treatment facilities, appurtenant structures and storage facilities located on the Tonini parcel. As described in Table Q.5-1, the Preferred Project will include an Oxidation Ditch or Biolac® facility that encompasses less area and requires substantially less grading than the facultative ponds proposed under Proposed Project 4. Based on the revision to the proposed treatment process, the Preferred Project would also not have a substantial adverse effect on a scenic vista similar to the finding provided for Proposed Project 4. Therefore, similar to Proposed Project 4, the Preferred Project would have a less than significant impact on a scenic vista.

Disposal Sites

Similar to Proposed Project 4, the proposed disposal systems under the Preferred Project include sprayfields at the Tonini parcel and leachfields at the Broderson parcel. Under the Preferred Project, the type of spray was revised to exclude percolation and as a result approximately 73 more acres of sprayfields are necessary to accommodate the 842 acre-feet of spray at Tonini compared to Proposed Project 4. The Preferred Project also includes setbacks from Turri Road and the property south of Tonini, and Proposed Project 4 did not include setbacks. Based on a review of the increase in sprayfield area and since the proposed sprayfields do not disrupt views of the Morros or other scenic features within the recently designated SRA for the Estero Area plan,, the proposed facilities would not have a substantial adverse effect on a scenic vista. This finding is similar to the finding for

Proposed Project 4. Therefore, similar to Proposed Project 4, the Preferred Project would have a less than significant impact on a scenic vista.

Combined Project Effects

Similar to Proposed Project 4, the proposed facilities for the treatment and sprayfields under the Preferred Project would be located on the Tonini parcel. The combination of the two facilities on the Tonini parcel would encompass approximately 268 acres of the approximate 650-acre parcel. Similar to Proposed Project 4, since the proposed facilities at the sprayfields under the Preferred Project would not affect views of the Morro Peaks or other scenic features within the recently designated SRA, the Preferred Project would not have a substantial adverse effect on a scenic vista. Therefore, similar to Proposed Project 4, the Preferred Project would have a less than significant impact on a scenic vista.

Cumulative Impact Analysis

Similar to Proposed Project 4, the Preferred Project would result in a less than significant impact on a scenic vista. However, since there are no cumulative projects that would contribute an impact on a scenic vista, the Preferred Project would not contribute to any potential cumulative scenic vista impacts similar to Proposed Project 4.

Mitigation Measures

Project-Specific

No mitigation measures are required.

Cumulative

No mitigation measures are required.

Level of Significance After Mitigation

Project-Specific

Less than significant.

Cumulative

No impact.

Scenic Resources within a State Scenic Highway

Q5.12-B:	**The project would not substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway.**

Project Specific Impact Analysis

Collection System

Similar to Proposed Project 4, the collection system under the Preferred Project is a gravity system. As described in Table Q.5-1, the Preferred Project includes additional collection system facilities such

as pump stations, standby power stations, and pipelines, as well as modifications to specific locations and size of facilities such as the central pump station, pipelines within streets, and pipelines crossing creeks compared to Proposed Project 4. None of these facilities are visible from a State Scenic Highway. Based on a review of the additions and modifications of the collection system facilities, the Preferred Project would not damage scenic resources within a State Scenic Highway similar to the finding for Proposed Project 4.

Treatment Plant Site

Similar to Proposed Project 4, the proposed treatment plant facilities under the Preferred Project include treatment facilities, appurtenant structures and storage facilities located on the Tonini parcel. As described in Table Q.5-1, the Preferred Project will include an Oxidation Ditch or Biolac® facility that encompasses less area and requires substantially less grading than the facultative ponds proposed under Proposed Project 4. None of these facilities would be visible from a State Scenic Highway. Based on the revision to the proposed treatment process, the Preferred Project would not damage scenic resources within a State Scenic Highway similar to the finding provided for Proposed Project 4.

Disposal Sites

Similar to Proposed Project 4, the proposed disposal systems under the Preferred Project include sprayfields at the Tonini parcel and leachfields at the Broderson parcel. Under the Preferred Project, the type of spray was revised to exclude percolation and as a result approximately 73 more acres of sprayfields are necessary to accommodate the 842 acre-feet of spray at Tonini compared to Proposed Project 4. The Preferred Project also includes setbacks from Turri Road and the property south of Tonini, and Proposed Project 4 did not include setbacks. None of these features would be visible from a State Scenic Highway. Based on a review of the increase in sprayfield area the proposed facilities would not damage scenic resources within a State Scenic Highway. This finding is similar to the finding for Proposed Project 4.

Combined Project Effects

Similar to Proposed Project 4, the proposed facilities for the treatment and sprayfields under the Preferred Project would be located on the Tonini parcel. The combination of the two facilities on the Tonini parcel would encompass approximately 268 acres of the approximate 650-acre parcel. Similar to Proposed Project 4, none of these facilities would be visible from a State Scenic Highway. Therefore, the Preferred Project would not cause damage to resources within a State Scenic Highway.

Cumulative Impact Analysis

Similar to Proposed Project 4, the Preferred Project would result in no impacts to scenic resources within a State Scenic Highway. Therefore, the Preferred Project would not contribute to any potential cumulative impacts on relative to scenic resources within a State Scenic Highway.

Mitigation Measures

Project-Specific

No mitigation measures are required.

Cumulative

No mitigation measures are required.

Level of Significance After Mitigation

Project-Specific

No impact.

Cumulative

No impact.

Visual Character

Q5.12-C:	**The project would substantially degrade the existing visual character or quality of the site and its surroundings.**

Project Specific Impact Analysis

Collection System

Similar to Proposed Project 4, the collection system under the Preferred Project is a gravity system. As described in Table Q.5-1, the Preferred Project includes additional collection system facilities such as pump stations, standby power stations, and pipelines, as well as modifications to specific locations and size of facilities such as the central pump station, pipelines within streets, and pipelines crossing creeks compared to Proposed Project 4. Based on a review of the additions and modifications of the collection system facilities, the Preferred Project would not result in a substantial alteration to the visual character of the collection system area. Similar to Proposed Project 4, the Preferred Project would result in less than significant visual character impacts.

Treatment Plant Site

Similar to Proposed Project 4, the proposed treatment plant facilities under the Preferred Project include treatment facilities, appurtenant structures and storage facilities located on the Tonini parcel. As described in Table Q.5-1, the Preferred Project will include an Oxidation Ditch or Biolac® facility that encompasses less area and requires substantially less grading than the facultative ponds proposed under Proposed Project 4. Based on the revision to the proposed treatment plant facilities, the Preferred Project would substantially degrade the visual character of the site and its surroundings similar to the finding provided for Proposed Project 4. Similar to Proposed Project 4, the Preferred Project would result in significant visual character impacts.

Disposal Sites

Similar to Proposed Project 4, the proposed disposal systems under the Preferred Project include sprayfields at the Tonini parcel and leachfields at the Broderson parcel. Under the Preferred Project, the type of spray was revised to exclude percolation and as a result approximately 73 more acres of sprayfields are necessary to accommodate the 842 acre-feet of spray at Tonini compared to Proposed Project 4. The Preferred Project also includes setbacks from Turri Road and the property south of Tonini, and Proposed Project 4 did not include setbacks. Based on a review of the increase in sprayfield area the proposed facilities would substantially degrade the visual character of the site and its surroundings. This finding is similar to the finding for Proposed Project 4. Similar to Proposed Project 4, the Preferred Project would result in significant visual character impacts.

Combined Project Effects

Similar to Proposed Project 4, the proposed facilities for the treatment and sprayfields under the Preferred Project would be located on the Tonini parcel. The combination of the two facilities on the Tonini parcel would encompass approximately 268 acres of the approximate 650-acre parcel. Similar to Proposed Project 4, the Preferred Project would substantially degrade the visual character of the site and its surroundings. Similar to Proposed Project 4, the Preferred Project would result in significant visual character impacts.

Cumulative Impact Analysis

Although the Preferred Project would result in significant visual character impacts, it would not contribute to a cumulative impact to the existing visual character or quality of the area because there are no cumulative projects that would contribute to a cumulative significant visual character impact. This finding is the same as the finding for Proposed Project 4.

Mitigation Measures

Project-Specific

5.12-C-1 AES 1 (construction staging area) from the Estero Area Plan shall apply. 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 of construction equipment storage away from direct views of sensitive viewing corridors (e.g. residences and major roads in the project area) shall be designated.

5-12-C-2 A final landscaping plan shall be prepared for the entire project site and approved by the County prior to building permit issuance. 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 landscaping plan shall be to visually integrate the project into the rural landscape, while preserving and enhancing existing views.

5-12-C-3 Any buildings associated with collection facilities at the Broderson and Mid-Town parcels shall be designed in such a manner so they are architecturally compatible with other buildings in the vicinity.

Cumulative

No mitigation measures are required.

Level of Significance After Mitigation

Project-Specific

Less than significant.

Cumulative

No impact.

Light or Glare

Q5.12-D:	**The project would create a new source of substantial light or glare which would adversely affect day or nighttime views in the area.**

Project Specific Impact Analysis

Collection System

Similar to Proposed Project 4, the collection system under the Preferred Project is a gravity system. As described in Table Q.5-1, the Preferred Project includes additional collection system facilities such as pump stations, standby power stations, and pipelines, as well as modifications to specific locations and size of facilities such as the central pump station, pipelines within streets, and pipelines crossing creeks compared to Proposed Project 4. These facilities would be in an area with existing sources of light and glare and would not be noticeable. Based on a review of the additions and modifications of the collection system facilities, the Preferred Project would not create a new source of light and glare similar to the finding for Proposed Project 4.

Treatment Plant Site

Similar to Proposed Project 4, the proposed treatment plant facilities under the Preferred Project include treatment facilities, appurtenant structures and storage facilities located on the Tonini parcel. As described in Table Q.5-1, the Preferred Project will include an Oxidation Ditch or Biolac® facility that encompasses less area and requires substantially less grading than the facultative ponds proposed under Proposed Project 4. Based on the revision to the proposed treatment process, the Preferred Project would result in potentially significant impacts in terms of new sources of light and glare similar to the finding provided for Proposed Project 4.

Disposal Sites

Similar to Proposed Project 4, the proposed disposal systems under the Preferred Project include sprayfields at the Tonini parcel and leachfields at the Broderson parcel. Under the Preferred Project,

the type of spray was revised to exclude percolation and as a result approximately 73 more acres of sprayfields are necessary to accommodate the 842 acre-feet of spray at Tonini compared to Proposed Project 4. The Preferred Project also includes setbacks from Turri Road and the property south of Tonini, and Proposed Project 4 did not include setbacks. Based on a review of the increase in sprayfield area the proposed facilities could create a new source of light and glare that could result in significant impacts. This finding is similar to the finding for Proposed Project 4.

Combined Project Effects

Similar to Proposed Project 4, the proposed facilities for the treatment and sprayfields under the Preferred Project would be located on the Tonini parcel. The combination of the two facilities on the Tonini parcel would encompass approximately 268 acres of the approximate 650-acre parcel. Similar to Proposed Project 4, these facilities would create a new source of light in glare, resulting in a potentially significant impact.

Cumulative Impact Analysis

Similar to Proposed Project 4, the Preferred Project would create a new source of light and glare. However, the Preferred Project would not contribute to any potential cumulative impacts relative to light and glare because there are no cumulative projects that would contribute light and glare in the project area.

Mitigation Measures

Project-Specific

5.12-D-1 AES-5 (lighting plan) from the Estero Area Plan shall apply. A final lighting plan shall be prepared for the treatment and disposal facilities. The lighting plan shall meet County design standards. This shall include proper shielding, proper orientation, and applicable height standards. All lighting fixtures shall be shielded so that neither the lamp nor the related reflector interior surface is visible from adjacent properties. Light hoods shall be dark-colored.

Cumulative

No mitigation measures are required.

Level of Significance After Mitigation

Project-Specific

Less than significant.

Cumulative

No impact.

Effect on Designation of Scenic Corridor Design Area for LOVR

Q5.12-E: **The project would not affect designation of LOVR as a County Scenic Corridor Design Area.**

Project Specific Impact Analysis

Collection System

Similar to Proposed Project 4, the collection system under the Preferred Project is a gravity system. As described in Table Q.5-1, the Preferred Project includes additional collection system facilities such as pump stations, standby power stations, and pipelines, as well as modifications to specific locations and size of facilities such as the central pump station, pipelines within streets, and pipelines crossing creeks compared to Proposed Project 4. Based on a review of the additions and modifications of the collection system facilities, the Preferred Project would not have visual impacts to LOVR similar to the finding for Proposed Project 4.

Treatment Plant Site

Similar to Proposed Project 4, the proposed treatment plant facilities under the Preferred Project include treatment facilities, appurtenant structures and storage facilities located on the Tonini parcel. As described in Table Q.5-1, the Preferred Project will include an Oxidation Ditch or Biolac® facility that encompasses less area and requires substantially less grading than the facultative ponds proposed under Proposed Project 4. Based on the revision to the proposed treatment process located on an AG zoned parcel, the Preferred Project would not result in potentially significant impacts to designation of LOVR as a scenic corridor design area similar to the finding provided for Proposed Project 4.

Disposal Sites

Similar to Proposed Project 4, the proposed disposal systems under the Preferred Project include sprayfields at the Tonini parcel and leachfields at the Broderson parcel. Under the Preferred Project, the type of spray was revised to exclude percolation and as a result approximately 73 more acres of sprayfields are necessary to accommodate the 842 acre-feet of spray at Tonini compared to Proposed Project 4. The Preferred Project also includes setbacks from Turri Road and the property south of Tonini, and Proposed Project 4 did not include setbacks. Based on a review of the increase in sprayfield area the proposed facilities located on AG zoned parcel, the Preferred Project would not result in potentially significant impacts to designation of LOVR as a scenic corridor design area similar to the finding for Proposed Project 4.

Combined Project Effects

Similar to Proposed Project 4, the proposed facilities for the treatment and sprayfields under the Preferred Project would be located on the Tonini parcel. The combination of the two facilities on the Tonini parcel would encompass approximately 268 acres of the approximate 650-acre parcel. Similar to Proposed Project 4, locating these facilities on an AG zoned parcel would not result a potentially significant impact to designation of LOVR as a scenic corridor design area.

Cumulative Impact Analysis

Similar to Proposed Project 4, the Preferred Project would not result in cumulative impacts to LOVR.

Mitigation Measures

Project-Specific

No mitigation measures are required.

Cumulative

No mitigation measures are required.

Level of Significance After Mitigation

Project-Specific

Less than significant.

Cumulative

No impact.

Visual Impacts to AG Zoned Parcels

Q5.12-F:	**The project would locate structures that would disrupt views of AG zoned parcels from LOVR.**

Project Specific Impact Analysis

Collection System

Similar to Proposed Project 4, the collection system under the Preferred Project is a gravity system. As described in Table Q.5-1, the Preferred Project includes additional collection system facilities such as pump stations, standby power stations, and pipelines, as well as modifications to specific locations and size of facilities such as the central pump station, pipelines within streets, and pipelines crossing creeks compared to Proposed Project 4. Based on a review of the additions and modifications of the collection system facilities, the Preferred Project would result in less than significant visual impacts on views from LOVR similar to the finding for Proposed Project 4.

Treatment Plant Site

Similar to Proposed Project 4, the proposed treatment plant facilities under the Preferred Project include treatment facilities, appurtenant structures and storage facilities located on the Tonini parcel. As described in Table Q.5-1, the Preferred Project will include an Oxidation Ditch or Biolac® facility that encompasses less area and requires substantially less grading than the facultative ponds proposed under Proposed Project 4. Based on the revision to the proposed treatment process on an AG zoned parcel, the Preferred Project could have significant impacts to views from LOVR similar to the finding provided for Proposed Project 4.

Disposal Sites

Similar to Proposed Project 4, the proposed disposal systems under the Preferred Project include sprayfields at the Tonini parcel and leachfields at the Broderson parcel. Under the Preferred Project,

the type of spray was revised to exclude percolation and as a result approximately 73 more acres of sprayfields are necessary to accommodate the 842 acre-feet of spray at Tonini compared to Proposed Project 4. The Preferred Project also includes setbacks from Turri Road and the property south of Tonini, and Proposed Project 4 did not include setbacks. Based on a review of the increase in sprayfield area, the proposed facilities of the Preferred Project could have significant impacts to views from LOVR similar to the finding provided for Proposed Project 4.

Combined Project Effects

Similar to Proposed Project 4, the proposed treatment plant and sprayfield facilities under the Preferred Project would be located on the Tonini parcel. The combination of the two facilities on the Tonini parcel would encompass approximately 268 acres of the approximate 650-acre parcel. Similar to Proposed Project 4, locating these facilities on an AG zoned parcel could have significant impacts to views from LOVR.

Cumulative Impact Analysis

Similar to Proposed Project 4, the Preferred Project would not contribute to a cumulative impact on views of AG zoned parcels from LOVR because there are no cumulative projects that would contribute to a cumulative impact to views of AG zoned parcels from LOVR Therefore, similar to Proposed Project 4, the Preferred Project would result in no cumulative impacts to views of AG zoned parcels from LOVR.

Mitigation Measures

Project-Specific

5.12-F-1 Any building (equipment areas, power generating stations) associated with treatment and disposal facilities (including the Tonini parcel) shall be designed to conform to an agricultural landscape. Buildings shall be designed to appear as barns or other farm related structures.

5.12-F-2 A final landscaping plan shall be prepared for the entire project site (including the Tonini parcel) and approved by the County prior to construction. 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 landscaping plan shall be to visually integrate the project into the rural landscape, while preserving and enhancing existing views.

5.12-F-3 AES 4 (Revegetation Plan) from the Estero Area Plan shall apply to any facilities associated with treatment and disposal (Tonini parcel). A revegetation plan shall be prepared to the satisfaction of the US Fish and Wildlife Service, California Department of Fish and Game and San Luis Obispo County for the portion of the Broderson site that will be disturbed by the installation of the disposal leachfields.

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.

Cumulative

No mitigation measures are required.

Level of Significance After Mitigation

Project-Specific

Less than significant.

Cumulative

Proposed Projects 1 through 4

No impact.

Consistency With Local Goals, Policies and Ordinances Related to Visual Resources

Q5.12-G	**The proposed projects would not conflict with local goals, policies and ordinances relating to visual resources.**

Project Specific Impact Analysis

Collection System

Similar to Proposed Project 4, the collection system under the Preferred Project is a gravity system. As described in Table Q.5-1, the Preferred Project includes additional collection system facilities such as pump stations, standby power stations, and pipelines, as well as modifications to specific locations and size of facilities such as the central pump station, pipelines within streets, and pipelines crossing creeks compared to Proposed Project 4. Based on a review of the additions and modifications of the collection system facilities, the Preferred Project would not conflict with local goals, policies, and ordinances relating to visual resources similar to the finding for Proposed Project 4.

Treatment Plant Site

Similar to Proposed Project 4, the proposed treatment plant facilities under the Preferred Project include treatment facilities, appurtenant structures and storage facilities located on the Tonini parcel. As described in Table Q.5-1, the Preferred Project will include an Oxidation Ditch or Biolac® facility that encompasses less area and requires substantially less grading than the facultative ponds proposed under Proposed Project 4. The Preferred Project would not conflict with local goals, policies, and ordinances relating to visual resources similar to the finding provided for Proposed Project 4.

Disposal Sites

Similar to Proposed Project 4, the proposed disposal systems under the Preferred Project include sprayfields at the Tonini parcel and leachfields at the Broderson parcel. Under the Preferred Project, the type of spray was revised to exclude percolation and as a result approximately 73 more acres of sprayfields are necessary to accommodate the 842 acre-feet of spray at Tonini compared to Proposed Project 4. The Preferred Project also includes setbacks from Turri Road and the property south of

Tonini, and Proposed Project 4 did not include setbacks. Based on a review of the increase in sprayfield area the proposed facilities the Preferred Project would not conflict with local goals, policies, and ordinances relating to visual resources similar to the finding for Proposed Project 4.

Combined Project Effects

Similar to Proposed Project 4, the proposed facilities for the treatment and sprayfields under the Preferred Project would be located on the Tonini parcel. The combination of the two facilities on the Tonini parcel would encompass approximately 268 acres of the approximate 650-acre parcel. Similar to Proposed Project 4, the Preferred Project would not conflict with local goals, policies, and ordinances relating to visual resources.

Cumulative Impact Analysis

Similar to Proposed Project 4, the Preferred Project would not result in cumulative impacts to local goals, policies, and ordinances relating to visual resources.

Mitigation Measures

Project-Specific

No mitigation measures are required.

Cumulative

No mitigation measures are required.

Level of Significance After Mitigation

Project-Specific

No impact.

Cumulative

No impact.

Q.5.13 - Environmental Justice

The following impact evaluation is based on the environmental setting, regulatory setting, and thresholds of significance discussions provided for the proposed projects in Draft EIR Section 5.13, Environmental Justice, and in Appendix O-1, Expanded Environmental Justice Analysis. These previous discussions are not repeated in the following evaluation. The evaluation is a comparative analysis between the Preferred Project and Proposed Project 4.

Environmental Justice

Q5.13-A: **The proposed project would not have adverse environmental impacts that are appreciably more severe in magnitude or predominately borne by households with low-income or minority populations.**

Project Specific Impact Analysis

Collection System

Similar to Proposed Project 4, the collection system under the Preferred Project is a gravity system. As described in Table Q.5-1, the Preferred Project includes additional collection system facilities such as pump stations, standby power stations, and pipelines, as well as modifications to specific locations and size of facilities such as the central pump station, pipelines within streets, and pipelines crossing creeks compared to Proposed Project 4. Based on a review of the additions and modifications of the collection system facilities, the Preferred Project would not have adverse environmental impacts that are appreciably more severe in magnitude or predominately borne by households with low-income or minority populations similar to Proposed Project 4.

Treatment Plant Site

Similar to Proposed Project 4, the proposed treatment plant facilities under the Preferred Project include treatment facilities, appurtenant structures and storage facilities located on the Tonini parcel. As described in Table Q.5-1, the Preferred Project will include an Oxidation Ditch or Biolac® facility that encompasses less area than the facultative ponds proposed under Proposed Project 4. Based on the revision to the proposed treatment process, the Preferred Project would not have adverse environmental impacts that are appreciably more severe in magnitude or predominately borne by households with low-income or minority populations similar to Proposed Project 4.

Disposal Sites

Similar to Proposed Project 4, the proposed disposal systems under the Preferred Project include sprayfields at the Tonini parcel and leachfields at the Broderson parcel. Under the Preferred Project, the type of spray was revised to exclude percolation and as a result approximately 73 more acres of sprayfields are necessary to accommodate the 842 acre-feet of spray at Tonini compared to Proposed Project 4. The Preferred Project also includes setbacks from Turri Road and the property south of Tonini, and Proposed Project 4 did not include setbacks. Based on a review of the increase in sprayfield area, the Preferred Project would not have adverse environmental impacts that are appreciably more severe in magnitude or predominately borne by households with low-income or minority populations. This finding is similar to the finding for Proposed Project 4.

Combined Project Effects

Similar to Proposed Project 4, the proposed facilities for the treatment and sprayfields under the Preferred Project would be located on the Tonini parcel. The combination of the two facilities on the Tonini parcel would encompass approximately 268 acres of the approximate 650-acre parcel. Similar to Proposed Project 4, the facilities at the Tonini parcel under the Preferred Project encompass a relatively small area and would not result in any adverse environmental impacts that are appreciably more severe in magnitude or predominately borne by households with low-income or minority populations.

Since the remainder of each component of the Preferred Project would not result in adverse environmental impacts that are appreciably more severe in magnitude or predominately borne by households with low-income or minority populations, the combined effect of implementing the proposed collection, treatment plant, and disposal facilities within the existing urban area and agricultural area of Los Osos would not result in any adverse environmental impacts that are appreciably more severe in magnitude or predominately borne by households with low-income or minority populations.

Cumulative Impact Analysis

Similar to Proposed Project 4, the Preferred Project would not result in adverse environmental impacts that are appreciably more severe in magnitude or predominately borne by households with low-income or minority populations. Therefore, the Preferred Project would not contribute to any potential cumulative impacts relating to adverse environmental impacts that are appreciably more severe in magnitude or predominately borne by households with low-income or minority populations.

Mitigation Measures

Project-Specific

No mitigation measures are required.

Cumulative

No mitigation measures are required.

Level of Significance After Mitigation

Project-Specific

No impact.

Cumulative

No impact.

Goals and Policies Related to Environmental Justice

Q5.13-B: **The proposed project would not conflict with any applicable environmental justice goals and policies of an agency with jurisdiction over the project.**

Project Specific Impact Analysis

Based on the findings in Q5.12-A, the Preferred Project would not conflict with any applicable environmental justice goals and policies of an agency with jurisdiction over the project. Therefore, similar to the finding for Proposed Project 4, no goals or policies related to environmental justice would apply to the Preferred Project.

Cumulative Impact Analysis

Similar to Proposed Project 4, the Preferred Project would not conflict with any applicable environmental justice goals and policies of an agency with jurisdiction over the project. Therefore, the Preferred Project would not contribute to any potential cumulative impacts related to environmental justice goals and policies.

Mitigation Measures

Project-Specific

No mitigation measures are required.

Cumulative

No mitigation measures are required.

Level of Significance After Mitigation

Project-Specific

No impacts.

Cumulative

No impacts.

Q.6 - SPRAY DATA FOR TONINI

Q.6.1 - Spray Field Evapotranspiration at Tonini Ranch

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1390 Oceanaire Drive
San Luis Obispo, California 93405
(805) 543-1413

Memorandum

Date: March 4, 2009
From: Spencer Harris
To: LOWWP Team

SUBJECT: Spray Field Evapotranspiration at Tonini Ranch

Tonini Ranch has been proposed as a location for wastewater disposal using spray fields. Prior work on spray field disposal capacity included nominal values of evapotranspiration developed during the fine screening process for the Los Osos Creek valley. This memorandum provides more detailed information on evaportranspiration (ET), effective rainfall, and associated spray field disposal capacity operations at Tonini Ranch.

ET draws water from the soil, which is replenished by irrigation and precipitation. Crop irrigation requirements depend primarily on the local ET and rainfall. For planning purposes, the volume of irrigation needed for maintaining a satisfactory soil water content can be estimated as the monthly crop ET minus the monthly effective rainfall.

The closest information on pasture or turfgrass ET for spray fields at Tonini is the California Irrigation Management Information Systems (CIMIS) Station #160, located at Chorro Regional Park on Highway 1. This CIMIS station is in the same climate zone as Tonini ranch (Zone 6) in the adjacent Chorro Valley. Station #160's reference surface is grass and is comparable to the future spray fields at Tonini. The closest rainfall data are precipitation records for County gage #727 at the former Los Osos landfill, west of Tonini ranch. Effective monthly rainfall is defined by the California Landscape Contractors Association as 30 percent of the precipitation in any month having more than one inch total precipitation. Using these sources of information, the evapotranspiration disposal capacity for spray fields at Tonini ranch is estimated at 47 inches (3.9 feet) during a normal year and 44 inches (3.7 feet) during a wet year. The following table summarizes the water budget information.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	**Total**
ETo (inches)	2.21	2.5	3.8	5.08	5.7	6.19	6.43	6.09	4.87	4.09	2.89	2.28	52.13
Normal Year (inches)													
Precip (ave.)	4.52	4.34	2.08	1.17	0.69	0.03	0.01	0	0.02	0.41	1.33	2.95	17.55
Eff. Rain	1.36	1.3	0.62	0.35	0	0	0	0	0	0	0.4	0.89	4.92
Irrigation	0.85	1.2	3.18	4.73	5.7	6.19	6.43	6.09	4.87	4.09	2.49	1.39	**47.21**
Wet Year (inches)													
Precip (1998)	4.45	11.26	2.84	1.22	1.77	0	0	0	0	0	4.29	5	30.83
Eff. Rain	1.34	3.38	0.85	0.37	0.53	0	0	0	0	0	1.29	1.5	9.26
Irrigation	0.87	0	2.95	4.71	5.17	6.19	6.43	6.09	4.87	4.09	1.6	0.78	**43.75**

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Q.6.2 - Cost Components for Wastewater Disposal

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805-543-1413
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Memorandum

Date: March 13, 2007
From: Spencer Harris, Cleath & Associates
To: LOWWP Team

Subject: Cost Components for Wastewater Disposal

This memorandum identifies cost components for various effluent disposal options that will be used during the upcoming fine screening meetings. The attached Table 1 and Figure 1 summarize these components.

Background

Levels of ground water management for fine screening:

Level 1 - Minimum project required to maintain status quo with respect to impacts
Level 2 - Options that mitigate impacts for current conditions
Level 3 - Options that mitigate impacts for buildout

Impacts are measured as:

Sea water intrusion
Salt loading
Nitrogen loading
Stranded Assets going to buildout

Initial flows are expected to be 1,120 AFY but project must meet capacity for buildout at 1,456 AFY.

Disposal Components

Spray Fields
Unrestricted Reuse
- Ag reuse without exchange
- Ag reuse with exchange
- Urban reuse large parcels
- Urban reuse small parcels

Percolation ponds and leach fields
Constructed terminal wetlands

Spray Fields

The spray fields will be costed in two parts, basic and expanded. The basic spray field will be capable of accepting the entire flow for current conditions (1,120+ AFY). Spray fields are not likely be a viable option to accommodate buildout flows, based on Level 1 requirements (sea water intrusion increases with wastewater export to spray fields). Spray fields could, however, accept all initial flows if combined with a toilet retrofit program designed to reduce water demand and offset the impact of wastewater export. If water is imported, spray fields could be used for buildout. For costing purposes, the expansion spray field would add capacity for buildout but would be tied to imported water.

Costing for the basic spray field assumes use of the 637 acre parcel (Tonini Ranch) which is currently for sale. The expansion spray field could be built at a neighboring site, and would be explored in greater detailed if an imported water option passes fine screening.

There are approximately 270 acres on Tonini Ranch providing flat or gentle slopes suitable for spray field operations, of which 80 acres is underlain by bedrock and provides evapotranspiration disposal capability, and 190 acres overlies thicker sediments that can provide both evapotranspiration (ET) and slow-rate disposal percolation. The ET disposal capacity is estimated at 3 feet per year (75 percent of reference ET). Slow-rate percolation capacity adds another 1.8 feet per year (4 percent of reported soil permeability), for a maximum spray field disposal capacity of approximately 1,150 AFY. In addition, there is a 15-acre spray area that may also accept high-rate percolation (i.e. ponds), pending site investigation, which could significantly increase the disposal capacity of Tonini Ranch.

Storage requirements for spray field operation relate to the ET component of disposal. Assuming a distribution of spray field ET capacity proportional to the reference ET for the area, there will be a winter storage requirement of approximately 170 acre-feet. A suitable reservoir site has been identified at the spray field site. The reservoir site encompasses approximately 15 acres and would involve an 800-foot long dam up to 40-feet high (averaging closer to 20-feet high). Total storage capacity of the reservoir could be in excess of 200 acre-feet, with maximum reservoir water elevations of 120 feet above sea level.

Reservoirs with more than 50 acre-feet of storage capacity and dam heights over 6 feet or with dam heights over 25 feet and storage capacity more than 15 acre-feet will require a permit from the Division of Safety of Dams (DSOD). To avoid a DSOD permit, an 170 acre-foot reservoir (with <6-foot sides) would require close to 30 acres of area. This would essentially be an evaporation pond. Note that both the DSOD reservoir and the evaporation pond would have evaporation disposal capacity, which will be factored into viable projects.

The costing components specific to spray field disposal options are:

1) Wastewater main from plant site to Tonini Ranch
2) Basic spray field system (estimate up to 270 acres)
3) Expansion spray field system (estimate 70 acres)

4) 170 acre-foot capacity DSOD reservoir
5) 170 acre-foot capacity evaporation ponds

Unrestricted Reuse - Ag

Ag reuse has limited in-lieu recharge benefits if overlying the basin, and no benefit to the groundwater balance if outside the basin. Ag reuse also requires significant wet weather storage, therefore, ag reuse outside the basin has no significant (groundwater balance) advantage over spray fields. Only ag reuse within the ground water basin will be costed for fine screening.

The amount of Ag reuse that could be part of a viable project is limited by the number of willing participants. Participants should not only take treated effluent, but should also allow new wells to be developed for exchange purposes. The amount of ag exchange is limited by the amount of historical pumping in the area used for exchange (to prevent potential adverse impacts to the local water supply). Exchange water production may also be limited by the amount the receiving purveyor will or can accept at the system connection, which may vary, depending on the quality of the exchange water or other considerations.

Agricultural demand for treated effluent has been estimated at 3.4 feet per year by Ripley Pacific, based on year-round farming and a crop factor of 0.85 of the reference ET. This level of demand is greater than the actual crop demands, based on historical land use surveys. Typical cropping patterns include at least one fallow or non-irrigated crop cycle. The most recent DWR land use survey available (1995) shows only one irrigated crop cycle per year for the large parcels north of Los Osos Valley Road. Truck crop water demand averages 1.3 feet per year in the coastal areas of Morro Bay and Los Osos (1998 County Water Master Plan). Even if 3.4 feet per year of applied water is possible, a value between 1.3 feet to 2.6 feet per year would be closer to the average historical water demand for agriculture in the creek valley.

For fine screening, a nominal value 2 feet per year for applied water and exchange potential is used. There are roughly 230 acres of cultivated land in the northern creek valley area, with an ag reuse and exchange potential of 460 AFY. This area has been selected for costing because of proximity to several potential plant sits, to purveyor water system lines, and to the spray field site, where the reservoir could be located. Preliminary discussion regarding ag reuse with growers during the Ripley Pacific study were mixed. A viable project that included ag reuse/exchange would need to include contingency plans in the event that grower or purveyor commitments fell short.

Ag exchange facilities are assumed to involve construction of new wells, rather than using existing ag wells. If existing wells can be used, there would be cost savings. It is assumed that one exchange well is needed for every 100 acre-feet of exchange water (equivalent to 63 gpm continuous flow). Locations of exchange well sites are shown in Figure 2. The purveyor system area east boundaries are also shown. Costs for treatment/blending facilities, if needed, are assumed to be incurred by purveyor and are not

part of wastewater project, although this is subject to negotiation. In fact, some or all of ag exchange costs may ultimately be incurred by purveyor(s), pending negotiations.

Reservoir storage is required for ag reuse operations, and has been calculated based on the distribution of reference ET for the area. At the maximum 460 AFY applied water, an estimated reservoir storage of 165 acre-feet would be required. Under initial flow conditions (1,120 AFY), the proposed reservoir storage for the spray field would accommodate all the storage requirement for ag reuse. At buildout however (1,456 AFY), reservoir capacity would need to be expanded by 120 acre-feet, for a total capacity of approximately 290 acre-feet. This additional 120 acre-foot capacity could be developed at the spray field DSOD reservoir site (an increase in dam height of close to 8 feet) or by expanding the evaporation ponds (20 acres more area).

Agricultural reuse costing components:

1) Wastewater main line from plant site to Los Osos Creek bridge on Los Osos Valley Road (stops at bridge).
2) Wastewater trunk lines serving parcels in ag reuse area (Figure 1). Total cultivated area of up to 230 acres.
3) Expansion of DSOD reservoir to 290 acre-foot capacity
4) Expansion of evaporation ponds to 290 acre-foot capacity

Ag exchange costing components

1) Five exchange wells (equipped)
2) Supply line to Golden State Water Company water system
3) Supply line to LOCSD water system

Unrestricted Reuse - Urban

Urban reuse on large parcels has already been identified at 132 acre-feet per year, although 21.6 AFY was for use at the Tri-W site (some or all of which could be transferred for use at a new plant site). Small parcel urban reuse would be most feasible for new development, but even the option of extensive retrofitting was not eliminated in rough screening. Upper aquifer water with elevated nitrates (such as harvest water) can substitute for wastewater in an urban reuse program, until such time as the purveyors are ready to expand upper aquifer use for the domestic supply. Use of upper aquifer water would eliminate the immediate need for any return connection between an out-of-town treatment plant and the urban area, and could be built as a water project.

Costing for all types of urban reuse will be necessary for fine screening. These costs can be built around the following components:

1) Wastewater main from Los Osos Creek (including crossing) along LOVR to Broderson Avenue.

2) Wastewater mains from LOVR to all urban reuse sites.
3) Wastewater pipe in right-of-way for residential service (per lineal foot).
4) Average single-family house retrofitting, including lateral.
5) Upper aquifer irrigation wells at in-town urban reuse sites.

The onsite retrofitting costs could include installation of a typical homeowner drip system and sprinkler system, automatic timers, and a nominal cost for landscape restoration.

Percolation Options

Both percolation ponds and leachfields will work at the Broderson site. If percolation ponds are significantly less expensive to construct and maintain, the community may decide to support that option, especially if the flows are scaled back. Both percolation ponds and leachfield engineered designs are available for the Broderson site. Percolation ponds may also be a limited option at the spray field site, pending site investigation.

Dry wells were not specifically mentioned in the rough screening report, but are part of the Tri-W disposal project on the east side. Dry wells are not recommended at the Broderson site (due to the required hydraulic loading rates and plugging issues) but are the only feasible disposal option at east side sites, due to the topography and the need to stay in county right-of-way.

Monitoring well installations are part of the Tri-W design for the Broderson site and east side disposal sites. These wells would be needed regardless of the amount of disposal, and the costs should be incorporated into those components. The cost components for percolation options are:

1) Wastewater main from Broderson Ave./LOVR to Broderson site.
2) Broderson leachfield at 400,000 and 800,000 gpd capacity
3) Broderson percolation ponds at 400,000 and 800,000 gpd capacity
4) Wastewater mains to east side sites
5) Santa Maria Avenue site at 160,000 gpd capacity
6) Pismo Avenue site at 160,000 gpd disposal

Harvest wells are required for disposal amounts in excess of 400,000 gpd at Broderson, and for an amount to be determined (prior to fine screening meetings) at east side sites. Viable projects that include harvest water must also follow through on harvest water disposition. This was a problem for the Tri-W project due to the lack of a bay (drainage water) discharge permit. For Broderson and east side disposal field operating at full capacity (1,255 AFY), there would be an estimated 588 AFY of harvest water being produced. The main benefit of pumping harvest water is realized when purveyors are able to incorporate the water into the drinking water supply and thereby reduce lower aquifer production. The only disposition of harvest water that would produce a similar benefit would be to substitute harvest water for urban reuse water, or for ag reuse water with exchange.

Harvest water components for costing are:

1) New harvest well constructions at Loma, Palisades, and Paso Robles Avenues
2) Water line from existing Skyline harvest well to golf course reservoir
3) Water line from Loma, Palisades, and Paso Robles Avenue harvest wells to ag land reuse area.

Note that the residential wastewater reuse line and home retrofitting costs estimated for urban reuse can be applied to areas surrounding individual harvest wells as a decentralized disposal option for harvest water.

Constructed Terminal Wetlands

Constructed terminal wetlands offer ET disposal capacity, which would be equivalent to spray field ET disposal capacity. There is an approximate 60 acre area adjacent to Warden (dry) Lake that would be suitable for constructed wetlands, which would include expansion into the 271-acre parcel south of Tonini Ranch. Using a nominal value of 3 feet per year, the disposal capacity of a 60-acre constructed wetland would be 180 AFY. Storage requirements would be equivalent to the ag reuse or spray field ET requirements, minus the actual storage within the wetlands. No special storage costing would be needed for constructed wetlands. No wastewater main is required (site is in drainage below DSOD reservoir). The cost component includes up to 60 acres of constructed wetlands.

Summary and Additional Costs/Credits

Table 1 below presents the various costing components that would cover all disposal options described above. Final cost estimates should include construction, operation and maintenance, soft costs (permitting, design, construction management, etc.) and any land acquisitions/leasing that would be needed. Potential revenues from disposal operations (ag subleases, ag water exchange revenues, harvest water exchange revenues, etc.) or grants that could reduce costs should also be estimated for fine screening.

Table 1 - Costing for Wastewater Disposal

Disposal Option	Cost Component (Construction and O&M)
Spray Fields	1) Wastewater main from plant to spray field
	2) Basic Spray field system (270 acres)
	3) Expansion spray field (70 acres)
	4) DSOD Reservoir (170 acre-foot capacity)
	5) Evaporation ponds (170 acre-foot capacity)
Ag reuse	6) Wastewater main from plant to Los Osos Crk.
	7) Wastewater trunk lines to service parcels
	8) DSOD Reservoir expansion (to 290 acre-feet capacity)
	9) Evaporation pond expansion (to 290 acre-feet capacity)
Ag Exchange	10) Five deep aquifer ground water wells
	11) Water line to GSWC system
	12) Water line to LOCSD system
Urban Reuse	13) Wastewater main across Los Osos Ck . and along LOVR to Broderson
	14) Wastewater mains from LOVR to all large urban reuse sites
	15) Wastewater pipe in right-of-way for residential service (lineal foot)
	16) Average single family house on-site retrofitting
	17) Upper aquifer irrigation wells at in-town urban reuse sites
Percolation Options	18) Wastewater main from LOVR/Broderson to Broderson site
	19) Broderson leachfield at 400,000 and 800,000 gpd capacity
	20) Broderson percolation ponds at 400,000 and 800,000 gpd capacity
	21) Wastewater mains to east side disposal sites
	22) Santa Maria Avenue dry well site at 160,000 gpd capacity
	23) Pismo Avenue dry wells site at 160,000 gpd capacity
Harvest Wells	24) Harvest wells at Loma, Palisades, and Paso Robles Avenues
	25) Water line from Loma, Palisades, and Paso Robles to ag reuse sites
	26) Water line from (existing) Skyline well to golf course reservoir
Wetlands	27) 60 acres of constructed wetlands

Q.6.3 - Support Documentation for LOWWP Disposal Memo dated March 13, 2007

Cleath & Associates
Engineering Geologists
Ground Water
1390 Oceanaire Drive
San Luis Obispo, CA 93405
805-543-1413
FAX: 805-543-1755

Memorandum

Date: March 15, 2007
From: Spencer Harris, Cleath & Associates
To: LOWWP Team

Subject: **Support documentation for LOWWP Disposal Memo dated March 13, 2007**

This memorandum documents the reservoir storage calculations, slow-rate percolation documentation, and ET disposal capacity estimates used for the March 13th disposal costing memo.

Irrigation Water Demand

The basic equation for calculating irrigation water demand for a crop is:
D (AFY) = Crop area * (ET-Pe)/((1-LR)*IE)
- D = demand
- ET = crop evapotranspiration potential
- Pe = effective precipitation
- LR = leaching ratio
- IE - Irrigation efficiency

and where
ET = Kc * ETo
- Kc = crop coefficient
- ETo = reference ET

and
LR = ECi / ((5*ECe)-ECi
- ECi = irrigation water EC (dS/m)
- ECe = soil extract EC (dS/m)

This methodology has been used to estimate annual crop water demand for different water planning areas in the county (August 1998 Water Master Plan Update) and monthly demand by Ripley Pacific (Appendix TM 5-A). For fine screening, the Water Master Plan estimates for annual water demand are used, based on the average historical cropping pattern for ag land use in the Los Osos Creek valley. This annual use is distributed into monthly demand based on Ripley's calculations.

ETo values used by Ripley look a little high, based on a review of DWR values for the coastal zones. The creek valley does get some fog, so ETo Zone 2 (light fog; 39 inches ET per year) is probably a conservative match, although the actual DWR state ETo map puts the creek valley at the edge of Zone

6 (coastal uplands - no fog; 49.7 inches ET per year), which is closer to what Ripley used. Crop demand includes adjustments for effective rainfall, irrigation efficiency, leaching requirement, and individual crop coefficients. Again, Ripley's crop demand appears a little high (intensive), so only the monthly distribution from Appendix TM 5-A is applied. The monthly ETo and ag irrigation demand distribution from Appendix TM-5A is provided for reference below:

Ripley Pacific ETo Distribution

	Inches	Percent
Jan	2.01	4.18
Feb	2.42	5.04
Mar	3.63	7.56
Apr	4.32	8.99
May	5.73	11.93
Jun	5.97	12.43
Jul	6	12.49
Aug	5.41	11.26
Sep	4.6	9.58
Oct	3.52	7.33
Nov	2.44	5.08
Dec	1.98	4.12
	48.03	100

Ripley Pacific Crop Demand

	Inches	Percent
Jan	0	0
Feb	0	0
Mar	1.67	4.08
Apr	3.7	9.05
May	5.82	14.23
Jun	6.94	16.97
Jul	7	17.11
Aug	6.3	15.4
Sep	5.35	13.08
Oct	2.94	7.19
Nov	1.18	2.89
Dec	0	0
TOTAL	40.9	100

As mentioned in the March 13 disposal memo text, the actual historical crop water demand in the Los Osos Creek valley is estimated at 2 feet per year, rather than the 3.4 feet per year of potential demand estimated by Ripley Pacific for intensive agriculture. Both the ET monthly distribution and the annual demand estimates can be refined when assessing the viable projects.

Spray Field Evapotranspiration

The ET distribution used for spray fields is based on the unadjusted reference ETo, for two reasons. ETo is the ET for a reference crop, which is either turfgrass (ETo) or alfalfa (ETr). Spray fields are basically intensive irrigated pasture, which can approach or even exceed the ETo. The other reason is that spray fields can still be used in the winter months (at a lower application rate) when no irrigation would normally be needed to support pasture. Spray fields maximize both the evaporation component and the transpiration component of ET.

The nominal value of 3 feet per year ET for spray fields used for fine screening is less than the 3.4 feet per year (ET-Pe) listed by Ripley, but keep in mind that Ripley's ETo may be a little high for the area, so 3 feet for fine screening purposes is more conservative.

Spray Field Slow-Rate Percolation

Slow-rate percolation capacity was estimated by taking the published permeability rates for the soils at Tonini Ranch (from USDA Soil Conservation Service report) and multiplying by 4 percent, as suggested by the EPA process design manual on Land Treatment of Municipal Wastewater (1981). Specifically, in section 4.5.1, the water balance equation given for monthly loading is:

$$Lw = ET - Pr + Pw$$

Lw = wastewater hydraulic loading rate
ET = evapotranspiration rate
Pr = Pe (effective precipitation)
Pw = percolation rate

The ET-Pe value is 3 feet per year, as discussed above, and the monthly distribution is proportioned to the reference ETo to reflect year-round hydraulic loading at the spray field. Pw, which is the slow-rate percolation component, is not to exceed 4% to 10% of the minimum soil permeability. Table 1 below lists the various soils and acreage (by planimeter) for Tonini Ranch on slopes less than 30%. The soils map is attached (Figure 1).

Table 1
Soil permeability at Spray Field site
(with acreage for slopes below 30 percent)

Soil Number - Type (area)	Listed Permeability (SCS -1984)
128 - Cropley clay (155 acres)	0.06-0.2 in/hr
131 - Diablo and Cibo clays (70 acres)	0.06-0.2 in/hr
191 - Pismo-Tierra complex (70 acres)	6.0 - 20 in/hr
121 - Conception loam (50 acres)	Variable (use 0.06-0.2 in/hr)
216 - Tierra sandy loam (40 acres)	Variable (use 0.06-0.2 in/hr)
169 - Marimel sandy clay loam, occ. flooded (15 acres)	0.2-0.6 in/hr

The lowest permeability listed in most cases is 0.06 in/hr. Using the most conservative slow-rate factor of 4 percent, the resulting percolation rate would be 0.0024 inches per hour, equivalent to 1.8 feet per year (assuming year-round operations). Spray fields ET (3 ft./yr) and slow-rate capacity (1.8 ft/yr) total 4.8 feet per year. Note that the total area of slopes less than 30 percent is 400 acres. Only 270 acres have been proposed for spray fields, with 190 acres of generally flat topography, and 80 acres with slopes up to 20 percent. If spray field operations are manageable on slopes between 20 and 30 percent, then more area would be available at the site.

Reservoir Storage Calculations

The required reservoir storage to accommodate spray fields at 1,120 AFY disposal was estimated at 170 AFY. The calculations (in AFY) are as follows:

Calculation 1 - Spray Field at 1,120 AFY

	Capacity	Flows	Storage
Oct	87.86	86	0
Nov	69.65	108	38.35
Dec	61.89	108	84.46
Jan	62.4	108	130.06
Feb	69.31	108	168.75
Mar	89.72	86	165.03
Apr	101.35	86	149.68
May	125.13	86	110.55
Jun	129.18	86	67.37
Jul	129.69	86	23.68
Aug	119.74	86	0
Sep	106.08	86	0
TOTAL	1152	1120	

Capacity for the Spray fields are determined by taking the nominal annual capacity of 1,152 AFY ((4.8 ft/yr * 190 acres) + (3 ft/yr * 80 acres)) and proportioning it according to the reference ETo distribution. The ET component of spray field capacity is 3 ft/yr * 270 acres = 810 AFY, and the slow-rate percolation component is 1.8 ft/yr * 190 acres = 342 AFY.

For example, in April the reference ETo listed by Ripley Pacific (Appendix TM 5-A) is 4.32 inches, which is 9% of the 48.03 inch annual total. The spray field capacity in April would be 9% of the annual ET capacity (810 AFY * 0.09 = 72.9 acre-feet) plus an equal monthly share of the slow-rate percolation capacity (342 AFY/12 months = 28.5 acre-feet), for a total capacity of 101.4 acre feet. As can be seen above, the maximum required storage is close to 170 acre-feet in February.

Ag reuse storage requirements are based on the crop demand. Flows to the ag areas are assumed to be constant year round (up to 460 AFY). The resulting storage calculations in AFY are:

Calculation 2 - Ag Resue at 460 AFY

	Flows	Demand	Storage
Oct	38.33	33	5.33
Nov	38.33	13	30.66
Dec	38.33	0	68.99
Jan	38.33	0	107.32
Feb	38.33	0	145.65
Mar	38.33	19	164.98
Apr	38.33	42	161.31
May	38.33	65	134.64
Jun	38.33	78	94.97
Jul	38.33	79	54.3
Aug	38.33	71	21.63
Sep	38.33	60	-0.04
TOTAL	460	460	

In this case, demand is proportioned using the Ripley Pacific distribution in Appendix TM 5-A, but adjusted to the nominal rate of 2 feet per year (which means we are talking about 230 acres of ag land to cover the demand listed above). For example, in April, the listed demand in Appendix TM 5-A is 3.70 inches (0.308 ft), which is 9.05 percent of the total annual demand of 40.9 inches. The corresponding water demand in April (adjusted to 2 ft/yr) would be 0.181 feet (2ft * 0.0905), and over 230 acres, the demand in April would be 41.6 acre-feet. Note that no water is applied from December through February, which is why the maximum storage requirement of 165 acre-feet in March is almost as much as the spray fields needs, even though the ag disposal capacity is less than half of the spray fields. The storage requirements for spray fields and ag reuse are redundant, such that only the greater value (not the sum) is actually needed.

At buildout, if ag reuse is assumed to be 460 AFY, and the balance (996 AFY) in spray fields, the actual required reservoir capacity will decline from 170 AFY to 165 AFY. This is because in the initial flows

(1,120 AFY) analysis, spray fields have the option to take all the flow. If, however, spray fields are needed to take all the flow at buildout, the needed reservoir capacity will go up. With expansion to handle full capacity (on an annual basis), the reservoir storage calculations in AFY are as follows:

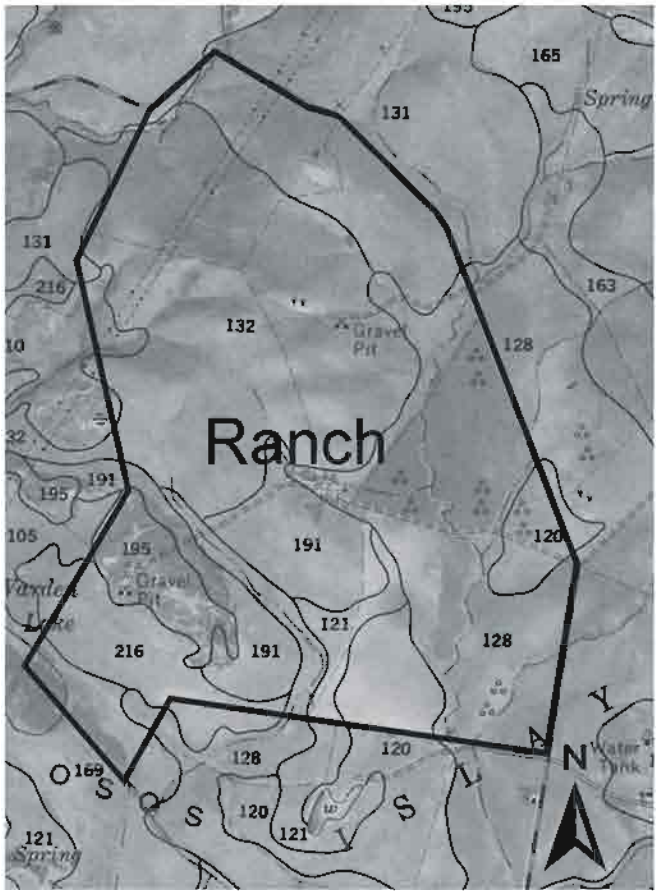
Calculation 3 - Spray Field at 1456 AFY

	Capacity	Flows	Storage
Oct	111.3	111.8	0.5
Nov	88.8	140.4	52.1
Dec	79.22	140.4	113.28
Jan	79.85	140.4	173.83
Feb	88.38	140.4	225.85
Mar	113.58	111.8	224.07
Apr	127.94	111.8	207.93
May	157.3	111.8	162.43
Jun	162.3	111.8	111.93
Jul	162.92	111.8	60.81
Aug	150.64	111.8	21.97
Sep	133.77	111.8	0
TOTAL	1456	1456	

Maximum storage would be 226 acre-feet in February, an increase of **56 acre-feet** over the 170 acre-feet initial requirement. *The disposal memo dated March 13, 2007 incorrectly states that the expansion to buildout would require an increase of 120 acre-feet in storage (total of 290 acre-feet). The 120 acre-feet value was actually the amount of storage required by the spray field for 996 AFY disposal rate at buildout (assuming 460 AFY to ag reuse), and inadvertently got mixed up with the other value.*

Revise cost items 8 and 9 to reflect expansion to 225 acre-feet, not 290 acre-feet.

Wet years would limit ET and ag demand, and increase inflow to the reservoir. Once viable projects are identified, a wet year analysis would be warranted. Credit for reservoir evaporation has also not been factored in, which is cumulative from year to year and likely significant. The cumulative reservoir evaporation could offset some or all of the wet year impacts.



Map Source. SCS Soil Survey of San Luis Obispo County - Coastal Part September 1984

Map Scale. 1 inch = 2,000 feet

Legend:

128 - Cropley clay
131, 132 - Diablo and Cibo clays
191 - Pismo-Tierra complex
120, 121 - Conception loam
216 - Tierra sandy loam
169 - Marimel sandy clay loam

Figure 1
Soils Map
Tonini Ranch
Los Osos Wastewater Project

Cleath & Associates

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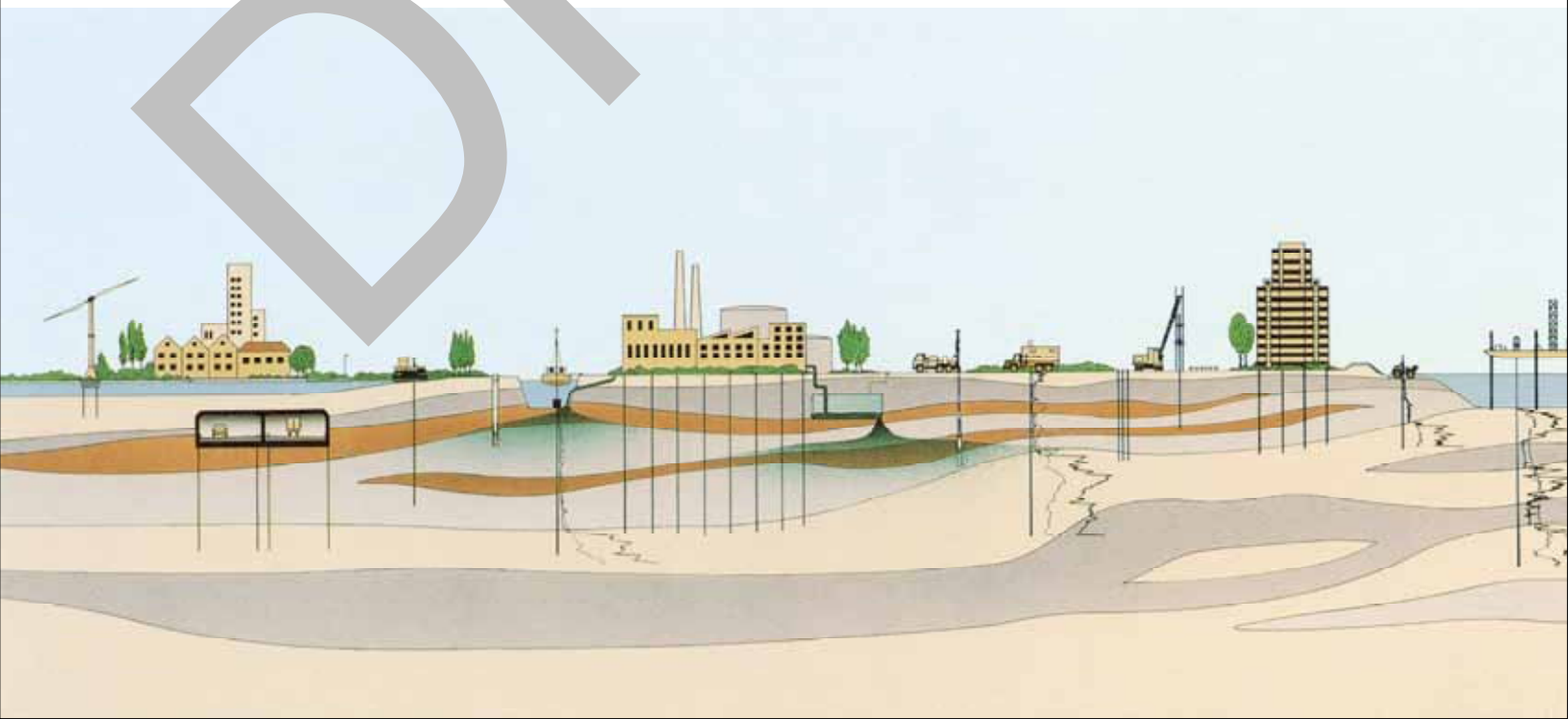
Q.7 - TECHNICAL REPORT: GEOLOGY

FUGRO WEST, INC.

PRELIMINARY GEOTECHNICAL REPORT
LOS OSOS WASTEWATER PROJECT EIR
SAN LUIS OBISPO COUNTY, CALIFORNIA

Prepared for:
MICHAEL BRANDMAN ASSOCIATES

May 21, 2008



FUGRO WEST, INC.

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660 Clarion Court, Suite A
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Tel: (805) 542-0797
Fax: (805) 542-9311

May 22, 2008
Project No. 3629.001

Michael Brandman and Associates
5280 Field Crest Drive
Camarillo, California 93012

Attention: Mr. Gene Talmadge

Subject: Preliminary Geotechnical Report, Los Osos Wastewater Project Environmental Impact Report, San Luis Obispo County, California

Dear Mr. Talmadge:

Fugro is pleased to submit this Preliminary Geotechnical Report as input to the Los Osos Wastewater Environmental Impact Report in San Luis Obispo County, California. This report was prepared in general accordance with the scope of services presented in our proposal dated March 5, 2008, and authorized by our subconsultant consultant agreement with Michael Brandman and Associates (MBA) dated April 1, 2008.

This report is a preliminary geotechnical study based on review of previous geotechnical studies, published geologic information, and project information provided by MBA. The purpose of this report is to provide input to the Environmental Impact Report and study being prepared by MBA. This report summarizes geologic hazards and geotechnical considerations that are likely to impact the design and construction of the project, and discusses mitigation measures that may be needed to address these items. Please contact the undersigned if you have questions regarding this report, or require additional information.

Sincerely,

FUGRO WEST, INC.

Jonathan D. Blanchard, G.E. 2312
Principal Geotechnical Engineer

Gresham D. Eckrich
Staff Engineer/Geologist II

Reviewed by:

Lori E. Prentice, C.E.G. 2312
Principal Engineering Geologist

Copies: 4 - Addressee

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CONTENTS

LIST OF PLATES

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1.0 PROJECT UNDERSTANDING

The work preformed for this study generally consists of a preliminary geotechnical evaluation that will provide input to the preparation of the Environmental Impact Report (EIR) for the proposed community-wide wastewater collection and treatment plant system for the unincorporated areas of Los Osos, Baywood Park and Cuesta-by-the-Sea in San Luis Obispo County, California. The project is currently in the preliminary design phase l and generally consists of the design and construction of a new wastewater treatment facility for the Los Osos community that will replace privately-owned individual septic systems (septic tanks and leach lines) that currently serve the residents of Los Osos. The locations of the proposed improvements and project alternatives considered for our evaluation are indicated on Plate 1 - Site Map.

The County of San Luis Obispo is overseeing the design and construction of the project. The proposed project will consist of a wastewater treatment facility, a disposal system for the treated effluent, a 30-acre storage reservoir for treated effluent, and a collection system comprised of a pipeline network with associated pump stations. The approximate limits of the collection system area are within the limits of the prohibition zone shown on Plate 1. MBA provided the proposed project and project alternatives being evaluated for the EIR in correspondence received May 1, 2008. A summary of alternatives is presented below:

Proposal Project and Alternatives

Project	Treatment Plant Site	Treatment Process	Effluent Disposal - Type	Storage	Collection System
Proposed Project 1	Branin-Giacomazzi-Cemetery	Facultative Ponds (Secondary Treatment)	Broderson – Infiltration Tonini – Spray Irrigation Conservation	30-acre feet at treatment plant	STEP/STEG and Gravity
Proposed Project 2	Giacomazzi	Oxidation Ditches/Bio Lac (Secondary Treatment)	Broderson – Infiltration Tonini – Spray Irrigation Conservation	30-acre feet at Tonini	STEP/STEG and Gravity
Proposed Project 3	Branin-Giacomazzi-	Oxidation Ditches/Bio Lac (Secondary Treatment)	Broderson – Infiltration Tonini – Spray Irrigation Conservation	30-acre feet at treatment plant	STEP/STEG and Gravity
Proposed Project 4	Tonini	Facultative Ponds (Secondary Treatment)	Broderson – Infiltration Tonini – Spray Irrigation Conservation	30-acre feet at treatment plant	STEP/STEG and Gravity

Project	Treatment Plant Site	Treatment Process	Effluent Disposal - Type	Storage	Collection System
Alternative 1	Turri Road	Oxidation Ditches (Secondary Treatment)	Broderson – Infiltration Tonini – Spray Irrigation Conservation	30-acre feet at Tonini	STEP/STEG and Gravity
Alternative 2	Mid-Town	MBR (Secondary Treatment)	Broderson – Infiltration Tonini – Spray Irrigation Conservation	30-acre feet at Tonini	STEP/STEG and Gravity
Alternative 3	Giacomazzi	Oxidation Ditches/Bio Lac (Tertiary Treatment)	Broderson – Infiltration Tonini – Spray Irrigation Conservation Ag and urban reuse	160-acre feet at Tonini	STEP/STEG and Gravity
Alternative 4	Branin-Giacomazzi-Cemetery	Facultative Ponds (Secondary Treatment)	Broderson – Infiltration Tonini – Spray Irrigation Conservation Agricultural Reuse Urban Reuse	30-acre feet at treatment plant site	STEP/STEG and Gravity
Alternative 5	Robbins 1-Robbins 2-Andre	Oxidation Ditches/Bio Lac (Secondary Treatment)	Broderson – Infiltration Tonini – Spray Irrigation Conservation	30-acre feet at treatment Tonini	STEP/STEG and Gravity

1.1 COLLECTION

A technical memorandum prepared for the County by Carollo Engineers (2008) discusses the likelihood that the sewer collection system will consist of a combination of lower pressure force mains and gravity flow piping. The proposed project and project alternatives would use a STEP/STEG and gravity flow system. The pipeline network will consist of approximately 45 miles of sewer and over 5,000 lateral connections to existing residences and property.

Alternatives for installation of the pipeline could consist of traditional cut and cover pipeline construction, or trenchless pipe installation performed using horizontal directional drilling. Cut and cover is typically selected in earthen areas and roadways, while trenchless techniques can be used to cross or install piping below heavily trafficked or environmentally sensitive areas. Trenchless installations are anticipated to cross the busier streets within the project limits, such as Los Osos Valley Road and South Bay Boulevard. However, we understand that no constraints have been identified that could preclude the use of cut and cover techniques in all areas of the project at this time.

The pipeline is designed to provide a minimum of 3 feet of soil cover over the top of the pipe on secondary roads, and 4 feet of soil cover over the pipe in primary roads. Pipe diameters are likely to range from about 2 to 12 inches. A previous gravity sewer design by Montgomery-Watson-Harza (MWH 2004) likely would have resulted in trench depths of up to approximately 15 to 30 feet. Carollo (2008) estimates that a low-pressure collection system, utilizing grinder pumps for residences in low lying areas, could be used to limit the trench depths to about 4 to 7 feet.

1.2 PUMP STATIONS

Pump stations are typically installed at the low points in the service area. Pump stations serve as collection points, typically located at the low point of a service area where the waste can flow into the pump station by gravity. The collected wastewater is then pumped to the treatment facility or is lifted to allow the wastewater to flow into an adjacent service area. The number and size of the pump stations depends on type of collection, terrain, and location of the treatment plant. Pump stations typically consist of a wet well, vault, electrical supply, and standby power building.

The MWH (2003) gravity sewer design plans show seven (7) primary pump stations and approximately 18 pocket-type pump stations at various locations. The pocket-type pump stations would help limit trench depths where the existing terrain is relatively low compared with adjacent areas. MWH estimates that the primary pump station wells would extend to 20 feet below the existing ground surface and that the pocket pump stations would be approximately 10 feet in diameter and extend to depths of approximately 10 to 15 feet below the existing ground surface.

Carollo (2008) estimates that about 3 to 4 pump stations would be needed to service a low pressure collection system, supplemented by grinder pumps installed at each customer location.

1.3 OUT OF TOWN CONVEYANCE

An out of town conveyance pipeline likely will be utilized to collect and pump wastewater from the entire collection area to a wastewater treatment facility located east of town. Also, it is anticipated that a pipeline returning reclaimed water to the community will be installed adjacent to the effluent disposal pipeline. Carollo (2008) mapped and discussed several options for pipeline routing, which may require crossing creeks by means of tunneling, trenching, or bridge-mounted piping. A number of the route options will border residential, agricultural, and sensitive habitat areas. Conveyance pipelines likely will consist of a 12- to 14-inch diameter pressurized force main that probably will be installed using a combination of conventional open-cut trenching and directional drilling to minimize excavation depth, project cost, and environmental impacts.

1.4 WASTEWATER TREATMENT PLANT SITES

The treatment plant generally will consist of a new wastewater treatment plant designed to accept an estimated peak flow of 1.6-million gallons per day. The components of the facility

will depend on the treatment option selected for design. The proposed project will involve secondary treatment using facultative ponds or oxidation ditches/BioLac. The pond systems are likely to be excavated to depths of 10 to 20 feet below the existing ground surface. Oxidation ditches and treatment facilities likely will involve relatively large, heavily loaded concrete structures and tanks that may be constructed above or below grade. Additional improvements are likely to include an operations building, offices, septage receiving station, headworks, solids processing, and filter systems. Site improvements could also involve paving for parking and access roads, concrete flatwork, retaining walls, utilities, piping, drainage facilities, and landscaping.

1.5 EFFLUENT DISPOSAL AND REUSE

A combination of spray fields, agricultural reuse areas, urban reuse sites, leach line fields, storage ponds, and constructed wetlands may be incorporated into the disposal and storage of treated effluent discharged from the treatment plant. These locations will dispose of an estimated 1,290 acre-feet per year of effluent by means of general irrigation, percolation lines, evaporation ponds, and drywells. In addition, seasonal storage ponds will provide storage for treated effluent during the winter months when agricultural reuse capacity is at a minimum. Storage ponds likely will be located at or near the treatment plant and/or reuse sites. The effluent will be pumped to disposal, reuse and storage sites via pressured pipelines. The locations of proposed effluent disposal and reuse sites are shown on Plate 1.

According to Carollo (2008), spray fields will likely be utilized to dispose of effluent by means of evapotranspiration and percolation. Agricultural reuse consists of crop irrigation with treated secondary and tertiary effluent. Tertiary treated and disinfected effluent may also be disposed of through urban reuse by irrigating lawns and landscaping vegetation. Leach lines are buried perforated pipes placed on top of a gravel backfilled trench and covered with soil. The effluent is distributed through the perforated pipe and percolates into the subsurface though the gravel backfill. Constructed wetlands are an additional consideration for storage of effluent and disposal via evapotranspiration and percolation.

1.6 TREATMENT AND STORAGE PONDS

Facultative ponds and oxidation ditches are planned as a component of the treatment plant design. The proposed project and alternatives include 30 acre-feet of storage intended to hold treated effluent during periods of low disposal capacity (wet season). Alternative 3 would require a total of 160 acre-feet of storage, and more limited urban reuse of water. We understand from MBA that storage ponds likely will be lined earthen reservoirs. The reservoirs will be designed such that the retained height of water and/or capacity of the reservoirs is below the jurisdictional limits of the California Division of Safety of Dams (the ponds will not be considered a dam according to State definitions). The ponds are likely to consist of an earthen perimeter berm and an interior excavation to provide the required storage. Treatment and storage pond depths have not yet been determined. Storage ponds are typically lined to prevent percolation, and with 2 to 4 feet of free board above the water storage level. The proposed project alternatives show the storage ponds at one of the treatment plant sites or on the Tonini site.

2.0 WORK PERFORMED

2.1 PURPOSE

The purpose of this report is to provide geotechnical input to the preparation of the EIR. It is not intended for the design or construction of the project. This report presents a summary of geologic hazards and geotechnical considerations as input to the preparation of the EIR for the project.

2.2 SCOPE OF WORK

Work performed for this study consists of the following:

Aerial Photographic Review and Data Review. We reviewed site-specific historical aerial photographs to evaluate the site. We also reviewed readily available published geologic data available in our files, previous geotechnical reports and a technical memorandum prepared by Fugro (Fugro, 2004a, 2004b, 2007). A summary of the historical aerial photographs that we reviewed is presented in the following table.

Summary of Reviewed Aerial Photographs

Date	Scale	Flight	Frames
11-13-02	1:32,000	GS00999	16 and 17

Site Reconnaissance. We performed a site reconnaissance to assist in the evaluation of the site conditions on May 6, 2008.

Review of Previous Geotechnical Reports and EIRs. We have reviewed and referenced relevant information and data from two geotechnical reports (Fugro, 2004a and 2007), one technical memorandum (Fugro, 2004b) and two EIR (The Morro Group, 1987; Crawford Multari & Clark Associates, 2000) addressing sites within the project limits.

Preliminary Geotechnical Report. This report summarizes geotechnical data reviewed for the project site and discusses potential geologic hazards, geotechnical considerations, and mitigations based on the data review. This report includes our opinions and recommendations regarding:

- Geologic and seismic setting;
- Predominant soil and formational units in the project area;
- Potential for the sites to be impacted by geologic hazards (such as strong ground motion, fault rupture, liquefaction, seismic settlement, landsliding, tsunami or seiche, or dam inundation);
- Potential for erosion, hydrocollapse, subsidence, expansive or collapsible soil conditions;

- Potential to encounter naturally occurring asbestos or radon gases;
- Areas (shown graphically) that pose geologic hazards;
- Potential for geologic conditions to cause site alterations (such as grading) to adversely impact the project;
- Construction or geotechnical considerations that could impact the project, such as the need for dewatering, excavation characteristics of the geologic materials, likely foundation support for structures, and anticipated grading;
- Impacts associated with potential geologic hazards related to liquefaction and seismic settlement and slope instability and landsliding); and
- Potential mitigation measures to address potentially significant impacts.

2.3 LIMITATIONS

This preliminary geotechnical report has been prepared for the exclusive use of Michael Brandman Associates and their agents as input to the preparation of the project EIR and is not intended for design of the project. In our opinion, the data collected and any findings, conclusions, professional opinions, and recommendations presented herein were prepared in accordance with generally accepted geotechnical engineering practice of the project region.

Although information contained in this report may be of some use for other purposes, it may not contain sufficient information for other parties or uses. If any changes are made to the project as described in this report, the conclusions and recommendations in this report shall not be considered valid unless the changes are reviewed and the conclusions and recommendations of this report are modified or validated in writing by Fugro.

In performing our professional services, in our opinion, we have used generally accepted geologic and geotechnical engineering principles and have applied that degree of care and skill ordinarily exercised, under similar circumstances, by reputable geotechnical engineers currently practicing in this or similar localities. No other warranty, express or implied, is made as to the professional advice included in this report.

3.0 SITE CONDITIONS

3.1 GEOLOGIC SETTING

The project is located in the Los Osos Valley and within the Coast Ranges geologic and geomorphic province. That province consists of north-northwest-trending sedimentary, volcanic, and igneous rocks extending from the Transverse ranges to the south into northern California. Rocks of the Coast Ranges province are predominantly of Jurassic and Cretaceous age; however, some pre-Jurassic, along with Paleocene-age to Recent rocks are present. The surficial geology in the project vicinity, as mapped by Hall et al. (1979), is shown on Plate 2 – Regional Geologic Map.

The Los Osos Valley and adjacent Irish Hills are the dominant geomorphic features within the project vicinity. The Los Osos Valley has formed in response to several tectonic processes that began prior to Pliocene time (more than 5 million years ago). Prior to the Pliocene, the bedrock strata in the Los Osos area was folded into an east-west trending syncline (U-shaped fold) that has subsequently been filled with up to 1,000 feet of sediment during the Pliocene and Pleistocene periods. Concurrent with that deposition was uplift along the east-west striking Los Osos fault that forms the boundary between the Los Osos basin and adjacent Irish Hills.

As shown on Plate 2, Hall et al (1979) map the predominant geologic units exposed in the study area as surficial sediments comprised of dune sand deposits (Qs) and alluvium (Qal), and outcrops of Paso Robles Formation (Qpr) and Franciscan Formation. Hall indicates that the Franciscan Formation materials are composed of greywacke (KJfg), metavolcanics (KJfmv), and mélange (KJfm). The dune sand (Qs) mapped by Hall is referred to as eolian deposits (Qe) by Lettis and Hall (1994). The alluvial sediments are associated with the Los Osos Creek, the floor of the Los Osos Valley, and Warden Lake. Surficial sediments are primarily underlain by weakly consolidated units of the age-equivalent of Paso Robles Formation and Careaga Sandstone (Tca). The Paso Robles Formation and Careaga Formation are underlain by relatively impermeable basement rocks composed of Franciscan greywacke and metavolcanics; Pismo Formation (Tp) shale; and Cretaceous-age dacitic (Td) intrusives (California DWR, 1989). Units of the Pismo Formation (Tpm) and Franciscan Formation (KJfm, KJfmv, KJfg) are exposed on the Irish Hills south of Los Osos.

3.2 FAULTING

The majority of the faults within the Coast Ranges province and the Sierra de Salinas belt generally trend north-northwest. The California Geological Survey (CGS 1996, formerly the California Division of Mines and Geology) considers major faulting within the project vicinity to include the Los Osos fault, San Simeon fault, and the San Andreas fault. The CGS fault database consists of active and potentially active faults that are considered by the CGS to be capable of affecting regional seismicity in California. A summary of faulting in the Central Coast area is shown on Plate 3 – Regional Fault Map.

Fugro utilized the fault search routine in FRISKSP (Blake 2000) to identify active and potentially active mapped faults and fault segments within a 62-mile radius of the project vicinity. The site coordinates (latitude and longitude) for the Los Osos Wastewater Treatment Project vicinity were estimated to be 35.3128° latitude and 120.8375° longitude. Summarized below are nine (9) faults and fault segments that were considered to be the most capable of producing high ground motion within the project vicinity. Additional information is presented in the California Geological Survey (CGS, 2002) fault database.

Summary of Fault Characteristics

Fault	Approximate Distance From Site (mile)	Maximum Moment Magnitude (M_w)	Fault or Fault Segment Length (km)	Slip Rate (mm/yr)
Los Osos	0.6	7.0	44 ± 4	0.5 ± 0.4
Hosgri	7	7.5	169 ± 17	2.5 ± 1.0
San Luis Range (S. Margin)	9	7.2	64 ± 6	0.2 ± 0.1
Rinconada	16	7.5	190 ± 19	1.0 ± 1.0
Casmalia (Orcutt Frontal Fault)	28	6.5	29 ± 3	0.3 ± 0.2
Lions Head	33	6.6	41 ± 4	0.02 ± 0.02
San Juan	37	7.1	68 ± 7	1.0 ± 1.0
San Andreas (Cholame)	43	7.3	63 ± 6	34 ± 5
Los Alamos – Baseline	48	6.9	28 ± 3	0.7 ± 0.7

Los Osos Fault. The closest mapped active fault to the project vicinity is the Los Osos fault zone (PG&E 1988, Lettis & Hall, 1994; Asquith, 1997). The fault zone and associated structural features are shown on Plate 4 - Los Osos Fault Zone and Lineaments. Lettis & Hall (1994) describe the Los Osos fault zone as a series of discontinuous, subparallel and en echelon fault traces that extend from the offshore Hosgri fault zone to Lopez Reservoir, a distance of about 35 miles. Lettis & Hall (1994) subdivided the fault zone into four segments: Estero Bay, Irish Hills, Lopez Reservoir, and Newsom Ridge. The Irish Hills segment of the Los Osos fault is about 10 to 12 miles long and extends from the Pacific Ocean near Los Osos eastward to San Luis Creek. This segment of the fault forms the boundary between the Los Osos Valley and the Irish Hills and has documented Holocene offset (PG&E 1988). Portions of the fault east of Los Osos (east of study area) near the City of San Luis Obispo have been zoned active and are designated as an Alquist-Priolo earthquake fault hazard zone by the CGS.

Several authors, including the California Division of Water Resources (DWR, 1989) and Asquith (1997), mapped a northwest-trending strand (locally referred to as ""Strand B") of the Los Osos fault east of the project area. The presence of the Strand B fault mapped by DWR was interpreted by an inferred offset in relatively deep bedrock units and groundwater aquifers in the Los Osos area. Asquith (1997) presents a refined location for a portion of the Los Osos fault and the Strand B lineation based on differences in shallow groundwater elevations in the Los Osos area. As part of their 1999 geotechnical study, CFS Geotechnical Consultants, Inc. advanced various piezocone penetration tests (CPT) and borings to depths of about 30 to 40 feet across the inferred trace of Strand B as mapped by Asquith near Ferrell Road. This data, combined with Fugro (1997) and various County of San Luis Obispo well data, suggest that the shallow groundwater is perched on various shallow clay layers that pinch out in the vicinity of the presumed fault trace. The clay layers terminate near or east of Palisades Avenue. The inferred Strand B trace from these data is an arcuate-shaped feature and not linear as inferred by previous investigations.

Cleath & Associates (2003a, 2003b, 2003c personnel communication with Spencer Harris, 2003) performed additional studies that included reviewing the DWR and Asquith reports, and performing pump tests in existing wells near the inferred Strand B fault on Palisades Avenue. Cleath reports that the inferred Strand B fault is not needed to characterize the structure of Los Osos Valley geology or groundwater basin. Further, pump testing of a well on Palisades Avenue near the County library did not show deflection of the drawdown cone of depression across the mapped trace of the inferred fault. The lack of deflection within the cone of depression suggests that there is not a groundwater barrier that prevents the horizontal flow of groundwater. As such, the Strand B fault is not included in their groundwater model for basin, and there is a low potential that the inferred fault exists.

Nacimiento Fault. The Nacimiento fault zone is associated with relatively recent, significant seismic events; however, it is not included as a seismic source within the CGS database. Jennings (1994) suggests that the fault does not have surficial features suggestive of Quaternary movement, and is considered inactive. However, the Bryson earthquake of 1952 that is sometimes assigned to the Nacimiento fault zone, and the M6.5 2003 San Simeon earthquake that occurred within the fault zone, contradicts Jennings' inactive classification and would make the fault seismically active. The Bryson earthquake, which occurred in a rural area of northern San Luis Obispo County, is poorly understood and may be attributed to movement on other faults such as the active San Simeon or potentially active Rinconada fault zones.

The Nacimiento fault zone is described by Hart (1976) as an ill-defined, complex array of northwest trending faults of diverse types and ages. The Nacimiento fault zone separates the soft rocks of the Coastal Franciscan domain on the west from the primarily granitic rocks of the Salinian domain on the east. As discussed by Hart (1976), the fault zone "lies on trend, both locally and regionally with faults and fault zones generally identified as the Nacimiento fault" along the southeastern portion by Hall and Corbató (1967) and Vedder and Brown (1968), and the Sur-Nacimiento fault to the northwest by Jennings (1958). Based on mapping by several investigators, it appears that the Nacimiento fault zone is not a single fault line of specific age, but rather a complex zone of branching and discontinuous faults of diverse orientations, movements, and ages. The fault zone is more or less defined by a narrow sinuous outcrop band of Franciscan mélange.

3.3 GEOLOGIC UNITS

The following characterization of general subsurface conditions mapped within the prospective project sites is based on review of published geologic maps and soils encountered during previous exploration programs conducted by Fugro (2004a, 2004b, 2007).

Dune Sand Deposits (Qs). Dune sand deposits comprise the predominant geologic unit exposed at the ground surface over the collection system area. The areal extent of the dune sand deposits, as mapped by Hall et al. (1979), is indicated on Plate 2, and is generally consistent with units encountered in the explorations. Lettis & Hall (1994) characterize the dune sands as unconsolidated to moderately consolidated, undifferentiated late Pleistocene and Holocene wind blown deposits.

The dune sand encountered in previous exploration programs was typically weathered with a moderately developed topsoil horizon. The topsoil was generally classified as very loose to medium dense sand (SP), silty sand (SM) and sand with silt (SP-SM). The underlying dune sand typically consisted of loose to very loose fine sand (SP) to depths of approximately 5 to 10 feet below the ground surface. The sand dune deposits below that depth were typically medium dense to dense sand (SP) and are locally interbedded with zones and lenses of silty sand (SM), clayey sand (SC), sand with silt (SP-SM), and silt (ML).

Alluvium (Qal). Alluvium is generally present along the eastern edge of the Morro Bay estuary, along the floodplains associated with Los Osos Creek, within wetland areas including Warden Lake, and on generally flat topography within the Los Osos Valley drainage basin. Within the collection system area, the alluvium is similar in composition to the dune sand deposits, and is therefore difficult to distinguish from those deposits on the basis of soil classification. Undifferentiated units of alluvium may be present in areas mapped or logged as dune sand deposits, particularly in low lying interdunal depressions within the project vicinity. The limits of alluvium mapped by Hall et al. (1979) are indicated on Plate 2. Lettis & Hall (1994) characterize the alluvium as Holocene-age unconsolidated cobbles, pebbles, sand, and silt stream deposits.

The alluvium encountered in previous exploration programs generally consisted of very loose to dense fine sand (SP, SP-SM) with varying amounts of silt. The deposits are locally interbedded with layers and lenses of gravel, clay, clayey sand, and organics. Dense sand units were encountered below the dune sand deposits near the intersection of Mitchell Drive and Pine Street.

Paso Robles Formation (Qpr). The presence of the Paso Robles Formation within the project vicinity is unrecognized by Lettis & Hall (1994) and undifferentiated from dune sands by Hall et al. (1979) as the surficial deposits comprising the plateau east of the Los Osos Creek flood plain. While not exposed within the collection system area, Paso Robles Formation is mapped along areas of Los Osos Creek, and overlies Franciscan rocks at the treatment plant sites near the cemetery, along portions of the southern and southwesterly areas of the Tonini site, and the hills near the Turri Road site. Hall et al. (1979) describes the unit as consisting of weakly consolidated sandstone, siltstone, claystone, and conglomerate in the Los Osos Valley area. Although described in terms of rock designation because of the formational name, the sediments of the Paso Robles Formation are generally equivalent to stiff to hard cohesive soils and medium dense to very dense granular soils.

The age-equivalent of the Paso Robles Formation was encountered below dune sand deposits during previous exploration programs, and likely underlies most of the dune sand within the project area. The material locally referred to as Paso Robles Formation may include older wind blown sediment and is commonly of a similar grain size as the overlying dune sand, only denser. The relative density of the material encountered was used to differentiate between what we interpret to be Paso Robles Formation and the surficial dune sand and alluvial deposits, in addition to the presence of clay layers that would not be expected to be encountered within wind blown deposits. The contact between the Paso Robles Formation and dune sands appears to be relatively uniform and dip to the northwest toward Morro Bay.

The Paso Robles Formation encountered in our previous explorations generally consisted of dense to very dense sand (SP), silty sand (SM), and clayey sand (SC). The sand is locally interbedded with 1- to 5-foot thick layers of very hard lean clay (CL). Where encountered in the explorations, the Paso Robles Formation was overlain by approximately 10 to 40 feet of dune sand and/or alluvium. We estimate that up to 100 feet or more of dune sand overlies the Paso Robles Formation near Santa Maria Avenue.

Franciscan Formation metavolcanics (KJfmv) and mélange (KJfm). The Los Osos Valley is bounded to the north and south by the San Lucia and San Luis ranges, respectively. Within the project site vicinity, the bases of these ranges are composed of Cretaceous or Jurassic-age Franciscan greywacke and metavolcanics. Along the easterly side of the collection area, Franciscan rocks were encountered below the Paso Robles Formation in borings by Cleath (2003b). Cleath reported metavolcanic rocks below Paso Robles Formation in borings drilled at the east end of Santa Ysabel and along South Bay Boulevard. Franciscan rocks are exposed on the hillsides above the Tonini site, extensively along Turri Road, and in hillsides above the Turri Road site. Hall et al. (1979) describes the Franciscan metavolcanics as primarily consisting of metamorphosed basalt and diabase with localized, extensively sheared zones. The mélange is characterized by Hall et al. (1979) as pervasively sheared greywacke largely composed of sheared claystone, with exotic clast inclusions. The mélange typically weathers to a highly expansive soil at the ground surface, and is prone to soil creep, slope instability, and landsliding.

3.4 GROUNDWATER CONDITIONS

Previous studies by Fugro report groundwater depths ranging from approximately near or at the ground surface to greater than 80 feet below the existing ground surface (Fugro, 2004a) in the collection system area. Based on a boring drilled on Doris Avenue just south of its intersection with Lupine Street (Fugro, 2004a), groundwater conditions in areas near Morro Bay appear to be influenced by tidal changes. Groundwater data is shown on Plate 5a - Groundwater Contours, Collection System Area and Plate 5b - Depth to Groundwater Map, Collection System Area. In addition, groundwater depths ranging from 30 to 48 feet below the existing ground surface were recorded within the limits of the Los Osos Mortuary, Giacomazzi and Branin properties (Fugro, 2007). During an exploration of the Andre site (Fugro, 2004b); groundwater was not recorded in any of the explorations advanced to depths ranging from 20 to 60 feet. However, vegetation suggestive of groundwater seeps/near surface groundwater was observed on the northeast-facing slope above the Warden Lake area, although active seeping was not observed during Fugro's reconnaissance. Based on published mapping, the Warden Lake area can be a marshy environment and has contained surface water in the past. The Turri Road site also appears to be in a low-lying area with shallow groundwater. Marshy soil and evidence of flooding was observed at the west end of the Turri Road site during our May 2008 site visit.

The potential exists for groundwater to be encountered at different depths at other locations and times, above impermeable layers, and within fractures or discontinuities within the

bedrock (if encountered). Groundwater and soil moisture conditions will fluctuate seasonally, and as a result of changes in precipitation, storm runoff, irrigation schedules, and other factors.

3.5 SEISMIC CONDITIONS

3.5.1 Historical Seismicity

The project is located in a seismically active region of central California. Historical records indicate that the area has been subject to various seismic events over the last 183 years (PG&E, 1988). A summary of Magnitude 2 and greater seismic events recorded from 1933 through March 2008 are presented on Plate 6 - Historical Seismicity Map. From these references, examples of relatively strong ground motion that has reportedly been experienced near the project area are the seismic events of 1830, 1857, 1913, 1916, 1917, 1966, 1980, and 2003.

The 1830 event is estimated to be an approximately M5 earthquake that occurred from a poorly located source near San Luis Obispo. The effects of the 1830 event were generally observed between the Los Osos and Rinconada faults. The 1857 event (the Fort Tejon earthquake) occurred on the Mojave segment of the San Andreas fault, and reportedly resulted in damage in central and southern California. The 1913 event is estimated to be an approximately M5 earthquake that occurred along the southwestern margin of the San Luis/Pismo block near Arroyo Grande. The 1916 event is estimated to be an approximately M5 earthquake that occurred near Avila, possibly along the Los Osos fault or faults along the southwestern margin of the San Luis/Pismo block. The 1917 event is estimated to be an approximately M5 earthquake that occurred near Lopez Canyon between the Rinconada and West Huasna faults. The 1966 event (the Parkfield earthquake) is estimated to be an approximately M6 earthquake that occurred on the San Andreas fault. The 1980 event is estimated to be an approximately M5 earthquake that occurred offshore near Point Sal along the Casmalia fault zone, and near its intersection with the Hosgri fault. The 2003 event (the San Simeon earthquake) is estimated to have been a M6.5 earthquake resulting in a ground acceleration of about 0.18g in the project vicinity (U.S. Geologic Survey 2004). The epicenter of the 2003 earthquake was located approximately 25 miles north of the site, near the Nacimiento fault zone.

3.5.2 Seismic Hazard Analysis

A preliminary probabilistic seismic hazard evaluation for the project vicinity was performed using the web-based interactive National Seismic Hazard Map program (U.S. Geologic Survey, 2008). The intent of our evaluation was to estimate the range of strong ground motions that could result from earthquakes occurring on active and potentially active faults. Crustal source and subduction source ground motions are calculated within a 200-kilometer (km) and 1,000-km radius of the project vicinity, respectively. Maps depicting the estimated peak horizontal ground motion and estimated spectral accelerations for 0.2 second (s) and 1.0s periods were used to estimate ranges within the project vicinity. Ground motions are calculated for a suite of attenuation relationships and combined using a weighted logic tree analysis (Peterson et al., 2008). The ground motions are approximated for a reference site

corresponding to the boundary between NEHRP Site Classes "B" and "C" (average shear wave velocity of 760 meters per second in the upper 30 meters of the crust). Estimated ground motions corresponding to a 2 percent probability of being exceeded in 50 years (statistical return period ≈ 2,475 Years) are tabulated below.

Hazard Level	Peak Horizontal Acceleration	0.2 Second Period Horizontal Acceleration	1.0 Second Period Horizontal Acceleration
2% Probability of Exceedance in 50 years	0.4 – 0.6	1.01 – 1.6	0.31 – 0.5

Note: All acceleration values in units of g (32 ft/sec2 or 9.81 m/s2)

Based on the geology of the project vicinity and subsurface conditions encountered in previous exploration programs, we anticipate the majority of sites will be classified as site class "D". This soil profile type corresponds to a stiff soil profile according to the CBC (2007). A site class "D" assumes that the material in the upper 100 feet of the site has an average shear wave velocity ranging between 600 and 1,200 feet per second (180 and 360 meters per second). However, based on review of geologic maps (see Plate 3) portions of the collection area are underlain by sediments that have been identified as having a potential for liquefaction. Exploration has not been performed for the Tonini and Turri Road sites; however, the sites are mapped as being underlain by alluvium that can be vulnerable to liquefaction. According to the ASCE (2005) design code and the CBC (2007), "soils vulnerable to potential failure or collapse under seismic loading, such as liquefiable soils…and collapsible weakly cemented soils" shall be classified as site class "F" and require a site-specific response analysis. It should be noted that a site-specific response analysis is not required for structures having fundamental periods of vibration equal to or less than 0.5s, according to section 20.3.1 of the ASCE (2005) design code.

3.6 LIQUEFACTION CONDITIONS

Liquefaction is a sudden loss of soil strength due to rapid increases in pore water pressures caused by seismic shaking. Liquefaction typically occurs during an earthquake in unconsolidated loose to medium dense sandy soils that are below the groundwater table. The potential and severity of liquefaction will depend on the intensity and duration of the strong ground motion, the depth to groundwater, the soil type, and terrain in the area where liquefaction occurs. Seismically induced settlement, collapse, or lateral spreads can occur in soils that are loose, soft, or that are moderately dense and weakly cemented, or in association with liquefaction.

3.6.1 San Simeon Earthquake

We reviewed selected areas of the project site on the afternoon following the December 22, 2003 magnitude M6.5 San Simeon earthquake to observe whether or not there was evidence of liquefaction or other earthquake damage. The epicenter of the earthquake was located approximately 25 miles north of the site, and is estimated to have resulted in a ground acceleration of 0.18g in the project vicinity (USGS 2004). We visited the low-lying areas of the

collection system, Mid-Town site, and pump station locations. Evidence of liquefaction was observed along shorelines of Morro Bay and Cuesta Inlet. Liquefaction was manifested as sand that had ejected around the pilings that support the Baywood T-pier, numerous sand boils and mud volcanoes on the shore of Morro Bay mainly below the high-tide line, and lateral spreads, pipes, and fissures along the shoreline of Cuesta Inlet. The liquefaction appeared to be constrained to near the shoreline, and did not visually appear to have seriously impacted the adjacent roadways or infrastructure such as may have been evidenced by cracks, fissures, or differential settlement.

The liquefaction appears to have occurred within a relatively shallow layer of loose sand that was encountered in previous exploration programs. We did not observe evidence of liquefaction or differential seismic settlement at the higher elevations of the prospective project sites such as at the Mid-Town, Broderson, effluent disposal sites, nor at the pump station sites that were typically located away from the shoreline.

The manifestation and damage that can be associated with liquefaction is strongly dependent on the duration of the ground motion. Larger magnitude earthquakes typically result in longer periods of shaking. Earthquakes that occur closer to a site generally result in higher ground motions than a similar magnitude earthquake that could occur away from the site. The design earthquake ground motion is likely to be higher than the San Simeon earthquake ground motion (0.4g to 0.6g vs. 0.18g).

3.6.2 Liquefaction

The Safety Element of the San Luis Obispo County General Plan (1999) identifies areas where the potential for liquefaction should be evaluated based on mapping of geologic formations that may contain soil types susceptible to liquefaction. Within the Los Osos area, the Safety Element identifies geologic units such as beach sand, dune sand, and younger alluvial deposits as having a high potential to contain sediments that may be prone to liquefaction. Based on review of geologic maps (see Plate 2), all the sites under consideration for the project are completely or partially underlain by geologic units that may contain sediments susceptible to liquefaction. The previous geotechnical data available for the sites and presented in the Fugro (2004a, 2004b, and 2007) reports was used to further characterize the potential for liquefaction to impact the project considering the soil types encountered within the various geologic units, the relative density of the soil, and the depth to groundwater. A summary of the liquefaction hazard for the project is presented on Plate 7 – Liquefaction Hazards Map. The varying potential for liquefaction shown on the map is presented below:

- Very High. Groundwater has been encountered within about 10 feet of the ground surface, soil units previously encountered are loose and vulnerable to liquefaction, and/or manifestation of liquefaction was observed following the 2003 San Simeon earthquake.
- High. Groundwater is present within about 50 feet of ground surface and previous explorations suggest sediments are loose and prone to liquefaction. The depth of potentially liquefiable material may be limited or near the groundwater table.

- Moderate. Groundwater is present within about 50 feet of ground surface, and previous explorations suggest sediments are medium dense and prone to liquefaction, or geologic units may contain sediments susceptible to liquefaction, but the area was not evaluated by the previous studies.
- Low. Groundwater likely not present within 50 feet of ground surface or sediments in this vicinity were previously evaluated and found to be dense and have a low potential for liquefaction.
- Not indicated. Bedrock or formation units that are not considered vulnerable to liquefaction.

4.0 GEOLOGIC HAZARD IMPACTS

The following sections present a summary of geologic hazards that we evaluated for the project, our opinion regarding the potential for the hazards to impact the project, and preliminary recommendations for mitigation of the hazard, if needed. Prospective agricultural and urban reuse sites were not evaluated for geologic hazard impacts, as irrigation with reuse water is not anticipated to represent a change in current land use or influence impacts from geologic hazards.

4.1 FAULT RUPTURE

Fault rupture is the displacement of the ground surface created by movement along a fault plane during an earthquake. A fault rupture hazard can exist when structures or facilities or are located directly on an active fault, and rupture of that fault could displace the ground surface upon which the building or facility is located. The State of California precludes building on active faults under Alquist-Priolo Earthquake Fault Zoning Act. The Alquist-Priolo Earthquake Fault Zoning Act's main purpose is to prevent the construction of buildings used for human occupancy on the surface trace of active faults.

As shown on Plate 4, prospective project sites are not located within a designated Alquist-Priolo Earthquake Fault Hazard Zone. As discussed in Section 3.2 of this report, the closest mapped active fault to the project vicinity is the Irish Hills segment of the Los Osos fault mapped approximately ½ miles or more south of the project vicinity. Therefore, the potential for fault rupture to impact the project site is considered low, and no mitigation for fault rupture is needed.

Mitigation: None anticipated.

4.2 STRONG GROUND MOTION

Strong ground motion (shaking) can occur in response to local or regional earthquakes. The project site is located within a seismically active area. The potential exists for strong ground motion to affect the project during the design lifetime. In general, the primary effects will be those phenomena associated with shaking and/or ground acceleration. Those effects can be mitigated through appropriate design and construction procedures.

The building code requires that structures be designed to resist design earthquake strong ground motions. The ASCE (2005) design code and the California Building Code (CBC 2007) require buildings to be designed for earthquake effects that are two-thirds ($^2/_3$) of the corresponding Maximum Considered Earthquake (MCE) effects. As discussed in Section 3.5 of this report, the estimated MCE ground motions are site class-modified spectral accelerations corresponding to earthquakes estimated to have a 2 percent chance of being exceeded in 50 years, or a return period of about 2,475 years. Design earthquake ground motions for liquefaction and other geotechnical analyses are defined as two-thirds ($^2/_3$) of the corresponding MCE ground motions. Structural designs are based on the 0.2s and 1.0s period spectral accelerations corresponding to the MCE for a Site Class "B" (site class is defined per ASCE [2005], CBC [2007]) which are modified, if necessary, to account for different Site Class effects.

Mitigation: The proposed structures should be designed to resist the lateral forces generated by earthquake shaking in accordance with building code requirements. Seismic data and site classification for the design of structures should be provided in the design-level Geotechnical Report in accordance with applicable building codes and subsurface exploration. The report should also provide ground motion parameters (magnitude and peak ground acceleration) for use in geotechnical analyses, such as for evaluating slope stability, liquefaction, and seismic settlement.

4.3 SEISMIC-RELATED GROUND FAILURE

4.3.1 Liquefaction and Seismic Settlement

As noted above, all the sites under consideration for the project are completely or partially underlain by geologic units that may contain sediments susceptible to liquefaction. However, previous site-specific analysis of liquefaction shows that not all of the mapped units are potentially liquefiable. The potential for liquefaction hazards to impact each prospective site is summarized below, and shown on Plate 7. The following information is based on previous investigations by Fugro (2004a, 2004b, 2007), visits to particular sites and review of geologic maps and literature.

Soils within the project vicinity vary from soils having a relatively low to high potential for liquefaction. Soils having a high to very high potential for liquefaction were typically encountered in the collection system area by our previous investigation (Fugro, 2004a). The greatest potential for liquefaction is within areas that are either low in elevation, such as the shoreline areas along Morro Bay and interdunal depressions along Morro Avenue, Paso Robles Avenue, Santa Ynez Avenue, and Ramona Avenue-Mitchell Drive. These areas are typically characterized as being underlain by relatively loose sand and shallow groundwater. The potentially liquefiable sand is typically less than 10 feet thick. The piping and pump stations that will be located in these areas are the most likely to be impacted by liquefaction. Soils having a low potential for liquefaction were generally encountered in the higher elevations of the site, such as the predominant dune ridges along Pismo Avenue, eastern Santa Maria-El Morro Avenue, and in the Broderson-Skyline Avenue area. These areas are typically characterized as being underlain by relatively dense sand, and/or areas where groundwater is deep relative to the presumed depth of the collection system.

In addition, soils having a moderate to high potential for liquefaction are mapped within the recent, unconsolidated dune sand and alluvial sediments associated with Los Osos Valley drainage, Los Osos Creek, and Warden Lake. Based on the low relief of these areas, we anticipate high groundwater elevations to augment the susceptibility of the alluvial soils to liquefaction. These areas are most likely to impact the conveyance pipelines that may traverse these low lying areas.

In general, dune sand and alluvial sediments are underlain by soils of the Paso Robles Formation within the project vicinity. The Paso Robles Formation is typically equivalent to stiff to hard and dense to very dense soil, thus, the majority of sites underlain by the Paso Robles Formation, have a low potential for liquefaction. Bedrock units of the Franciscan Formation are not considered susceptible to liquefaction. The treatment plant improvements and Broderson sites are located in areas that are considered to have a low potential for liquefaction, except for perhaps the Turri Road and Tonini treatment plant sites where subsurface exploration to help evaluate liquefaction hazards has not been performed. Based on site reconnaissance, the majority of the Tonini site appears to have relatively shallow soil cover overlying Paso Robles Formation or Franciscan rocks, and a site for the treatment facility could likely be selected in the bedrock areas and outside any areas that may be vulnerable to liquefaction.

4.3.1.1 Collection System and Conveyance Network

Liquefaction can result in ground mobility that impacts pipeline grades, or results in pipelines floating out of the ground in areas of liquefaction. The collection system will consist of approximately 45 miles of pipeline that will essentially be constructed through the Los Osos, Cuesta-by-the-Sea and Baywood communities. Loose sand blankets the upper 5 to 10 feet of the ground surface over most of the collection system area. Portions of the collection system network and prospective out-of-town/in-town conveyance routes traverse areas having a relatively high potential for liquefaction. The potential for liquefaction and seismic settlement to impact pipelines may be governed by the depth of the pipeline relative to the depth of liquefiable soils. For our previous investigation (Fugro, 2004), the seismic settlement within the collection area was estimated to be less than about 2 inches.

Mitigation. Liquefaction could impact the pump station and pipelines in portions (about 20 percent) of the collection system areas, and where the conveyance crosses low-lying areas or creeks. Mitigation for pump stations typically consists of site preparation and grading that will reduce the potential for liquefaction and seismic settlement to impact the pump station areas, or supporting the structure on deep foundations bearing below the liquefiable materials. Specific recommendations for designing pump stations considering liquefaction hazards should be provided in the design-level geotechnical report.

When practical, pipelines should be founded below liquefiable soils. Because of the difficulty of predicting pipeline performance relative to liquefaction and seismic hazards, pipelines are commonly not mitigated as part of the design and construction of a pipeline project. Alternatively, liquefaction and seismic hazards can be addressed in an Emergency Response Plan (ERP) for the wastewater facility. The ERP should recognize the potential for liquefaction and seismic hazards to impact the pipeline, and specific high hazard areas that

should be inspected for damage following an earthquake. "Soft fixes" are sometimes incorporated in the ERP. Soft fixes typically consist of having a plan in-place to address the hazards, such as can be achieved by storing supplies and equipment associated with the pipeline and repair that can be difficult to obtain or have long lead times to obtain.

4.3.1.2 Wastewater Treatment Plant Sites

Los Osos Mortuary, Giacomazzi, Branin, Robbins 1, Robbins 2, and Andre Sites. Materials of undifferentiated Paso Robles Formation and/or alluvium were encountered in each of the explorations from our previous investigation (Fugro, 2007) at the sites. The upper 3 to 4 feet of materials appeared to be relatively loose/soft and likely represent topsoil/colluvial materials disturbed during previous agricultural/plowing activities. There appears to be a low potential for liquefaction to impact these sites based on currently available information.

Tonini Site. The lower, generally flat topography of the Tonini site is characterized primarily by alluvium, with queried deposits of dune sand and Paso Robles formation. The slopes along the western and northern portions of the site have been mapped as Franciscan mélange and metavolcanics. During a site visit on May 6, 2008, Fugro noted the presence of alluvial, surficial clayey soils on the generally flat portions of the site, and Franciscan units on the adjacent slopes. As shown on Plate 7, without site-specific geotechnical study the recent alluvial sediments are considered to have moderate to high potential for liquefaction if groundwater elevations are high. However, the presence of fine-grained, cohesive materials within the soil profile suggests a lesser potential for liquefaction and seismic settlement than that typically associated with cohesionless soils. The majority of the Tonini site appears to have relatively shallow soil cover overlying Paso Robles Formation or Franciscan rocks, and although further geotechnical analysis is needed to evaluate liquefaction potential for a treatment facility at this site, a site could likely be selected outside any areas that may be vulnerable to liquefaction.

Mid-Town Site. The site is underlain by a variable thickness of relatively loose to medium dense dune sand deposits that overlie relatively dense sand of the Paso Robles Formation (age-equivalent). During our previous investigation (Fugro, 2004a), the groundwater table was generally encountered within the denser sand and below the base of the dune sand deposits. Grading was recommended to remove the loose soil from improvement areas that may be vulnerable to seismic or static settlement. The denser sand within the Paso Robles Formation is estimated to have a relatively low potential for seismic settlement and liquefaction.

Turri Road Site. The Turri Road site is underlain by alluvium. As shown on Plate 7, without site-specific geotechnical data and given the recent alluvial sediments, low elevation of the site, and the likelihood of shallow groundwater, the site is considered to have a relatively high potential to be impacted by liquefaction. Fugro estimates a high potential for liquefaction and seismic settlement to impact the site.

Mitigation. The building code requires liquefaction and associated mitigation to be addressed in the design-level geotechnical report for design. With the exception of the Turri Road site, the treatment plant sites appear to have a moderate to low potential for liquefaction.

As discussed above, grading would remove loose soil from the Mid-Town site that is considered vulnerable to seismic settlement. A geotechnical study of the Tonini site should allow for a suitable site for the treatment facility to be selected outside areas where mitigation of liquefaction may be required. The Turri Road site should be further evaluated if selected for design; however, there is a relatively high potential that mitigation of liquefaction or seismic settlement would be needed to develop the site for the treatment plant.

The design-level geotechnical report should address liquefaction for the selected wastewater treatment site considering the treatment facility (structure vs. ponds), the storage reservoirs, and related site improvements. Mitigation for liquefaction and seismic settlement typically consists of either removing the soil that is prone to liquefaction and seismic settlement and replacing it with properly compacted (engineered) fill; deeply compacting the soil in-place; or supporting structures on deep foundations bearing below the settlement-prone soil. Deep compaction or deep foundations may be needed to support structures, or portions of the structures, if the estimated seismic settlement cannot be tolerated using shallow or mat foundations. The tolerable settlement and foundation design for the buildings should be further evaluated by the geotechnical professional and structural engineer during the design of the project.

4.3.1.3 Effluent Disposal Sites

Broderson. The proposed effluent disposal system at Broderson will be located on a relatively gently sloping hillside approximately 1,200 feet south of Highland Avenue. Based on previous investigations (Fugro, 2004a), the depth to groundwater is greater than 100 feet below the existing ground surface, and except for the near-surface loose dune sand deposits, the deeper soils encountered beneath the site are generally dense and not susceptible to liquefaction or seismic settlement. The near-surface loose dune sand would be considered potentially liquefiable in the event that they were saturated at the time of an earthquake; however, the groundwater depths will not be permitted to rise near to the ground surface at the site (Cleath and Associates, 2000). Therefore, Fugro (2004a) concluded there is essentially no change in the potential for liquefaction or seismic settlement to occur within the soils encountered as a result of the effluent disposal system and estimated mounding at the Broderson Site.

Tonini. The spray field irrigation at Tonini likely have little impact on the potential for liquefaction. Should liquefaction occur at the site, it is unlikely that the occurrence of liquefaction would impact the suitability of the site for spray irrigation. Clay soil mapped over most of the site likely limit the infiltration of irrigation water. Low lying areas along the southern end of the site, may contain liquefiable soil, but are likely to have an increased potential for liquefaction due to irrigation.

Mitigation. None anticipated.

4.3.2 Lateral Spreads

Lateral spreading is slope instability that can occur in response to liquefaction. Lateral spreading typically develops on sloping ground underlain by liquefiable soils or where free-face conditions can develop in a liquefiable soil, such as along a river bank or drainage. Prospective sites that include rivers banks or descending slopes that may allow for free-face conditions to develop within liquefiable soils, and the potential for lateral spreading to impact the sites during a seismic event are discussed below. As discussed in Section 3.6.1 of this report, lateral spreading was observed in areas along the perimeter of Morro Bay following the December 2003 San Simeon Earthquake. Observed lateral spreading was generally confined to inlets and shoreline areas, and not within the proposed collection system area. Stream bank areas along Los Osos Creek are also likely vulnerable, and could impact the conveyance pipes at creek crossing locations.

Above-ground treatment and storage ponds with earth berm perimeters likely would be susceptible to liquefaction-induced slope instability if founded on potentially liquefiable soil. The potential for berm instability is predominantly governed by the inclination of berm slopes and relative density of the underlying foundation support soil. Only the Turri Road and Tonini sites are likely to have foundation soils that may be prone to liquefaction. Design and construction of slopes should be further evaluated in subsequent design level geotechnical reports.

Mitigation. The design-level geotechnical report should address the potential for lateral spreading to occur in association with liquefaction, and whether or not the hazard could impact the design of the conveyance structures, storage reservoirs or other improvements. The ERP should consider the potential for lateral spreading in association with liquefaction along shoreline areas and creeks. Mitigations, such as lowering the conveyance pipelines below potentially liquefiable soils and the need to remove liquefiable soil from beneath the storage reservoir berm to maintain slope stability, should be addressed in the report.

4.3.3 Ground Lurching

Ground lurching occurs as the ground is accelerated during a seismic event. As evidenced by the Loma Prieta, Landers, Northridge, and San Simeon earthquakes, the effects of ground lurching can damage facilities and buried pipelines. Ground lurching occurs due to detachment of underlying stratigraphic units, allowing near-surface soil to move differentially from underlying soil. The site is within a seismically active region of central California that is prone to moderate to large earthquakes. It is therefore our opinion that there is a potential for ground lurching to impact the site. Ground lurching is generally not a geologic hazard that can be prevented, and therefore is mitigated by implementing preparedness measures.

Mitigation. Address in ERP with other seismic hazards.

4.4 LANDSLIDING

The project sites are generally on relatively flat terrain and not in areas that would be subject to landslides. However, based on review of aerial photographs, site reconnaissance

and review of geologic maps, the hills adjacent to the Tonini site and along Turri Road are underlain by Franciscan Mélange and show relatively extensive evidence of slope instability, landsliding and creep. The Tonini site is also an area proposed for disposal of treated effluent by spray field irrigation. However, the Tonini and Turri Road sites are generally located on flatter ground, off of the hillsides where the instability was observed. Landsliding is not expected to impact the treatment plant, collection system, conveyance or disposal system sites. Potential impacts from landsliding could be the potential for debris to move down slope and accumulate near the base of slopes. Improvements, particularly the spray field at the Tonini site, should not be sited upon sloping areas where slope instability may be a concern.

Mitigation. A California registered engineering geologist (CEG) should evaluate the limits of the spray fields during the design of the project to confirm that spray fields are not located in areas of known or potential slope instability, landsliding, or creep. The design plans for the spray field should be reviewed by the CEG, and the CEG should document the review in writing with any recommendations for modifying the limits of the spray field. The recommendations of the CEG should be incorporated into the design plans.

4.5 SUBSIDENCE AND COLLAPSE

The prospective sites are not in an area where the withdrawal of subsurface fluids is known to have caused ground subsidence. The greatest potential for subsidence would be if potentially compressible soils were impacted by lowering of the groundwater table during construction dewatering. The buoyancy of the soil above a specific depth decreases as groundwater levels are lowered. Lowering of the groundwater level therefore increases the effective weight of the soil above that depth, which can cause the soil to subside (settle) under the increased weight of the ground above it.

Previous investigations and geologic maps indicate the majority of the collection system area underlain sand dune deposits that are generally granular. Granular soils are typically regarded as having a low potential for subsidence due to dewatering. With the exception of the Turri Road site, the treatment plants sites are not in areas where dewatering would cause ground subsidence. The Turri Road site is in a low-lying area where shallow groundwater and soft or organic soil may be present. If dewatering is planned at the Turri Road site, the potential for subsidence in association with lowering of the groundwater table should be evaluated.

Mitigation. The design-level geotechnical report should address if there are potentially compressible soils that could be prone to subsidence by construction dewatering, and any mitigation that may need to be considered for construction dewatering.

4.6 EROSION

Graded cut and fill slopes associated with the site development will be subject to sheet and rill erosion. Erosion of soils can be accelerated where soils are exposed directly to runoff and/or areas of concentrated storm runoff, such as at culvert outlets. Site drainage and landscape improvements can be designed to reduce the potential for soil erosion.

Mitigation. Erosion control measures, such as hydro-seeding, erosion control matting, and maintenance, should be provided to reduce the potential for erosion while vegetation is being established on slopes. On-going maintenance of the slopes should be provided, as-needed, to assist in establishing appropriate vegetation and to repair erosion that occurs. Energy dissipation and erosion control devices should be provided at outlets of drainage pipes and in areas where there are concentrated flows of runoff to reduce the potential for erosion.

4.7 EXPANSIVE SOILS

Expansive soil generally consists of fine-grained soil of high plasticity (clay) that can damage near-surface improvements in response to shrinking and swelling associated with changes in soil moisture content. Expansion potential of soils within the project vicinity is depicted on Plate 8 – Soil Expansion Potential Map. Near surface soils at the prospective sites predominantly consist of dune sands having a generally low potential for expansion, and alluvial sediments having a low to high potential for expansion.

Highly expansive soils mapped within the limits of the prospective wastewater treatment plant sites belong to the Concepcion, Cropley, Diablo and Cibo series. These soils are characterized as having slow to very slow permeability and high shrink-swell (expansion) potential (Ernstrom, 1984). After swelling, water infiltration is typically low and surface water is more likely to runoff or pond.

Mitigation. Structures and foundations should be designed according to at least the minimum requirements of the building code. The building code provides criteria for the design of structure foundations and concrete flatwork for expansive soil conditions. The design-level geotechnical report should address whether or not expansive soil conditions should be considered for design of structures and concrete flatwork, and provide recommendations for mitigating expansive soil conditions using concrete reinforcement, deepened footings, control of drainage, or mats of non-expansive fill as-needed based on the expansion potential of the foundation support soil.

4.8 HYDROCOLLAPSE POTENTIAL

Hydrocollapse or hydroconsolidation describes soils that are prone to settling when subjected to wetting or saturation. Hydroconsolidation can result in differential settlement that can impact buildings, pipelines, flatwork, or pavement; particularly if the wetting or infiltration of water does not occur uniformly. Shallow near surface soil, such as the expansive clay soil and loose dune sand, may be vulnerable to collapse. Near surface soil that may be vulnerable to collapse is typically removed during site preparation and grading and is replaced with compacted (engineered) fill to provide suitable support for structures, or supporting structures on deep foundations bearing below the soil. Previous investigations and review of geologic literature indicate near surface soils encountered at the prospective sites may be vulnerable to hydrocollapse. Explorations performed for previous studies suggest the loose soil that is most prone to hydrocollapse is typically less than several feet thick. We therefore expect that the loose soil likely be removed by grading to remove the loose soil and replace it as compacted fill.

Mitigation. The design-level geotechnical report should provide recommendations for foundation design, site preparation and grading to provide suitable support for structures.

4.9 TSUNAMIS AND INUNDATION

Tsunamis, or long-period sea waves created due to seismic events or submarine landslides, have historically occurred in the project region. Tsunamis can range in height from a few feet to greater than 50 feet, and can result in run-ups, or bores, extending great distances up streams, rivers, and creeks. As evidenced by recent events around the world, tsunamis can have devastating impacts on coastal areas. The project vicinity is located at elevations (el) ranging from approximately sea level for the portions of the pipeline that bound Morro Bay to approximately el. +200 feet above mean sea level (MSL) at the Broderson and Tonini sites. The County of San Luis Obispo has prepared web-based tsunami inundation maps (http://www.sloplanning-maps.org/ed.asp?bhcp=1) that show coastal areas that may be vulnerable to inundation from tsunami below about el. +40 feet MSL. The inundation zones are generally the coastal areas along Morro Bay, and low lying areas along Los Osos Creek and the vicinity of Warden Lake. According to Kilbourne and Mualchin (1980), the following historical tsunamis have occurred in the project region:

Historical Tsunami Run-up

Year	Estimated Tsunami Generation Location	Estimated Impact Location	Estimated Tsunami Run-up (meters/feet)
1868[1]	Unknown	Morro Bay	Unknown
1878[2]	Unknown	Morro Bay	Unknown
1927	Local	Pismo Beach	1.8 meters/5.9 feet
1946	Aleutian Trench	San Luis Obispo Bay	1.2 - 1.5 meters/3.9 - 4.9 feet
1960	Chile-Peru Trench	Central Coast	>1.0 meters/>3.3 feet
1964	Gulf of Alaska	Central Coast	>1.0 meters/>3.3 feet

[1] Speculative

[2] Reportedly overtopped the sand spit that separates the bay from the ocean (SLO County 1999).

As noted in the above table, tsunamis generated from far-field sources have historically occurred in the project region. A study performed by Houston and Garcia (1978) estimated the 100-year and 500-year tsunami run-ups in the study area based upon far-field source generation locations (such as the Aleutian or Chile-Peru Trenches). On the basis of their study, the estimated tsunami run-up along the Cayucos/Morro Bay coastline is up to approximately 9.5 feet to 24.2 feet for the 100-year and 500-year events, respectively. Those run-ups were calculated using astronomical high tides, and compare well with recorded tsunamis that have occurred in Crescent City and other locations along the California coast. However, according to Kilbourne and Mualchin, the worst case scenario would occur if a tsunami occurred during a meteorological high tide (storm surge), which would add an estimated 15 feet to the run-up values calculated by Houston and Garcia (1978). Thus, with a worst case scenario, the estimated tsunami run-up for the 100-year and 500-year would be approximately 25 and 40 feet, respectively.

Houston and Garcia's (1978) study did not evaluate the tsunami run-up potential generated from local seismic events or local submarine landslides. It is difficult to model the tsunami run-up magnitudes based on local events; however, it is thought that local events can generate tsunamis of equal magnitudes as far-field tsunami sources (Kilbourne and Mualchin 1980).

The entire Turri Road Site and coastal areas of the collection system are below the estimated tsunami run-up elevations shown on the County website. As a result, tsunami run-ups may be considered a potential hazard to the Turri Road Site as a prospective location for the wastewater treatment plant. However, tsunami run-ups should not result in adverse impacts to the pipeline in areas where it is buried and protected from scour, or impact areas where the pipeline is above the run-up elevations. We would expect that there is a potential that locally the pipeline could be exposed and possibly damaged as a result of erosion associated with tsunami run-up.

Mitigation. None anticipated. Tsunami hazards are typically addressed by developing warning systems and evacuation plans for coastal areas. The San Luis Obispo County Office of Emergency Services is responsible for the emergency response plan.

4.10 NATURALLY OCCURRING ASBESTOS

Naturally occurring asbestos (NOA) is common in serpentine rock throughout San Luis Obispo County. The California Air Resources Board has identified serpentine rock as having the potential to contain asbestos. Serpentine rock is typically a constituent of Franciscan Formation mélange, which is mapped on the slopes along the northern limits of the Tonini site and north of the Turri Road site. Mélange has not been mapped or encountered at any of the remaining prospective sites. We do not anticipate components of the project will be planned for areas potentially containing serpentine rock. Therefore, it is our opinion that there is a low potential for NOA to impact the project.

Mitigation. None anticipated. The County will likely require a letter prepared by a geotechnical professional for project that specifically identifies whether or not NOA is an issue for the project.

5.0 GEOTECHNICAL CONSIDERATIONS AND IMPACTS

The following provides a summary of preliminary geotechnical considerations that are likely to affect the project. These items will need to be considered in the design and construction of the project.

5.1 SEISMIC DATA

San Luis Obispo County has adopted the 2007 California Building Code effective January 1, 2008. Buildings and structures for the new wastewater facility will be designed to the minimum requirements of Seismic Zone 4. The site preparation and foundation design should consider any associated impacts that could be associated with liquefaction, seismic settlement, or ground instability as discussed in this report. Seismic design criteria from the 2007 California Building Code are discussed in section 3.5.2 of this report.

5.2 COLLECTION SYSTEM

5.2.1 Excavation

Excavation for the collection system will generally consist of trenching to allow for placement of the new sewer pipes and service laterals from the existing residences. Improper excavation techniques and can result in instability of the trench sidewalls, unsafe working conditions, and damage to adjacent property, utilities, and streets. As part of the Fugro (1997) field exploration program, 7 backhoe trenches were excavated at the site. On the basis of the trenching, the main geotechnical considerations for the trench excavations will be:

- The soils encountered within the collection system area generally consist of sandy soils. The trenches that were excavated at the site were performed using a rubber-

tire mounted backhoe with a 30-inch-wide bucket. The sand should be able to be excavated for pipeline trenches relatively easily using conventional backhoe or excavator type equipment typically used for pipeline construction.

- The sand encountered in the previous explorations generally has low or no cohesive strength. These materials generally will not stand unsupported in excavations with vertical sides. Depending on the soil moisture conditions at the time of construction, the soil may exhibit apparent cohesion for a time; however, even temporary unsupported excavations with vertical sidewalls should be considered to be potentially unstable and subject to collapse. Excavations should be sloped or shored in accordance with OSHA requirements.

- Groundwater was encountered at relatively shallow depths in the borings, trenches, and CPT soundings. Where groundwater was encountered in our trenches, we observed that the walls of the excavation typically became unstable and collapsed or flowed into the excavations. Excavations extending below the groundwater table should not be considered feasible without the use of dewatering prior to excavation. Areas of potentially high groundwater are shown on Plates 5a and 5b.

- Trenching for the collection system mainly be performed in the existing streets. Placement of the pipe will typically involve saw cutting the existing pavement, removing pavement, excavating the trench, placing the pipe, placing backfill, and patching the street. Stockpile areas adjacent to the trench are typically needed to provide access for pipe delivery, stock piled material excavated from the trench, and provide access for haul trucks delivering and hauling away trench excavation and backfill material. This system can easily occupy the width of the roadway and limit access of most residential streets.

Mitigation. Trench and excavation and shoring is the responsibility of the contractor. Trench walls should be supported in accordance with Cal OSHA requirements, and properly sloped, shored, and dewatered to prevent instability of the trench walls and damage to adjacent property.

5.2.2 Dewatering

Groundwater conditions are notoriously shallow in many areas of the communities of Los Osos, Baywood, and Cuesta-by-the-Sea. Construction dewatering likely be needed to allow for construction of portions of the collection system. Improper construction dewatering can result in instability of trench walls, removal of insitu soil and subsequent subsidence of the ground along the trench, and flooding of the trench preventing proper construction. Groundwater depths based on previous studies within the collection area are summarized on Plates 5a and 5b. In some areas of the site, groundwater daylights on the surface, resulting in areas of ponding, springs, and seeps. Groundwater and surface water conditions along the coastal areas in Baywood and Cuesta-by-the Sea are likely influenced by tidal fluctuations. Groundwater changes will also fluctuate seasonally, and with variations in storm water runoff, irrigation schedules, rainfall, and other factors.

- On the basis of the groundwater conditions previously encountered within the collection area, it is our opinion that dewatering will be needed to construct the pipeline trenches. The contractor should be responsible for selecting the method of dewatering, and for maintaining the dewatering system, as-needed, to allow for the pipeline construction.
- Dewatering should consist of lowering groundwater levels below the bottom of the trench prior to excavation. Dewatering should be performed such that water does not seep through side walls of the trench, and is significantly below the invert of the pipe to allow for stabilization of the subgrade and compaction of the pipe zone bedding material.
- Dewatering facilities, such as sump pits, wells, and well points should be designed with filters such that sand and fine-grained materials are not removed from the soil during dewatering operations. Dewatering facilities should be installed in advance of beginning excavation, and time should be allowed for lowering of the groundwater table before beginning excavation. Prior to mobilizing equipment to the site, the contractor should be required to submit a dewatering plan for review by the design consultant and geotechnical engineer. A qualified registered professional should prepare the dewatering plan.
- Although the majority of soil conditions previously encountered generally consisted of sandy materials, layers of moderately cemented, dense sand and clay were encountered in some of the explorations at depth. It is our experience that these types of conditions can perch groundwater, and subsequently reduce the effectiveness of dewatering wells constructed at depth to drawdown the groundwater table. The contractor should perform field pump tests to evaluate the depth and spacing of dewatering points or wells prior to submitting the dewatering plan.
- Discharge requirements from the Regional Water Quality Control Board will need to be permitted to allow for construction dewatering.

Mitigation. Construction dewatering should be performed by a qualified contractor. Discharge permits and requirements for construction dewatering should be addressed in advance of beginning construction.

5.3 SITE PREPARATION AND GRADING

We anticipate that site preparation and grading will be needed to provide uniform support for building foundations, pavements, concrete flat work, and related structures. The near-surface soil is relatively loose, prone to hydrocollapse, and is not suitable for support of the improvements. Grading typically consists of removing the existing soil to a specific depth below the existing ground surface, and replacing the excavated materials as compacted fill. The specific depth of the removal will depend on the results of design-level geotechnical study, but likely be about 5 feet or less.

Mitigation. The design-level geotechnical report should provide recommendations for foundation design, site preparation and grading to provide suitable support for structures.

5.4 FOUNDATION DESIGN

Foundations should be designed such that structural loads are transferred to the ground without exceeding the allowable bearing capacity of the soil, and such that the settlement of the ground in response to structural loading does not exceed tolerable limits for the structure. The project development is expected to consist of single-story buildings for the plant operation, pump station controls, and generators. Geotechnical considerations that could impact the design of the building foundations are differential settlement associated with liquefaction or seismic settlement, and the presence of potentially compressible soils that may be present below the depth of grading.

We expect that building and tanks associated with the wastewater project likely be supported on shallow foundations bearing in compacted fill. The exception may be the Turri Road site, where there is a potential for soft ground conditions, which may require that building or treatment facilities be supported on deep foundations, such as driven piles. At the remainder of the site, grading will likely be performed to provide uniform support for foundations and structures, and limit the potential for settlement due to the foundation load. Additionally, footings can be tied together with grade beams or designed as a single “mat” foundation to help distribute structural loads, reduce bearing pressures, and help to limit differential settlement.

If structural loads are relatively large, the footing size will need to be increased to accommodate the higher load, and the depth of soil that is influenced by the pressure of the footing will extend to a greater depth. In soft, liquefiable, or compressible soil, it may not be practical to design the grading deep enough to limit the settlement to within tolerable limits for the structure.

Mitigation. The design-level geotechnical report should provide recommendations for foundation design, site preparation, and grading to provide suitable support for structures. The type of foundation systems and tolerable settlement for structures will need to be addressed during the design phase of the project. Additional geotechnical evaluation, and coordination with the structural engineer, will be needed to select the appropriate foundation type and grading needed to support foundations.

5.5 SITE SELECTION FOR TREATMENT PLANT

With the exception of the Turri Road site, the treatment plant sites appear geotechnically feasible for design, have limited potential to being impacted by geologic hazards, and will likely be constructed using relatively conventional foundation support and grading methods. No site-specific geotechnical evaluation has been performed for the Turri Road site. Because the site has potential for shallow groundwater and soft ground, the design and construction of a treatment plant on this site could be geotechnically complex, costly, and prone to being impacted by geologic hazards such as liquefaction, seismic settlement, and inundation from a relatively catastrophic tsunami.

Mitigation. Further geotechnical evaluation and exploration of the Turri Road site should be performed to further evaluate geologic hazards and geotechnical considerations for the project, if this site is to be selected for design.

6.0 SUMMARY

Hazard/Geotechnical Consideration	Summary	Consideration/Mitigation
Fault Rupture	No known faults appear to impact the current sites.	None
Strong Ground Motion	Project site is likely to be impacted by strong ground motion. Historical earthquakes have impacted the Los Osos Community in the past.	Design and construction should be performed in accordance with minimum requirements of California Building Code (2007), as adopted by County of San Luis Obispo. A Geotechnical Report, prepared by a California registered Geotechnical Engineer and Professional Geologist, should be prepared for the design of the project to provide seismic data for use with the building code.
Seismic-Related Ground Failure (liquefaction and seismic settlement)	Collection System and Conveyance Network: Portions of the collection system and the out-of/in-town conveyance pipelines traverse areas having a high potential for liquefaction. The greatest potential for liquefaction is within areas that are either low in elevation, such as the shoreline areas along Morro Bay and interdunal depressions along Morro Avenue, Paso Robles Avenue, Santa Ynez Avenue, and Ramona Avenue-Mitchell Drive, and along the drainages of Los Osos Creek. These areas are typically characterized as being underlain by relatively loose sand and shallow groundwater.	A Geotechnical Report should be prepared for the project to address liquefaction hazards, and provide recommendations for mitigation. When practical, pipelines should be founded below liquefiable soils. An Emergency Response Plan (ERP) should be prepared as part of the operation and maintenance plan for the wastewater facility. The ERP should recognize the potential for liquefaction and seismic hazards to impact the pipeline, and specific high hazard areas that should be inspected for damage following an earthquake. “Soft fixes” are sometimes incorporated in the ERP. Soft fixes typically consist of having a plan in-place to address the hazards, such as can be achieved by storing supplies and equipment for repair.
	Wastewater Treatment Plant Site: Previous studies suggest that the Los Osos Mortuary, Giacomazzi, Branin, Robbins 1, Robbins 2, Andre and Mid-town Sites have a low potential for being impacted by liquefaction. Additional exploration and geotechnical evaluation would be needed to evaluate the liquefaction hazards at the Tonini and Turri Road site. Based on geologic review, portions of the Tonini site have a moderate potential to be underlain by potentially liquefiable soil. There is a relatively high potential for the Turri Road site to be underlain by potentially liquefiable soil.	A design-level Geotechnical Report should be prepared for the design of the project that addresses liquefaction hazards and any mitigation for the selected site in accordance with building code requirements. A preliminary geotechnical report should be performed in advance of design, if a treatment plant is to be sited at Turri Road or on the Tonini property. The preliminary study should address whether or not the sites being considered will require mitigation for liquefaction, and if they are geotechnically feasible and preferred for this project.
	Effluent Disposal Sites: The soils beneath the Broderson site that may be subject to a rise in groundwater level are generally dense and not prone to liquefaction. The Tonini site will have spray irrigation, is not a facility that would be expected to be significantly impacted by liquefaction hazards, if it were to occur.	None

Hazard/Geotechnical Consideration	Summary	Consideration/Mitigation
Seismic-Related Ground Failure (lateral spread)	Lateral spreading is slope instability that can occur in response to liquefaction. Lateral spreading is most likely to occur along shoreline areas of inlets and the bay, and not within the proposed collection system area. Stream bank areas along Los Osos Creek are also likely vulnerable to lateral spreading in association with liquefaction, and could impact the conveyance pipes at creek crossing locations. Above-ground treatment and storage ponds with earth berm perimeters likely be susceptible to liquefaction-induced slope instability, if founded on potentially liquefiable soil. Only the Turri Road and Tonini sites are likely to have foundation soils that may be prone to liquefaction.	A design-level Geotechnical Report should be prepared for the design of the project that addresses liquefaction and lateral spreading hazards and any mitigation for the selected site in accordance with building code requirements.
Seismic-Related Ground Failure (ground lurching)	Ground lurching (detachment of near-surface soil layers or strata) can occur in variety of subsurface conditions, is not easily predicted, and cannot be avoided or mitigated.	Operation and emergency response plans should consider the potential for ground lurching to occur in response to seismic events, and the potential for lurching to damage lifelines, utilities, and structures.
Landsliding (building areas)	Generally the improvements are not located on ground mapped as existing landslides or in areas of known slope instability. However, the hills adjacent to the Tonini site and along Turri Road are underlain by Franciscan mélange and show relatively extensive evidence of slope instability, landsliding, and creep.	A California professional geologist (PG) should evaluate the limits of the spray fields during the design of the project to confirm that spray fields are not located in areas of known or potential slope instability, landsliding, or creep. The design plans for the spray fields should be reviewed by the CEG, and the CEG should document the review in writing with any recommendations for modifying the limits of the spray field. The recommendations of the CEG should be incorporated into the design plans.
Subsidence and Collapse	The site is not in an area where extraction of fluids (such as groundwater or oil) is known to have resulted in subsidence or collapse.	Likely, none at existing groundwater levels. If dewatering or lowering of the groundwater level is expected, the associated impacts to the site and grading and foundation design should be addressed in the Geotechnical Report.
Erosion	Graded areas of the site will be prone to erosion.	Erosion control measures should be implemented during grading to minimize the impacts of erosion during grading. Graded cut and fill slopes should be vegetated or landscaped in a manner that will reduce the potential for soil erosion following construction. Site drainage should be provided to control surface water, direct water away from slopes, and control surface water discharge.
Expansive soils	Soils mapped at the Los Osos Mortuary, Giacomazzi, Branin, Robbins 1, Robbins 2, Andre Tonini and Turri Road sites have a moderate to high potential for expansion.	Structures and foundations should be designed according to at least the minimum requirements of the building code. The design-level geotechnical report should address whether or not expansive soil conditions should be considered for design of structures and concrete flatwork, and provide recommendations for mitigating expansive soil conditions.

Hazard/Geotechnical Consideration	Summary	Consideration/Mitigation
Hydrocollapse	Near surface soils (less than about 5 feet in thickness) are likely to be relatively loose and vulnerable to collapse (hydroconsolidation) when subject to wetting and surface loads.	Soils prone to hydroconsolidation should be removed from building sites during grading, and be replaced with properly compacted fill, or as otherwise recommended in the design-level Geotechnical Report.
Flooding, Tsunamis or Inundation	The County of San Luis Obispo has prepared web-based tsunami inundation maps (http://www.sloplanning-maps.org/ed.asp?bhcp=1) that show coastal areas that may be vulnerable to inundation from tsunami below about el. +40 feet MSL. The inundation zones are generally the coastal areas along Morro Bay, and low lying areas along Los Osos Creek and the vicinity of Warden Lake. The San Luis Obispo County Office of Emergency Services has a program for tsunami hazard warnings and evacuation independent of this project.	None
Trench Excavations	Excavation for the collection system will generally consist of trenching to allow for placement of the new sewer pipes and service laterals from the existing residences. Improper excavation techniques within the dune sand and shallow groundwater areas can result in instability of the trench sidewalls, unsafe working conditions, and damage to adjacent property, utilities, and streets.	Trench and excavation and shoring is the responsibility of the contractor. Trench walls should be supported in accordance with Cal OSHA requirements, and properly sloped, shored, and dewatered to prevent instability of the trench walls and damage to adjacent property.
Dewatering	Groundwater conditions are notoriously shallow in many areas of the communities of Los Osos, Baywood, and Cuesta-by-the-Sea. Construction dewatering likely be needed to allow for construction of portions of the collection system. Improper construction dewatering can result in instability of trench walls, removal of insitu soil and subsequent subsidence of the ground along the trench, and flooding of the trench preventing proper construction.	Construction dewatering should be performed by a qualified contractor. Discharge permits and requirements for construction dewatering should be addressed in advance of beginning construction.
Site Preparation and Grading	Site preparation and grading is needed to provide uniform support for building foundations, pavements, concrete flat work, and related structures. The near-surface soil is relatively loose, prone to hydrocollapse, and is not suitable for support of the improvements. Grading typically consists of removing the existing soil to a specific depth below the existing ground surface, and replacing the excavated materials as compacted fill. The specific depth of the removal will depend on the results of design-level geotechnical study, but will likely be about 5 feet or less.	The design-level geotechnical report should provide recommendations for foundation design, site preparation, and grading to provide suitable support for structures.
Foundation Design	Foundations should be designed such that structural loads are transferred to the ground without exceeding the allowable bearing capacity of the soil, and such that settlement of the ground in response to structural loading does not exceed tolerable limits for the structure. Structures likely be supported on conventional spread footing foundations. The exception may be the Turri Road site, where there is a potential for soft ground conditions, which may require that building or treatment facilities be supported on deep foundations, such as driven piles.	The design-level geotechnical report should provide recommendations for foundation design, site preparation, and grading to provide suitable support for structures.

Hazard/Geotechnical Consideration	Summary	Consideration/Mitigation
Site Selection for the Treatment Plant	With the exception of the Turri Road site, the treatment plant sites appear geotechnically feasible for design, have limited potential to being impacted by geologic hazards, and can likely be constructed using relatively conventional foundation support and grading methods. No site-specific geotechnical evaluation has been performed for the Turri Road site. Because the site has potential for shallow groundwater and soft ground, the design and construction of a treatment plant on this site could be geotechnically complex, costly, and prone to being impacted by geologic hazards such as liquefaction, seismic settlement, and inundation from a relatively catastrophic tsunami.	Further geotechnical evaluation and exploration of the Turri Road site should be performed to further evaluate geologic hazards and geotechnical considerations for the project, if this site is to be selected for design.

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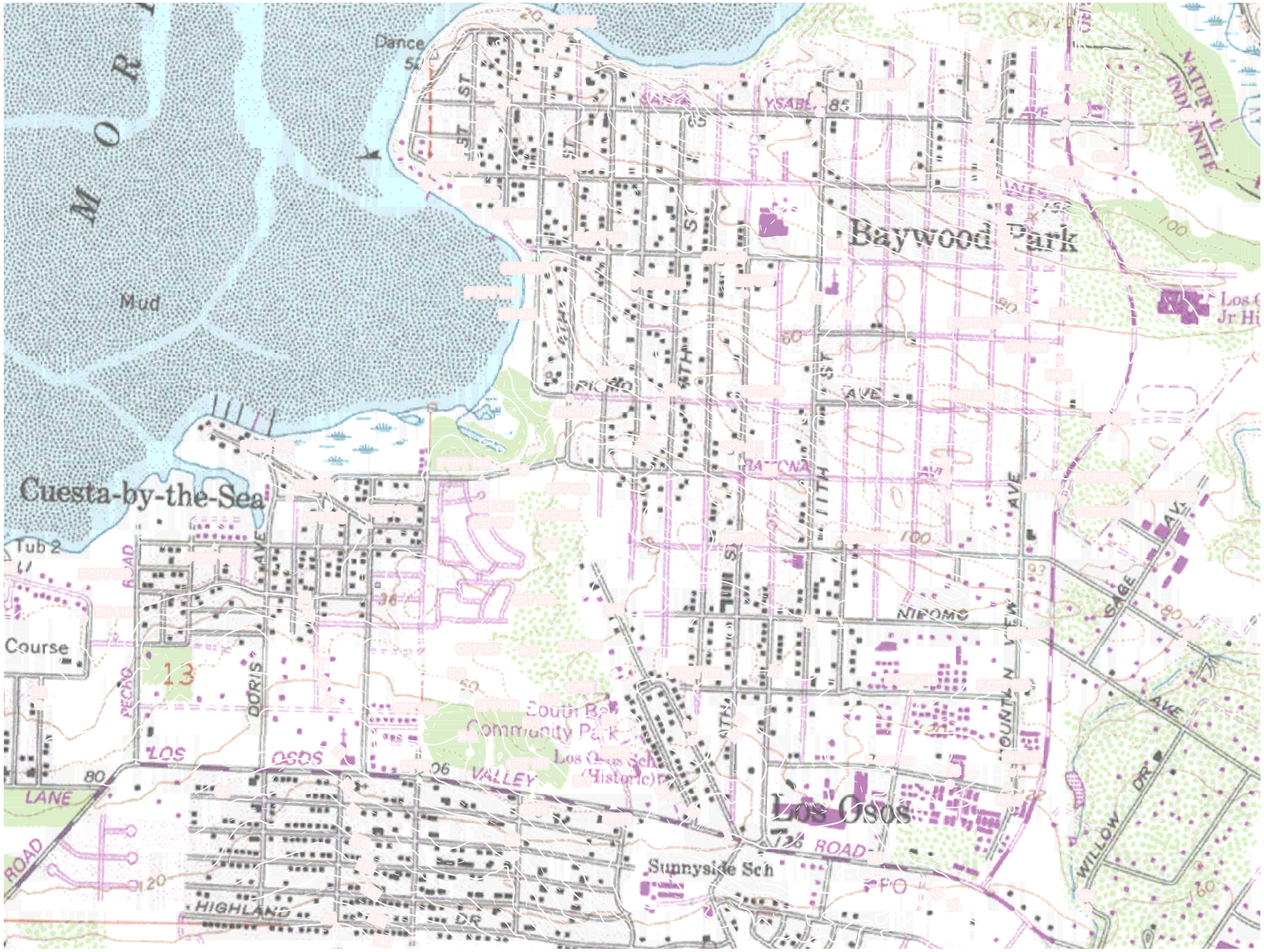
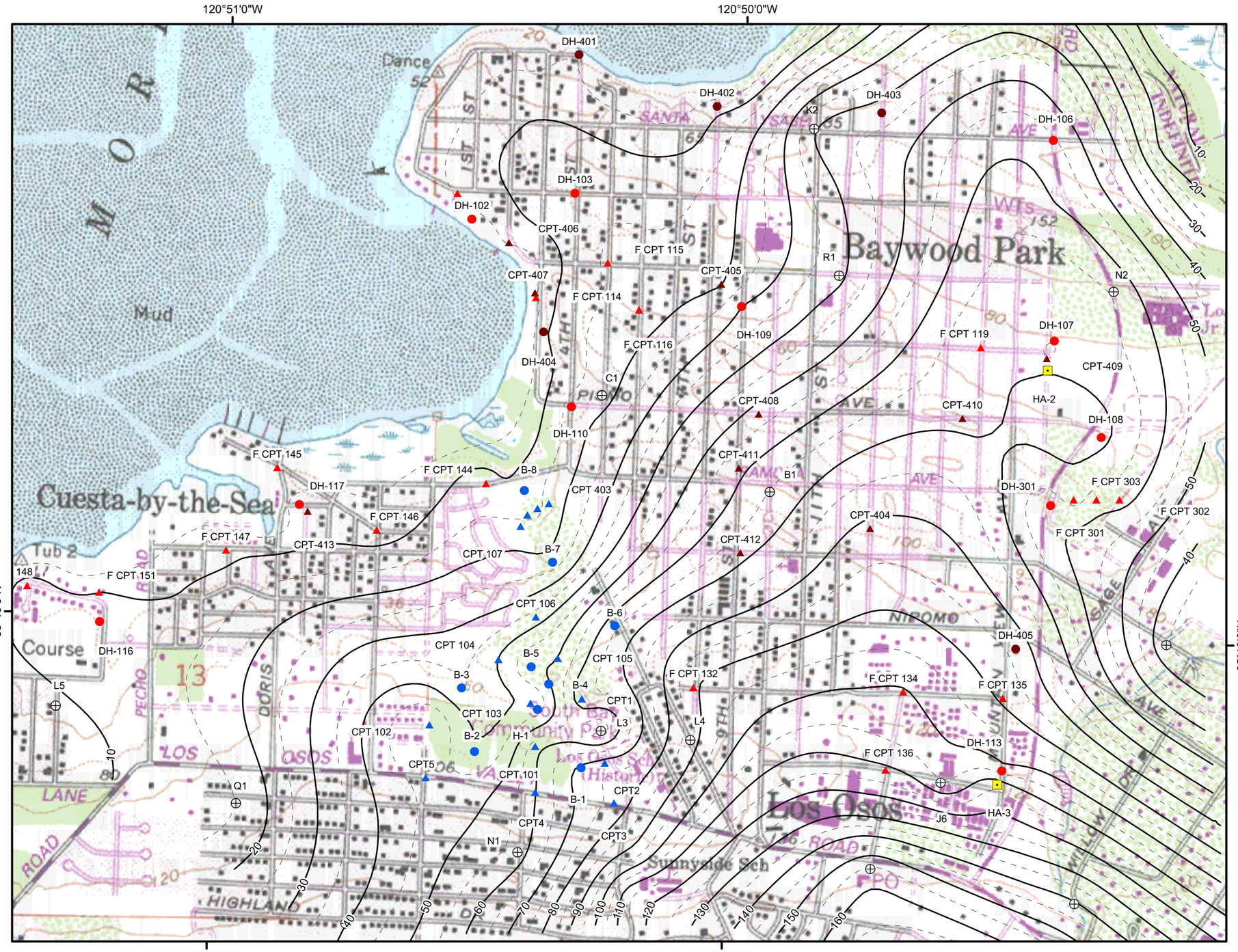

Dance
Mud
Baywood Park
Cuesta-by-the-Sea
Tub 2
Course
13
Los Osos
Sunnyside Sch
Community Park
NIPOMO
SAGE
WILLOW
HIGHLAND
LOS OSOS
VALLEY
ROAD
LANE
DORIS
PECHO
MORRO
NATURAL INDIGENITE

Michael Brandman Associates
Project No. 3629.001



Legend

- Hollow Stem Auger Boring Site (Fugro, 2003)
- CPT Site (Fugro, 2003)
- Hollow Stem Auger Boring Site (Fugro, 1997)
- CPT Site (Fugro, 1997)
- Hollow Stem Auger Boring Site (Cleath, 2003)
- Boring Site (CFS, 1999)
- CPT Site (CFS, 1999)
- County Engineering Monitoring Well
- Hand Auger Site

Depth to Groundwater Contours

- Contour Interval = 10 feet
- Contour Interval = 5 feet

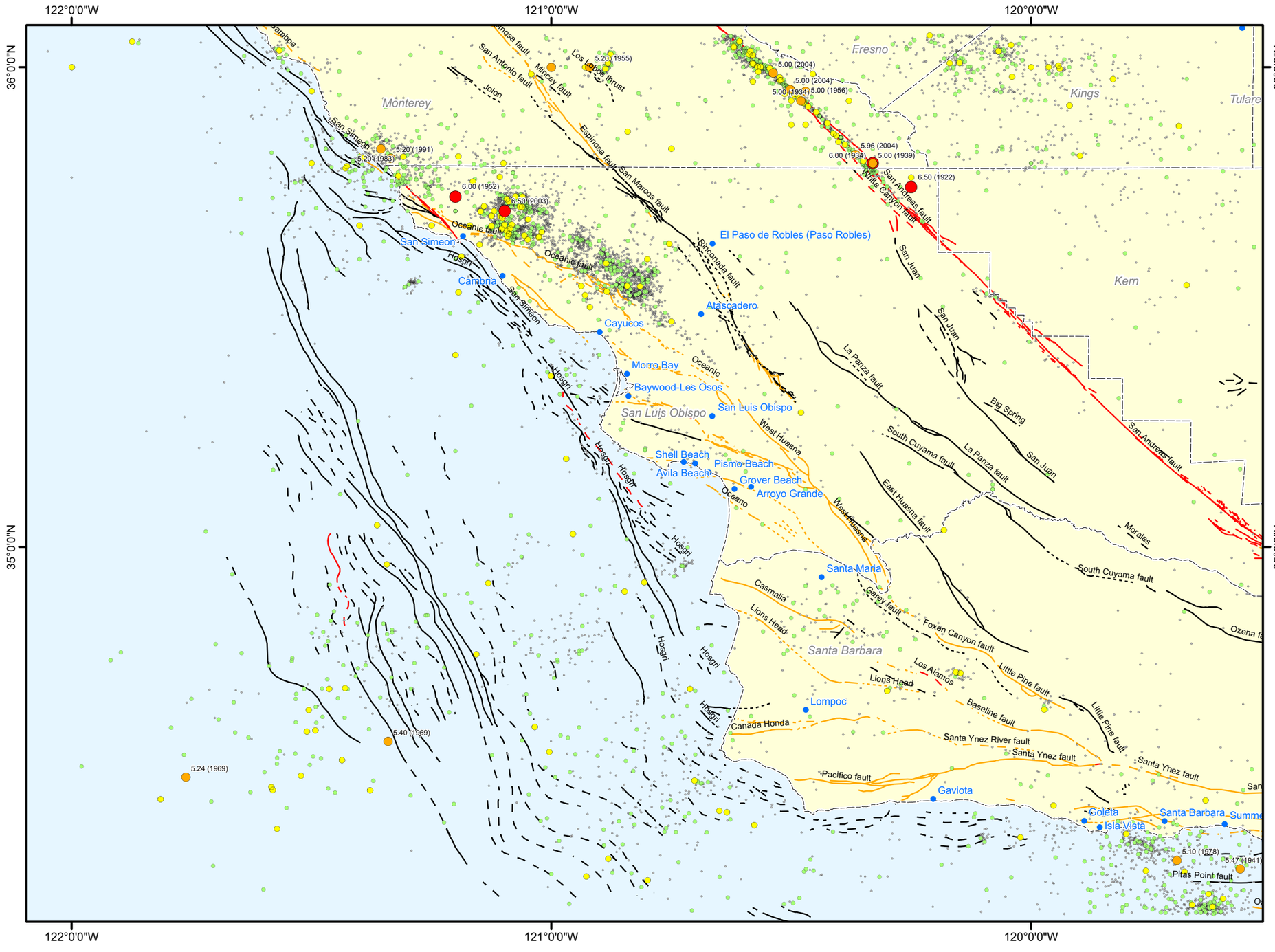
N

0 500 1,000 2,000 Feet

DEPTH TO GROUNDWATER MAP, COLLECTION SYSTEM AREA
Los Osos Wastewater Project
San Luis Obispo County, California

PLATE 5b

N:\Projects\3629_MBrandmanAssoc\3629-001_LosOsosWW_EIR\Outputs\Working\mxd\Plate5b-Depth_to_GW.mxd, 05/21/08, ksheil



Legend

Earthquake Magnitude
Magnitudes equal to and greater than 5 are labeled.

- 2.0 - 2.9
- 3.0 - 3.9
- 4.0 - 4.9
- 5.0 - 5.9
- >6.0

Faults (dashed where inferred, dotted where concealed)

- Active Fault
- Potentially Active Fault
- Inactive Fault

Source:

1) Earthquake Data:
Earthquake epicenters from ANSS Composite Catalog Search, 1933 to 2008, <www.ncedc.org/anss/> (downloaded March 2008)

2) Faults:
a) Bryant, 2005
b) Jennings, 1994

N

0 7.5 15 30 Miles

HISTORICAL SEISMICITY MAP
Los Osos Wastewater Project
San Luis Obispo County, California

PLATE 6

N:\Projects\3629_MBrandmanAssoc\3629-001_LosOsosWW_EIR\Outputs\Working\mxd\Plate6-Earthquakes.mxd, 05/22/08, ksheil

Michael Brandman Associates
Project No. 3629.001

120°51'0"W 120°49'30"W 120°48'0"W

35°19'30"N

35°18'0"N

Urban Reuse

Urban Reuse

Mid-Town

Urban Reuse

Broderson

Turri Road Site

Ag Reuse

Ag Reuse

Branin

Giacomazzi

Cemetery

Ag Reuse

Robbins/Andre

Tonini
Spray Fields and Storage
(and possible treatment plant site)

Baywood Park

Los Osos

Cuesta-by-the-Sea

Canyon

Gravel Pit

Spring

Water Tank

Water Tank

Wells

Wells

Well

Well

Well

Mud

Mud

Mud

Legend

- Observed Lateral Spreading (Dec 2003)
- Observed Sand Volcanoes (Dec 2003)
- Out-of-Town / In-Town Conveyance
- Prohibition Zone / Collection Area
- Potential Wastewater Treatment Plant Site
- Disposal Site
- Reuse Site

Liquefaction Zones

- Very High
- High
- Moderate
- Low

N

0 1,000 2,000 4,000 Feet

LIQUEFACTION HAZARDS MAP
Los Osos Wastewater Project
San Luis Obispo County, California

PLATE 7

N:\Projects\3629_MBrandmanAssoc\3629-001_LosOsosWW_EIR\Outputs\Working\mxd\Plate7-Liquefaction.mxd, 05/21/08, kshell

Michael Brandman Associates
Project No. 3629.001

120°51'0"W 120°49'30"W 120°48'0"W 120°46'30"W

35°19'30"N

35°18'0"N

Urban Reuse

Urban Reuse

Mid-Town

Urban Reuse

Broderson

Turri Road Site

Ag Reuse

Ag Reuse

Branin

Giacomazzi

Cemetery

Ag Reuse

Robbins/Andre

Tonini
Spray Fields and Storage
(and possible treatment plant site)

Legend

- Out-of-Town / In-Town Conveyance
- Prohibition Zone / Collection Area
- Potential Wastewater Treatment Plant Site
- Disposal Site
- Reuse Site

Expansion Potential of Soil

- High
- Moderate to High
- Moderate
- Low to High
- Low to Moderate
- Low
- Data Not Available

N

0 1,000 2,000 4,000 Feet

SOIL EXPANSION POTENTIAL MAP

Los Osos Wastewater Project
San Luis Obispo County, California

PLATE 8

N:\Projects\3629_MBrandmanAssoc\3629-001_LosOsosWW_EIR\Outputs\Working\mxd\Plate8-Soil_Hazards_Expansion.mxd, 05/21/08, ksheil

FUGRO WEST, INC.

PRELIMINARY GEOTECHNICAL REPORT
LOS OSOS WASTEWATER PROJECT
TONINI PROPERTY
3515 TURRI ROAD
SAN LUIS OBISPO COUNTY, CALIFORNIA

Prepared for:
COUNTY OF SAN LUIS OBISPO

January 29, 2009

FUGRO WEST, INC.

660 Clarion Court, Suite A
San Luis Obispo, California 93401
Tel: (805) 542-0797
Fax: (805) 542-9311

January 29, 2009
Project No. 3014.031

County of San Luis Obispo
Department of Public Works, Room 207
County Government Center
San Luis Obispo, CA 93408

Attention: Mr. John Waddell

Subject: Preliminary Geotechnical Report, Los Osos Wastewater Project, Tonini Property, 3515 Turri Road, San Luis Obispo County, California

Dear Mr. Waddell:

Fugro is pleased to submit this Preliminary Geotechnical Report for the Los Osos Wastewater Project in San Luis Obispo County, California. This report was prepared in accordance with the scope of services presented in our proposal dated October 14, 2008, and authorized under the County's Purchase Order No. 25004795, dated October 22, 2008.

The purpose of this report is to provide preliminary geotechnical considerations for the Tonini property at 3515 Turri Road in San Luis Obispo County that is being considered as a possible site for the new wastewater treatment plant, storage ponds, and sprayfield irrigation. This report provides preliminary geotechnical considerations and opinions regarding site geology, soil and groundwater conditions encountered, potential for the site to be impacted by geologic hazards, anticipated site preparation and grading, and foundation support for the proposed structures. We understand this report will likely also provide input to the preparation of an Environmental Impact Report (EIR).

Please contact the undersigned if you have questions regarding this report, or require additional information.

Sincerely,

FUGRO WEST, INC.

Jonathan D. Blanchard, GE 2312
Principal Geotechnical Engineer

Reviewed by:

Lori E. Prentice, C.E.G. 2312
Principal Engineering Geologist

REGISTERED GEOLOGIST
LORI E. PRENTICE
EG NO. 2312
CERTIFIED ENGINEERING GEOLOGIST
STATE OF CALIFORNIA

Gresham D. Eckrich
Staff Engineer/Geologist

Copies: 4 – Addressee, 1 PDF

CONTENTS

LIST OF PLATES

APPENDIX A – BORING LOGS

APPENDIX B – LABORATORY TEST RESULTS

1. PROJECT AND SITE DESCRIPTION

The work preformed for this study generally consists of a preliminary geotechnical evaluation of the 643-acre Tonini property located at 3515 Turri Road in San Luis Obispo County, California. The site is being considered as a possible location of the new wastewater treatment facility for the Los Osos community that will replace privately-owned individual septic systems (septic tanks and leach lines) that currently serve the residents of Los Osos. The location of the site is shown on Plate 1 - Vicinity Map. The layout of the proposed improvements is shown on Plate 2 – Field Exploration Plan.

1.1 EXISTING SITE

The Tonini property is located approximately ½ mile north of Los Osos Valley Road. The site is currently occupied by ranch buildings, open agricultural fields, and grazing land. The property is bounded by Turri Ranch Road to the south, agricultural fields and the Los Osos Valley drainage (Warden Lake) to the southwest and west, and Turri Road to the north and east.

The topography over the majority of the site and vicinity is characterized by gently rolling hills. A prominent hill top and associated foothills of the Morros are located on the western portion of the property. The eastern portion of the property is generally flat and traversed by a network of south- and east-trending seasonal creeks linked with the Los Osos Valley drainage. Elevations range from about 20 feet near Warden Lake along the southwestern limits of the site to about 541 feet in the northwestern portion of the site. Slope inclinations on the foothills range from about 3½h:1v to 9h:1v.

1.2 PROJECT DESCRIPTION

Proposed improvements at the Tonini site include a wastewater treatment plant, storage ponds, and sprayfields for disposal of treated effluent, as shown on Plate 2. According to Michael Brandman Associates (MBA, 2008), the footprint of the treatment facility and associated ponds will be sited on about 32 acres of generally flat terrain in the south central portion of the property. The sprayfields will occupy the remaining flat terrain and the lower portions of adjacent slopes to about elevation (el.) 280 feet (MSL). A summary description of each project component is presented below:

1.2.1 Wastewater Treatment Plant

According to Carollo (2008), the treatment plant generally will consist of a new wastewater treatment plant designed to accept an estimated peak flow of 1.2-million gallons per day. The facility and appurtenances will occupy about 4 acres, and the components of the facility will depend on the treatment option selected for design. The proposed project will involve secondary treatment using extended aeration basins. The aeration basins are likely to be excavated to depths of 10 to 20 feet below the existing ground surface. Oxidation ditches and some appurtenant treatment facilities likely will involve relatively large, heavily loaded concrete structures and tanks that may be constructed above or below grade. Additional

improvements are likely to include an operations building, offices, septage receiving station, headworks, solids processing, and filter systems. Site improvements could also involve paving for parking and access roads, concrete flatwork, retaining walls, utilities, piping, drainage facilities, and landscaping.

1.2.2 Treatment and Storage Ponds

Partially-mixed facultative ponds may be used as an alternative secondary treatment process and would occupy approximately 20 acres. The proposed project includes approximately 5 to 8 acres of storage intended to hold treated effluent during periods of low disposal capacity (wet season). We understand that treatment and storage ponds likely will be lined earthen reservoirs with an earthen perimeter berm and an interior excavation to provide the required storage. Treatment and storage pond depths have not yet been determined, but will be designed such that the retained height of water and/or capacity of the reservoirs is below the jurisdictional limits of the California Division of Safety of Dams (the ponds will not be considered a dam according to State definitions). Storage ponds will be lined to prevent percolation, protected with riprap, and have 4 feet of free board above the water storage level (MBA, 2008).

1.2.3 Effluent Disposal

According to MBA (2008), on-site effluent disposal will consist of sprayfields that will dispose of up to 842 acre-feet of treated effluent over approximately 175 acres annually. Treated effluent will be disposed of during daytime and dry weather periods by means of evapotranspiration and percolation. Run-off will be collected by a drain constructed at the bottom of sprayfield slopes and reapplied to the sprayfields. We understand irrigation lines will be buried less than two (2) feet below grade. Additional treated wastewater effluent will be transported by a pipe conveyance system to an off-site leachfield.

2. WORK PERFORMED

2.1 PURPOSE

The purpose of this report is to provide preliminary geotechnical considerations and opinions for the proposed wastewater treatment project site. The primary geotechnical considerations evaluated for the project are characterization of the subsurface materials, geologic hazards, anticipated site preparation and grading for support of the improvements, foundation support of structures, and construction considerations. The information provided herein is preliminary and is not intended for design of the project. A design-level geotechnical study will be needed if the project proceeds to design.

2.2 SCOPE

To evaluate the geotechnical considerations for the project, we performed the following scope of work:

- Site visits to observe the general site conditions, a meeting with the Tonini property owner, preparing a Health and Safety Plan, and notifying Underground Service Alert of the field exploration program;
- A review of selected published geologic maps, and geotechnical data available from our in-house files;
- Field exploration consisting of drilling twelve hollow-stem auger borings;
- Laboratory testing of selected samples recovered from the field exploration program; and
- Preparation of this report summarizing the data obtained for the site, and our preliminary conclusions and recommendations regarding;
  - Soil and groundwater conditions encountered;
  - Potential for the site to be impacted by geologic hazards such as seismic shaking, fault rupture, liquefaction, landsliding, or slope instability;
  - Naturally occurring hazards that could impact the design or construction of the project such as erosion, expansive soil, hydro-collapse, naturally occurring asbestos, and radon or hazardous gases;
  - Liquefaction potential and potential impacts to site preparation and structures;
  - Anticipated site preparation and grading;
  - Suitability of on-site soil for use as compacted fill;
  - Suitable foundation types and ranges of presumptive bearing values for the soil conditions encountered; and
  - Excavation considerations such as need for dewatering and excavation characteristics of the materials encountered.

2.3 FIELD EXPLORATION

The drilling subcontractor for the project was J.E.T Drilling of Signal Hill, California. J.E.T used a CME75, truck-mounted drilling rig equipped with 8-inch hollow-stem augers to advance twelve (12) borings within the limits of the proposed improvements. The borings were advanced to depths of approximately 11½ to 50 feet below the existing ground surface. The approximate locations of the borings are shown on Plate 2.

The borings were sampled using a 2-inch outside diameter standard penetration test (SPT) split-spoon sampler and a 3-inch outside diameter modified California split-spoon sampler. The SPT sampler was used without liners. The modified California sampler was used with brass liners. The samplers were driven into the materials at the bottom of the drill hole using a 140-pound automatic trip hammer with a 30-inch drop. The blow count (N-value) is the number of blows from the hammer that were needed to drive the sampler 1 foot, after the

sampler had been seated at least 6 inches into the material at the bottom of the hole. Bulk samples were collected from the drill cuttings retrieved from the auger flights. The sample intervals, N-values, a description of the subsurface conditions encountered, and other field and laboratory data are presented on the logs of the borings in Appendix A.

2.4 LABORATORY TESTING

Laboratory tests for moisture content, unit weight, grain size distribution, Atterberg limits, expansion index, and permeability were performed on selected samples recovered from the field exploration program. The tests were performed in general accordance with the applicable standards of ASTM. The results of the tests are presented in Appendix B.

2.5 AERIAL PHOTOGRAPHIC REVIEW AND DATA REVIEW

We reviewed the following site-specific historical aerial photographs to aid in evaluation of the surficial conditions at the site.

Summary of Reviewed Aerial Photographs

Date	Scale	Flight	Frames
11-13-02	1:32,000	GS00999	16 and 17

2.6 PREVIOUS STUDIES

Fugro (2004a, 2004b, 2007, 2008) previously performed geotechnical studies in the project vicinity. Fugro (2004a) addressed the design of the Los Osos Wastewater Project collection system, treatment plant and effluent disposal system. Fugro (2004b) provided a preliminarily evaluation of the subsurface conditions at the adjacent Andres site to identify geotechnical considerations that could impact development of a new treatment facility at that site. Fugro (2007) provided preliminary geotechnical considerations and opinions for the proposed wastewater treatment plant located at the nearby Los Osos Mortuary, Giocamazzi, and Branin properties. Fugro (2008) generally consisted of a preliminary geotechnical evaluation of various sites within Los Osos, Baywood Park and Cuesta-by-the-Sea for components of the wastewater collection and treatment plant system that will provide input to the preparation of the Environmental Impact Report (EIR) currently being prepared for the Los Osos Wastewater Project. Cleath & Associates (2008) conducted a hydrogeologic site reconnaissance to collect data for water quality analyses and preliminarily evaluate geologic hazards.

2.7 GENERAL CONDITIONS

Fugro prepared the conclusions and professional opinions presented in this report in accordance with generally accepted geotechnical engineering principals and practices at the time and location this report was prepared. This statement is in lieu of all warranties, expressed or implied.

This report has been prepared for the County of San Luis Obispo and their authorized agents only. It may not contain sufficient information for the purposes of other parties or other uses. If any changes are made in the project as described in this report, the conclusions and recommendations contained in this report should not be considered valid unless Fugro reviews the changes and modifies and approves, in writing, the conclusions and recommendations of this report. The report and drawings contained in this report are preliminary, intended for design-input purposes; they are not intended to act as construction drawings or specifications.

Soil and rock deposits will vary in type, strength, and other geotechnical properties between points of observation and exploration. Additionally, groundwater and soil moisture conditions also can vary seasonally or for other reasons. Therefore, we do not and cannot have complete knowledge of the subsurface conditions underlying the site. The conclusions and recommendations presented in this report are based upon the findings at the points of exploration, and interpolation and extrapolation of information between and beyond the points of observation, and are subject to confirmation based on the conditions revealed during construction.

The scope of services did not include any environmental assessments for the presence or absence of hazardous/toxic materials in the soil, surface water, groundwater, or atmosphere. Any statements or absence of statements in this report or data presented herein regarding odors, unusual or suspicious items, or conditions observed are strictly for descriptive purposes and are not intended to convey engineering judgment regarding potential hazardous/toxic assessment.

3. SITE CONDITIONS

3.1 GEOLOGIC SETTING

The project is located in the Los Osos Valley that is part of the Coast Ranges geologic and geomorphic province. That province consists of north-northwest-trending sedimentary, volcanic, and igneous rocks extending from the Transverse ranges to the south, into northern California. Rocks of the Coast Ranges province (locally the Santa Lucia Mountains) are predominately of Jurassic and Cretaceous age; however, some pre-Jurassic, along with Paleocene-age to Recent rocks are present. The surficial geology in the project vicinity, as mapped by Hall et al. (1979), is shown on Plate 3 – Regional Geologic Map. The surficial geology in the project vicinity, as mapped by Lettis and Hall (1994), is shown on Plate 5 – Los Osos Fault Zone and Lineaments.

As shown on Plate 3, Franciscan mélange (KJfm) and metavolcanics (KJfmv) underlie the gently rolling hills comprising the majority of the western part of the project site as mapped by Hall et al. (1979). Hall et al. describes the Franciscan metavolcanics as primarily consisting of metamorphosed basalt and diabase (greenstone) with localized, extensively sheared zones. The mélange is characterized by Hall et al. as pervasively sheared greywacke and claystone, with exotic clast inclusions. The mélange typically weathers to a highly expansive soil at the ground surface, and is prone to soil creep, slope instability, and landsliding. Soils formed in place by the decomposition of underlying rock are referred to as residual soils and are included

in the corresponding Franciscan formation. Prominent outcrops of chert and blue schist are mapped within the mélange by Hall et al. (1979).

The terrain in the south and southwestern portions of the property are mapped as queried Paso Robles Formation (Qpr) and dune sand deposits (Qs) by Hall et al. (1979); as shown on Plate 5, Lettis and Hall (1994) mapped these slopes as queried eolian (dune sand) deposits (Qe). Alluvium (Qal) is mapped in the generally flat areas on the eastern portion of the property and within the southwestern limits of the site along Warden Lake. The alluvial sediments are associated with the Los Osos Valley drainage and Warden Lake. Based on our field exploration, the sediments along the southern limits of the property consist of interbedded alluvial deposits, and not the Paso Robles Formation mapped by Hall et al. (1979). Additionally, it is our opinion that the slopes in the southwestern portion of the property are predominantly composed of dune sand deposits. Lettis & Hall (1994) characterize these dune sands as unconsolidated to moderately consolidated, undifferentiated late Pleistocene and Holocene wind blown deposits.

3.2 SUBSURFACE CONDITIONS

The soil and groundwater conditions were characterized for the preliminary study based on the results of the field exploration program. The locations of the explorations are shown on Plate 2.

Logs of the borings are presented in Appendix A. The subsurface conditions encountered consisted of alluvium, colluvium, dune sand deposits, and Franciscan mélange and metavolcanics rocks. A discussion of the geologic units encountered is provided below. Our interpretation of subsurface conditions is based on our boring logs.

Alluvium (Qal). The alluvium encountered likely contained undifferentiated units of floodplain and fluvial sediments deposited along site-traversing creeks of the Los Osos Valley drainage system. Surficial soils disturbed by agricultural practices and/or grazing were encountered in all borings from the ground surface to depths of about 1 to 4½ feet. The alluvium was encountered in all borings except B-102 and B-104 to depths of approximately 3½ to 21½ feet below the existing ground surface. The alluvium encountered has been characterized as a predominantly granular sandy unit (Qal_1) and a cohesive fat clay (CH) unit (Qal_2).

Qal_1. This predominantly granular unit of the alluvium was encountered in B-1, B-4, B-5, and B-101 from the ground surface to depths of approximately 11 to 21½ feet. Borings B-1 and B-4 encountered alluvial sediments to the total depth explored, approximately 21½ feet. The Qal_1 unit consisted predominantly of loose to very dense silty sand (SM), medium dense to dense clayey sand (SC), and medium dense sand (SP) encountered at the base of gentle slopes in the southern portion of the property. The sandy alluvium was interbedded with stiff sandy silt (ML), stiff to hard lean clay (CL), medium stiff lean clay with sand (CL), and stiff to hard sandy clay (CL).

Samples of the Qal_1 unit had dry unit weights ranging between approximately 96 and 113 pounds per cubic foot (pcf) and moisture contents ranging between approximately 4 and 27

percent. A sample of silty sand (SM) from the Qal_1 unit had a permeability of approximately $9x10^{-5}$ centimeters per second (cm/s). Results of laboratory tests are presented in Appendix B.

Qal_2. This finer-grained unit of the alluvium was encountered in B-2, B-3, B-103, B-105, B-106 and B-107 advanced on the property's generally flatter terrain. The Qal_2 unit consisted of medium stiff to hard fat clay (CH) and fat clay with sand (CH) encountered from the ground surface to depths of approximately 3½ to 14 feet.

Samples of the Qal_2 unit had dry unit weights ranging between approximately 93 and 117 pcf and moisture contents ranging between approximately 13 and 26 percent. Samples of the Qal_2 alluvium unit had permeability values ranging between approximately 2.0×10^{-8} to 3.1×10^{-9} cm/s. Two samples of fat clay (CH) obtained from the Qal_2 unit encountered in B-3 had expansion index values of 93 and 105.

Colluvium (Qcol). Colluvium was encountered in B-103 and B-104. The colluvium encountered consisted of very stiff lean clay (CL) and fat clay (CH). We differentiated colluvium from alluvium based on the material's location on or adjacent to slopes and the general heterogeneity of the soil. The colluvium was encountered below alluvium from depths of about 4½ feet to 9 feet in B-103, and from the surface to an approximate depth of 1 foot in B-104.

A sample of fat clay (CH) recovered from the Qcol unit had a dry unit weight of approximately 96 pcf and a moisture content of approximately 10 percent.

Dune Sand Deposits (Qs). Dune sand deposits were encountered in B-102 from the ground surface to the maximum depth explored, approximately 11½ feet. The dune sand deposits consisted of medium dense silty sand (SM). The areal extent of the dune sand deposits, as mapped by Hall et al. (1979), is illustrated on Plate 2. Based on our explorations, it is our opinion the dune sand deposits on the property also extend north of the contact mapped by Hall et al. (1979).

A sample of silty sand (SM) recovered from the Qs unit had a dry unit weight of approximately 99 pcf and a moisture content of approximately 2 percent. A sample of silty sand (SM) recovered from the Qs unit had a permeability of approximately 1×10^{-3} cm/s.

Franciscan Mélange (KJfm). Mélange was encountered in B-104 beneath colluvium from a depth of about 1 foot to the maximum depth explored, approximately 11½ feet. The mélange consisted of stiff to hard residual fat clay (CH) and soft claystone (Rx). The mélange is mapped by Hall et al. (1979) within the northern portion of the site. Based on field observations, the mélange is the predominant formation exposed in areas where geomorphic features indicative of soil creep and landsliding are common.

Franciscan Metavolcanics (KJfmv). Metavolcanics were encountered beneath the alluvium to the maximum depths explored in B-2, B-3, B-5, B-105, B-106 and B-107 up to approximately 50 feet below the ground surface. The metavolcanics were also encountered below colluvium in B-103 from a depth of about 9 feet. The metavolcanics predominantly consisted of residual soils including medium stiff to hard lean clay (CL), stiff to hard clay with

sand (CL), very stiff lean clay with gravel (CL), very stiff fat clay with gravel (CH), hard gravelly lean clay (CL), and clayey gravel (GC); very soft to soft greenstone (Rx) decomposed to clayey gravel with sand (GC) and clayey sand (SC); and bedrock consisting of hard greenstone (Rx).

Samples of residual lean clay (CL) and fat clay with gravel (CH) recovered from the KJfmv unit had dry unit weights of approximately 98 and 100 pcf and moisture contents of approximately 18 and 21 percent, respectively.

3.3 GROUNDWATER

Groundwater was encountered during our October 2008 field exploration program at an approximate depth of 27 feet in B-3. Groundwater was not encountered in any other borings.

Based on published mapping, the Warden Lake area along the southwestern limits of the property can be a marshy environment and has contained surface water in the past. Cleath (2008) noted a linear exposure of mid-slope spring seeps within the dune sand deposits in the southwestern portion of the property (outside the proposed limits of spray irrigation) during a May 2008 site reconnaissance. Variations in surface and groundwater conditions will likely occur as a result of changes in precipitation, irrigation, runoff, and other factors.

3.4 SEISMIC CONDITIONS

3.4.1 Faulting

The majority of the faults within the Coast Ranges province and the Sierra de Salinas belt generally trend north-northwest. The California Geological Survey (CGS 2002) considers major faulting within the project vicinity to be related to the Los Osos fault, the San Luis Range fault zone (a compilation of several named fault strands), the offshore Hosgri fault, the Rinconada fault, and the San Andreas fault. The CGS fault database consists of active and potentially active faults that are considered by the CGS to be capable of affecting regional seismicity in California. Terms used by CGS to describe fault activity are defined below.

Active. Faults that show evidence of displacement during the most recent epoch of geologic time, the Holocene, are classified as active. The Holocene epoch is generally considered to have begun about 11,000 years ago.

Potentially Active. Faults which displace geologic formations of Pleistocene age but show no evidence of movement in the Holocene period can be considered to be potentially active. Pleistocene time is the period between about two million years ago and 11,000 years ago. The exception is that certain Pleistocene faults can be presumed to be inactive based on direct geologic evidence of inactivity during the Holocene time or longer.

Inactive. Faults which show no evidence of movement during the past two million years and show no potential for movement in the future are classified as inactive.

The locations of regional faults in the Central Coast area as mapped by Lettis et al. (2004) are shown on Plate 4 – Regional Fault Map. Fault activity definitions on Plate 4 by Lettis

et al. are not consistent with the California Geological Survey (CGS) activity definitions. Lettis et al. consider faults as 'active' if they exhibit evidence of displacement within the past 500,000 years, whereas the CGS considers faults as 'active' if they exhibit evidence of displacement within the past 11,000 years.

Fugro utilized the fault search routine in FRISKSP (Blake, 2000) to identify active and potentially active mapped faults and fault segments within a 62-mile radius of the project vicinity. The site coordinates (latitude and longitude) for the Tonini property were estimated to be 35.3122° latitude and -120.7782° longitude. Summarized below are eight (8) faults and fault segments that were considered to be the most capable of producing high ground motion within the project vicinity. Additional information is presented in the California Geological Survey (CGS, 2002) fault database.

Summary of Fault Characteristics

Fault	Approximate Distance From Site (mile)	Maximum Moment Magnitude (M_w)	Fault or Fault Segment Length (km)	Slip Rate (mm/yr)
Los Osos	0.9	7.0	44 ± 4	0.5 ± 0.4
San Luis Range (S. Margin)	9.0	7.2	64 ± 6	0.2 ± 0.1
Hosgri	9.9	7.5	169 ± 17	2.5 ± 1.0
Rinconada	13	7.5	190 ± 19	1.0 ± 1.0
Casmalia (Orcutt Frontal Fault)	27	6.5	29 ± 3	0.3 ± 0.2
Lions Head	32	6.6	41 ± 4	0.02 ± 0.02
San Juan	34	7.1	68 ± 7	1.0 ± 1.0
San Andreas (Cholame)	40	7.3	63 ± 6	34 ± 5

Los Osos Fault. The closest mapped active fault to the site is the Los Osos fault zone (CGS, 2002; PG&E, 1988; Lettis & Hall, 1994; Asquith, 1997). The Los Osos fault zone and associated lineament features are shown on Plate 5. Lettis & Hall (1994) describe the Los Osos fault zone as a series of discontinuous, subparallel and en echelon fault traces that extend from the offshore Hosgri fault zone to Lopez Reservoir, a distance of about 35 miles. Lettis & Hall (1994) subdivided the fault zone into four segments: Estero Bay, Irish Hills, Lopez Reservoir, and Newsom Ridge. The Irish Hills segment of the Los Osos fault is about 10 to 12 miles long and extends from the Pacific Ocean near Los Osos eastward to San Luis Creek. This segment of the fault forms the boundary between the Los Osos Valley and the Irish Hills and has documented Holocene offset (PG&E 1988). Portions of the fault east of Los Osos (east of the study area) near the City of San Luis Obispo have been zoned active and are designated as an Alquist-Priolo earthquake fault hazard zone by CGS.

3.4.2 Historical Seismicity

The project is located within a seismically active region of Central California. Historical records indicate that the area has been subject to various seismic events over the last 183 years (PG&E, 1988). A summary of Magnitude 2 and greater seismic events recorded from 1933 through March 2008 by the Advanced National Seismic System (ANSS, 2008) and Clark et al. (1994) are presented on Plate 6 - Historical Seismicity Map. Examples of relatively strong ground motion that has reportedly been experienced near the project area are the seismic events of 1830, 1857, 1913, 1916, 1917, 1952, 1966, 1980, and 2003.

The 1830 event is estimated to be an approximately M5 earthquake that occurred from a poorly located source near San Luis Obispo. The effects of the 1830 event were generally observed between the Los Osos and Rinconada faults. The 1857 event (the Fort Tejon earthquake) occurred on the Mojave segment of the San Andreas fault, and reportedly resulted in damage in central and southern California. The 1913 event is estimated to be an approximately M5 earthquake that occurred along the southwestern margin of the San Luis/Pismo block near Arroyo Grande. The 1916 event is estimated to be an approximately M5 earthquake that occurred near Avila, possibly along the Los Osos fault or faults along the southwestern margin of the San Luis/Pismo block. The 1917 event is estimated to be an approximately M5 earthquake that occurred near Lopez Canyon between the Rinconada and West Huasna faults. The 1952 earthquake is estimated to be a M6 earthquake occurring within the Nacimiento Fault Zone. The 1966 event (the Parkfield earthquake) is estimated to be an approximately M6 earthquake that occurred on the San Andreas fault. The 1980 event is estimated to be an approximately M5 earthquake that occurred offshore near Point Sal along the Casmalia fault zone, and near its intersection with the Hosgri fault.

The epicenter of the San Simeon earthquake was located approximately 30 miles north of the project site. A ShakeMap for the site developed by the California Integrated Seismic Network (CISN 2003) shows that the project site likely experienced moderate ground motion during the earthquake. The peak horizontal ground acceleration at the project site, as estimated from the ShakeMap, was likely about 0.12g.

4. GEOTECHNICAL ANALYSIS

4.1 SEISMIC HAZARD ANALYSIS

A preliminary probabilistic seismic hazard evaluation for the site was performed using the computer program FRISKSP (Blake, 2000) and the USGS Hazard Calculator program based on the 2007 California Building Code (CBC). The current CBC was adopted by the County in January 2008, and was used to define the seismic hazard exposure for this preliminary evaluation. The CBC seismic design code is referenced to the American Society of Civil Engineers ASCE 7-05 report. The program FRISKSP is based on FRISK (McGuire, 1978) and has been modified for the probabilistic estimations of seismic hazards using three-dimensional earthquake sources.

Our evaluation estimated earthquake effects corresponding to the Maximum Considered Earthquake (MCE). The MCE is defined by the code as an earthquake having a 2 percent chance of being exceeded in 50 years (Statistical Return Period of approximately once every 2,475 years). Design earthquake ground motions for liquefaction and other geotechnical analyses are defined as two-thirds ($^2/_3$) of the corresponding MCE ground motions.

FRISKSP was used to estimate the peak horizontal acceleration using the attenuation relationship proposed by Boore et al. (1997) and assuming an average shear wave velocity of 250 m/s in the upper 100 feet. FRISKSP estimated the MCE would result in a peak horizontal ground acceleration of approximately 0.63g, corresponding to a deaggregated modal M6.7 event on the Los Osos fault.

Based on subsurface conditions encountered at the site, the Soil Profile Type selected for our evaluation was Site Class D, "S_D". This soil profile type corresponds to a stiff soil profile with an average shear wave velocity ranging between 600 and 1,200 feet per second (180 and 360 meters per second), according to the CBC (2007).

4.2 LIQUEFACTION AND SEISMIC SETTLEMENT

Liquefaction is defined as the loss of soil strength due to an increase in soil pore water pressure that results from seismic ground shaking. In order for liquefaction to occur, three general geotechnical conditions need to occur: 1) groundwater is present within the potentially liquefiable material; 2) the soil is granular and meets a specific range of grain sizes; and 3) the soil is in a loose state of low relative density. If those conditions are present and strong ground motion occurs, portions of the soil column could liquefy, depending upon the intensity and duration of the strong ground motion. Seismic settlement can occur in relatively loose sands, similar to soil types that are vulnerable to liquefaction, but can also occur in soils that are unsaturated and above the groundwater table.

The Safety Element of the San Luis Obispo County General Plan (1999) identifies areas where the potential for liquefaction should be evaluated based on mapping of geologic units that may contain soil types susceptible to liquefaction. Within the Los Osos area, the Safety Element identifies geologic units such as beach sand, dune sand, and younger alluvial deposits as having a high potential to contain sediments that may be prone to liquefaction.

Based on our subsurface exploration, the site is predominantly underlain by alluvial, colluvial and residual soils overlying generally shallow bedrock. The stiff to hard fine-grained units of the alluvium (Qal_2) consist mostly of clay and are not considered susceptible to liquefaction. Loose to medium dense sandy alluvium (Qal_1) that may be prone to liquefaction were generally encountered in B-4, B-5 and B-101 above the depth of groundwater and within approximately 4 feet of the ground surface at the base of slopes within the south and southwestern portions of the project area. Potentially liquefiable dune sand deposits (Qs) were also encountered above the depth of groundwater in B-102 along the western limits of the project extent. Our analysis of the liquefaction potential of these units is summarized on Plate 7 - Summary of Liquefaction Potential.

We evaluated the potential for liquefaction to impact the on-site soils encountered by our explorations. For the purpose of our evaluation, we considered a ground motion of approximately 0.42g and an earthquake magnitude of 6.7, corresponding to two-thirds ($^2/_3$) of the MCE and the deaggregated modal earthquake magnitude. The analysis was performed using procedures described in the 1998 NCEER guidelines (Youd and Idriss, 2001) for performing liquefaction analyses using field blow counts and soil type. Field blow counts and soil type at each boring location are shown on the boring logs in Appendix A.

Based on the evaluation, soils susceptible to seismic settlement were encountered predominantly within the shallow alluvial soils and dune sand deposits. A summary of the estimated factor of safety against liquefaction within these potentially liquefiable soils is presented on Plate 7. As summarized on Plate 7, the estimated factors of safety against liquefaction for two blow counts recorded within the sandy alluvium unit (Qal_1) and for one blow count recorded within the dune sand deposits (Qs) are approximately 0.8 and 1.1, and 0.8, respectively. The remainder of the blow counts recorded had estimated factors of safety greater than 1. Liquefaction of these soils would likely occur if the materials were saturated during an earthquake. We anticipate shallow materials susceptible to seismic settlement would be excavated during grading of storage/treatment ponds and construction of critical structures, and be replaced with properly compacted fill having a low potential for liquefaction. Soils susceptible to seismic settlement underlying proposed sprayfield areas, outside the limits of ponds and structures, will likely have minimal impact on the project, and specific mitigation for liquefaction is not needed.

5. GEOLOGIC HAZARDS AND GEOTECHNICAL CONSIDERATIONS

The following sections present a summary of geologic hazards that were evaluated for the project, our opinion regarding the potential for the hazards to impact the project, and preliminary recommendations for mitigation of the hazard, if needed.

5.1 FAULT RUPTURE

Fault rupture is the displacement of the ground surface created by movement along a fault plane during an earthquake. The project vicinity is not located within a designated Alquist-Priolo Earthquake Fault Hazard Zone. The Alquist-Priolo Earthquake Fault Zoning Act identifies areas of known active faults, and the main purpose of the act is to prevent the construction of buildings used for human occupancy on the surface trace of active faults.

Lettis and Hall (1994) mapped a linear drainage trending northwest-southeast between foothills in the southwestern portion of the property as possibly being related to the Los Osos fault zone (LOFZ), as shown on Plate 5. Linear drainages can also be related to differences in material types and erodibility characteristics at geologic contacts. The LOFZ is considered active and a portion of the LOFZ (near the intersection of Los Osos Valley Road and Foothill Boulevard, about 4 miles southeast of the project site) is zoned by the State of California Alquist-Priolo Special Studies Zones Act.

Based on our aerial photograph review, field exploration and site visits, fault-related geomorphic features other than the aforementioned linear drainage are not readily visible within the project limits. In our opinion, the lineation is not fault-related, but rather related to differential weathering and erosion of different geologic materials, and potential for fault rupture to impact the project site is considered low.

5.2 STRONG GROUND MOTION

The potential exists for strong ground motion to affect the project during the design lifetime. Strong ground motion (shaking) can occur in response to local or regional earthquakes. The project site is located within a seismically active area, and has been subjected to earthquake effects in the recent past (such as the 2003 San Simeon Earthquake). The recency of the San Simeon Earthquake does not suggest that the project area is more or less prone to earthquakes, or has a greater frequency of earthquakes, than it did prior to 2003. In general, the primary effects will be those phenomena associated with shaking and/or ground acceleration. Those effects are discussed in subsequent sections of this report regarding liquefaction, seismic settlement, ground lurching, and slope instability.

As discussed in Section 4.1 of this report, the design earthquake for this project is estimated to be a M6.7 event with a corresponding peak ground acceleration of approximately 0.42g. The design earthquake being considered is of similar magnitude to the San Simeon Earthquake; however, the design earthquake would be a near-field event resulting in greater shaking at the project site. Design earthquake ground motions for liquefaction and other geotechnical analyses are defined as two-thirds ($^2/_3$) of the corresponding MCE ground motions. The MCE is defined by the CBC as an earthquake having a 2 percent chance of being exceeded in 50 years (Statistical Return Period of approximately once every 2,475 years).

5.3 LIQUEFACTION, SEISMIC SETTLEMENT, AND LATERAL SPREADS

As discussed in section 4.2 of this report, liquefaction is a loss of soil strength due to a rapid increase in soil pore water pressures due to cyclic loading during a seismic event. Liquefaction commonly occurs in loose to medium dense sandy soil that is below the groundwater table at the time of an earthquake. The potential and severity of liquefaction will depend on the intensity and duration of the strong ground motion. Seismically induced settlement, collapse, or lateral spreads can occur in loose, soft, or moderately dense and weakly cemented soils, or in association with liquefaction.

Based on the analysis summarized in Section 4.2 and on Plate 7, a majority of the project extent is underlain by fine-grained cohesive alluvium (Qal_2), residual soil and bedrock that has a low potential for liquefaction. Areas within the south and southwestern portion of the project extent are underlain by generally shallow sandy alluvium (Qal_1) or dune sand deposits (Qs) that were encountered above groundwater. We anticipate these soils are likely to be removed during grading within the limits of proposed structures and ponds. Further, we anticipate that any seismic settlement of soils underlying sprayfields would not have an impact on the project.

Fine-grained soil encountered over a majority of the project extent will likely limit the infiltration of irrigation water and limit the potential for liquefaction. However, low lying areas within the southwestern portion of the project extent that are underlain by relatively permeable, potentially liquefiable soils are likely to have an increased potential for liquefaction due to irrigation.

The design of treatment and storage ponds may need to consider the presence of potentially liquefiable near-surface soils comprising perimeter slopes so that proper site preparation and grading can be performed to remove the potentially liquefiable materials maintain slope stability.

5.4 SUBSIDENCE AND COLLAPSE

The site is not in an area where the withdrawal of subsurface fluids is known to have caused ground subsidence. The fine-grained cohesive materials that underlie the majority of the project extent are generally stiff to hard and are not considered significantly susceptible to compression due to lowering of local water levels. Additionally, lowering of local water levels is not anticipated as part of the proposed project. It is our opinion that there is a low potential for subsidence to impact the project.

5.5 LANDSLIDING/SLOPE INSTABILITY

The County of San Luis Obispo has identified the slopes in the northwestern portion of the property as geologic study areas for landslide risk (http://www.sloplanning-maps.org/ed.asp?bhcp=1). Areas of suspected landslide deposits (Qls) and potentially unstable slopes are delineated on Plate 8 – Soil Constraints Map. Based on site visits and our review of aerial photographs, we observed evidence suggestive of slope instability (landslides, debris flows, creep, and erosion) along the eastern-facing slopes in the northwestern portion of the property. These geomorphic features appear to be shallow in nature and can be common within the Franciscan mélange. The on-site mélange is predominantly composed of expansive claystones that are known to be relatively weak and erode rapidly to form shallow slope inclinations without rock outcrops. It is our opinion that sprayfield irrigation systems sited on steeper slopes or areas of potential instability would increase the potential for slope instability. Mitigation for landsliding or slope instability should consist of positioning proposed effluent areas away from suspected landslide features, potentially unstable ground, or slopes steeper than about 20 percent.

5.6 GROUND LURCHING

Ground lurching occurs as the ground is accelerated during a seismic event. As evidenced by the Loma Prieta, Landers, Northridge, and San Simeon earthquakes, the effects of ground lurching can damage facilities and buried pipelines. Ground lurching occurs due to detachment of underlying stratigraphic units, allowing near-surface soil to move differentially from underlying soil. The site is within a seismically active region of Central California that is prone to moderate to large earthquakes. It is therefore our opinion that there is a potential for

ground lurching to impact the site. Ground lurching is generally not a geologic hazard that can be prevented, and therefore is mitigated by implementing preparedness measures.

5.7 EROSION

As described above, erosion was observed on the slopes in the northwestern portion of the property, as shown on Plate 8. Graded cut slopes associated with the site development will be subject to sheet and rill erosion. Erosion of soils can be accelerated where soils are exposed directly to runoff and/or areas of concentrated storm runoff, such as at culvert outlets. Site drainage and landscape improvements can be designed to reduce the potential for soil erosion.

5.8 EXPANSIVE SOILS

Expansive soil generally consists of fine-grained soil of high plasticity (fat clay) that can damage near-surface improvements in response to shrinking and swelling associated with changes in soil moisture content. A majority of the topsoil encountered at the site consists of fat clay (CH). Samples of fat clay (CH) tested for expansion index had a high potential for expansion with expansion index values of 93 and 105. According to the CBC (2007), the soil tested is classified as expansive.

The National Resource Conservation Service (Ernstrom, 1984) maps the highly expansive soils within the limits of the project extent as belonging to the Cropley series. The Cropley series is characterized as having slow to very slow permeability and high shrink-swell potential (Ernstrom, 1984). After swelling, water infiltration is typically low and surface water is more likely to runoff or pond. The design of structure foundations, concrete flatwork, and pavements should be designed with consideration for expansive soil. Expansive soil conditions are typically mitigated by removal and replacement with select fill, increasing the amount of steel reinforcement in foundations and slabs, deepening footings, and/or placing mats of non-expansive soil below structures or pavements.

5.9 NATURALLY OCCURING ASBESTOS

Naturally occurring asbestos (NOA) is common in serpentine rock throughout San Luis Obispo County. The California Air Resources Board has identified serpentine rock as having the potential to contain asbestos. Serpentine rock is typically a constituent of Franciscan Formation mélange, which was encountered in B-104 during our investigation and is mapped on the slopes in the northwestern portion of the site. However, we encountered alluvium and metavolcanic rocks within the limits of proposed ponds and structures, and we do not anticipate extensive grading or excavation in areas potentially underlain by serpentine rock. Therefore, it is our opinion that there is a low potential for NOA to impact the project.

5.10 FLOODING, TSUNAMIS AND INUNDATION

Tsunamis, or long-period sea waves created due to seismic events or submarine landslides, have historically occurred in the project region. Tsunamis can range in height from a

few feet to greater than 50 feet, and can result in run-ups, or bores, extending great distances up streams, rivers, and creeks. As evidenced by recent events around the world, tsunamis can have devastating impacts on coastal areas. According to Kilbourne and Mualchin (1980), the following historical tsunamis have occurred in the project region:

Historical Tsunami Run-up

Year	Estimated Tsunami Generation Location	Estimated Impact Location	Estimated Tsunami Run-up (meters/feet)
1868[1]	Unknown	Morro Bay	Unknown
1878[2]	Unknown	Morro Bay	Unknown
1927	Local	Pismo Beach	1.8 meters/5.9 feet
1946	Aleutian Trench	San Luis Obispo Bay	1.2 - 1.5 meters/3.9 - 4.9 feet
1960	Chile-Peru Trench	Central Coast	>1.0 meters/>3.3 feet
1964	Gulf of Alaska	Central Coast	>1.0 meters/>3.3 feet

[1] Speculative

[2] Reportedly overtopped the sand spit that separates the bay from the ocean (SLO County 1999).

As noted in the above table, tsunamis generated from far-field sources have historically occurred in the project region. A study performed by Houston and Garcia (1978) estimated the 100-year and 500-year tsunami run-ups in the study area based upon far-field source generation locations (such as the Aleutian or Chile-Peru Trenches). On the basis of their study, the estimated tsunami run-up along the Cayucos/Morro Bay coastline is up to approximately 9.5 feet to 24.2 feet for the 100-year and 500-year events, respectively. Those run-ups were calculated using astronomical high tides, and compare well with recorded tsunamis that have occurred in Crescent City and other locations along the California coast. However, according to Kilbourne and Mualchin, the worst case scenario would occur if a tsunami occurred during a meteorological high tide (storm surge), which would add an estimated 15 feet to the run-up values calculated by Houston and Garcia (1978). Thus, with a worst case scenario, the estimated tsunami run-up for the 100-year and 500-year would be approximately 25 and 40 feet, respectively.

Houston and Garcia's (1978) study did not evaluate the tsunami run-up potential generated from local seismic events or local submarine landslides. It is difficult to model the tsunami run-up magnitudes based on local events; however, it is thought that local events can generate tsunamis of equal magnitudes as far-field tsunami sources (Kilbourne and Mualchin 1980).

The project site is located at elevations (el) ranging from approximately el. +20 feet along Warden Lake in the southwest portion of the property to approximately el. +541 feet MSL in the northwestern portion of the site. The County of San Luis Obispo has prepared web-based tsunami inundation maps (http://www.sloplanning-maps.org/ed.asp?bhcp=1) that show areas on the property that may be vulnerable to inundation from tsunamis below about el. +60 feet MSL. Areas vulnerable to inundation are generally in the vicinity of Warden Lake and outside the

limits of the proposed project. Based on estimated tsunami run-up elevations shown on the County website, tsunami run-ups should not be considered a potential hazard to the project.

5.11 HYDROCOLLAPSE POTENTIAL

Hydrocollapse refers to the potential for a soil to consolidate or collapse due to wetting. The site is predominantly underlain by generally stiff fine-grained materials and generally medium dense sandy materials. These materials are not considered susceptible to hydrocollapse. Near-surface expansive clay and disturbed agricultural soil may have a potential to collapse due to wetting; however, these materials are likely to be removed during grading and be replaced with properly compacted soil having a low potential for hydrocollapse. Therefore, it is our opinion that there is a low potential for this hazard to impact the project.

5.12 RADON GASES

Radon gases are generally associated with Mesozoic granitic rocks and derivative Tertiary sedimentary rocks, and Tertiary marine sedimentary rocks. Radon hazards are generally related to an accumulation of radon gases within homes and housing structures. The San Luis Obispo County Safety Element (1999) has identified these geologic formations as having high equivalent uranium (eU) concentrations. These formations have not been mapped or encountered within the project site. We do not anticipate components of the project will be planned for areas potentially containing rocks with high eU concentrations. Therefore, it is our opinion that there is a low potential for this hazard to impact the project.

5.13 SURFACE PERMEABILITY

We understand proposed sprayfields will dispose of up to 842 acre-feet of treated effluent over approximately 175 acres annually by means of evaporation and percolation. As noted in section 5.8 of this report, highly expansive soils mapped within the limits of the project extent belong to the Cropley series. These soils are characterized as having slow to very slow permeability, with reported values ranging from approximately 4.2×10^{-5} to 1.4×10^{-5} cm/s (Ernstrom, 1984). After swelling, water infiltration is typically low and surface water is more likely to runoff or pond. As a measure against excessive runoff, Ernstrom (1984) recommends controlled sprinkler or drip methods of irrigation for the Cropley clay.

Based on our subsurface exploration, we anticipate predominantly clayey alluvium (Qal_2) and residual soils of the Cropley series underlie the northern and eastern portions of the project extent. Samples of fat clay (CH) recovered from the Qal_2 unit had permeabilities ranging from approximately $2x10^{-8}$ to $3x10^{-9}$ cm/s. Relatively permeable dune sand deposits (Qs) and predominantly sandy alluvial deposits (Qal_1) underlie the southern and western portions of the project extent. Samples of silty sand (SM) recovered from the Qs unit and Qal_1 unit had permeabilities of approximately $1x10^{-3}$ to $9x10^{-5}$ cm/s, respectively. Our interpreted contact between relatively impermeable surficial soils (Qal_2) and relatively permeable surficial soils (Qs unit and Qal_1 unit) is shown on Plate 8.

Mitigation of relatively impermeable soils relative to sprayfield operation may consist of periodic scarification and aeration of soils to increase pore spaces within the soil fabric, or temporary shutdown/control of sprayfield discharge to allow prolonged infiltration of effluent.

6. CONCLUSIONS AND RECOMMENDATIONS

We prepared the conclusions and recommendations for this report based on our preliminary geotechnical evaluation of the site conditions and a review of available geotechnical information for other projects located near the project site.

6.1 SUMMARY OF FINDINGS

- The generally flat southern and eastern portions of the site are underlain by alluvial and residual soils consisting of generally stiff fine-grained material and generally medium dense sandy material. Dune sand deposits, and Franciscan metavolcanics and mélange are exposed on hillsides within the site and were encountered at the surface or at generally shallow depths below alluvium and/or colluvium. Alluvium is mapped within the generally flat portions of the site. Groundwater was encountered at a depth of approximately 27 feet below the existing ground surface in B-3. Surface and shallow groundwater likely are present in the vicinity of Warden Lake in the southwest corner of the property.
- Geologic hazards relating to fault rupture, deep-seated landsliding, subsidence, hydrocollapse, tsunami inundation, naturally occurring asbestos, and radon gases are unlikely to impact the project.
- The site is located within a seismically active area, and could be impacted by seismic hazards related to liquefaction and seismic settlement. The site has been subjected to strong ground motions in response to historical earthquakes that have occurred in relatively close proximity to the site. The design of the facility should consider the potential for the site to be subjected to strong ground motion in response to nearby or regional earthquakes. The soil encountered by our explorations is predominantly fine-grained material underlain by Franciscan formational materials that would not be considered susceptible to liquefaction. The loose to medium dense sandy material potentially susceptible to seismic settlement encountered in B-4, B-5, B-101 and B-102 are generally shallow (less than 2 to 3 feet), unsaturated, or underlying proposed sprayfield areas. We anticipate soils susceptible to seismic settlement within the limits of storage/treatment ponds and structures will be removed during grading and construction.
- We expect that typical 1- to 2-story structures, below grade structures, and moderately loaded structures can be supported on shallow foundations supported on compacted fill.
- The design of structure foundations, concrete flatwork, and pavements should be designed with consideration for expansive soil. Expansive soil conditions are typically mitigated by removal and replacement with select non-expansive fill, increasing the

amount of steel reinforcement in foundations and slabs, deepening footings, and/or placing mats of non-expansive soil below structures or pavements.

- Sprayfield design will need to consider the generally slow to very slow permeability of clayey alluvium and residual soil underlying the northern and eastern portions of the project extent. Soils underlying the southern and western portions of the project extent are relatively permeable and generally better suited for percolation of treated wastewater effluent. Our interpreted contact between relatively impermeable surficial soils (Qal_2) and relatively permeable surficial soils (Qs unit and Qal_1 unit) is shown on Plate 8.

6.2 PRELIMINARY SEISMIC DATA

As discussed in Section 4.1 and 5.2 of this report, the design earthquake for this project is estimated to be a M6.7 event with a corresponding peak ground acceleration of approximately 0.42g. The Los Osos fault is the controlling fault for the site, and is mapped approximately 2,000 feet south of the site. The Los Osos fault is classified as a type "B" seismic source by the USGS (Cao et al., 2003). We recommend that the following values be used for zone-based seismic hazard analyses.

Table 1. Parameters for Use in Building Code-Based Seismic Design

California Building Code	Seismic Parameter	Value
Site Coordinates	Latitude, degrees	35.312183
	Longitude, degrees	-120.778203
Section 1613.5.1 Figure 1613.5	Ss , Seismic Factor, Site Class B at 0.2 sec	1.421g
	S_1, Seismic Factor, Site Class B at 1 sec	0.530g
	Site Class	S_D, Stiff soil
Section 1613.5.3 Table 1613.5.3(1)	Fa, Site Coefficient for Site Class D	1.0
Section 1613.5.3 Table 1613.5.3(2)	Fv, Site Coefficient for Site Class D	1.5
Section 1614A	S_{MS}, MCE Spectral Response Acceleration Parameter for Site Class D at 0.2 sec.	1.421g
	S_{M1}, MCE Spectral Response Acceleration Parameter for Site Class D at 1.0 sec.	0.530g
	$S_{DS} = 2/3\ S_{MS}$,	0.947g
	$S_{D1} = 2/3\ S_{M1}$	0.530g

Based on the seismic design parameters calculated by the USGS Hazard Calculator, and per 2007 CBC Section 1613A.5.6, structures of Occupancy Category I, II, III and IV (defined in 2007 CBC Table 1604.5) should be designed according to Seismic Design Category "D".

6.3 FOUNDATION DESIGN CONSIDERATIONS

Typical 1- to 2-story and moderately loaded structures can likely be supported on shallow foundations bearing in compacted fill. Relatively large or heavy structures located within the south central portion of the site may need to consider total and differential settlement of underlying soil units that may warrant deep foundations bearing on generally shallow bedrock.

Allowable bearing pressures of 2,500 to 3,500 pounds per square foot (psf) can be used for preliminary foundation design. Foundations and floor slabs should be reinforced with consideration for highly expansive soil conditions. Additional exploration testing and analysis will be required as part of the design phase of the project.

6.4 EXPANSIVE SOILS

Tested samples of fat clay (CH) encountered in the Qal_2 unit had expansion index values of 93 and 105. According to the CBC (2007), the soil tested is classified as expansive. It is our opinion the predominantly clayey alluvial soils encountered at the site have a high potential for expansion. Removal or treatment of potentially expansive soils within the limits of proposed structures will need to be considered in foundation design.

6.5 GRADED SLOPES

Graded cut and fill slopes less than 15 feet in height can likely be designed to a slope inclination of 2h:1v or flatter. Retaining structures or reinforced slopes can be provided to allow for steeper slopes, if needed.

6.6 DRAINAGE AND EROSION CONSIDERATIONS

Drainage should be provided such that surface water does not run over slopes or pond on pavements, slabs, or adjacent to foundations. Downspouts should be provided to collect roof drainage and direct the water to drainage pipes or areas away from the building. Irrigated planters and medians should be equipped with drainage or other provisions to help prevent water from infiltrating expansive subgrade soil below structures, pavements, or flatwork. Landscaping and maintenance of slopes should be provided to assist vegetation to be established on slopes, and reduce the potential for erosion. Energy dissipation and erosion control devices should be provided at the outlet of drainage pipes and in areas of concentrated flow and runoff to reduce the potential for erosion.

6.7 EFFLUENT PERCOLATION

Proposed sprayfields will be designed to dispose of wastewater effluent over approximately 175 acres by means of evapotranspiration and percolation. Based on our laboratory testing of surficial alluvium and dune sand deposits, we anticipate predominantly slow percolation rates for soils underlying proposed sprayfield areas, particularly expansive soils within the northern and eastern portions of the project extent. As discussed in section 5.8 of this report, the Cropley soil series is characterized as having slow to very slow permeability and high

shrink-swell potential (Ernstrom, 1984). Expansive soils are likely to swell and become relatively impervious, thereby increasing runoff during prolonged rainfall or irrigation. Mitigation of relatively impermeable soils relative to sprayfield operation may consist of periodic scarification and aeration of soils to increase pore spaces within the soil fabric, or temporary shutdown/control of sprayfield discharge to allow prolonged infiltration of effluent. Additional testing and analysis will be required as part of the design phase of the project.

6.8 CONSTRUCTION CONSIDERATIONS

6.8.1 Site Preparation and Grading

Prior to grading, the site should be cleared and grubbed. Grading for the improvements is likely to consist of excavation of near-surface soils for construction of treatment/storage ponds and over-excavation for building subgrades. Near-surface soils are potentially expansive or may be susceptible to seismic settlement. Site preparation will likely consist of removing the existing soil from areas to receive fill to a depth of about 3 to 5 feet below the existing ground surface. Prior to placing compacted fill, the subgrade in areas to receive fill is typically prepared by scarifying the soil to a depth of approximately 9 inches, moisture conditioning the material, and compacting the subgrade in-place to a specified compaction. Soft or yielding subgrade conditions should be stabilized by placing a mat of dry, compacted fill over the undisturbed subgrade.

6.8.2 Use of On-site Soil

Fill material should be free of organics, oversized rocks, pavements, and other deleterious materials. The clayey on-site materials encountered within the northern and eastern portions of the project limits may not be suitable for fill in building and pavement areas due to potentially expansive soils but may be suitable for use as general fill. If clayey materials are used for building and pavement areas, the overlying improvements will need to be designed with consideration for highly expansive soil conditions. More suitable sandy materials were encountered in the southern and western portions of the project limits. The on-site granular soils likely are not suitable for select material such as backfill for pipelines and base for roadways. On-site soil excavated from below the groundwater table (if encountered) will likely not be suitable for compacted fill as excavated. Aeration or treatment of excavated soils may be needed to reduce the water content of the excavated material and make the material suitable for compaction. The quality of and need for fill material should be considered in the design-level geotechnical study.

6.8.3 Dewatering

Groundwater was encountered at approximately 27 feet below the existing ground surface in B-3. We expect that excavations within the generally flat portions of the site will be above the anticipated depth of groundwater (approximately 27 feet) and would not require dewatering. However, groundwater levels will vary depending on the time of construction, and should be considered in the excavation plans for the project.

6.8.4 Excavation

The existing alluvial and residual soils encountered within the limits of proposed ponds and structures consisted of loose to medium dense sandy soils and medium stiff to hard fine-grained soils that extended to depths ranging from approximately 14 to 21½ feet. These types of soils can likely be excavated using conventional earth-moving equipment and ripping. Excavation of underlying Franciscan metavolcanic rocks or boulders within the Franciscan mélange (mapped on slopes within the sprayfield limits) may require the use of a hoe-ram or similar type of equipment to break hard rocks.

7. CONTINUATION OF SERVICES

The geotechnical considerations in this report are intended for preliminary planning and estimating costs associated with developing the site. The recommendations are preliminary based on our limited geotechnical study. A more comprehensive design-level geotechnical investigation should be completed in support of the final design of the proposed improvements.

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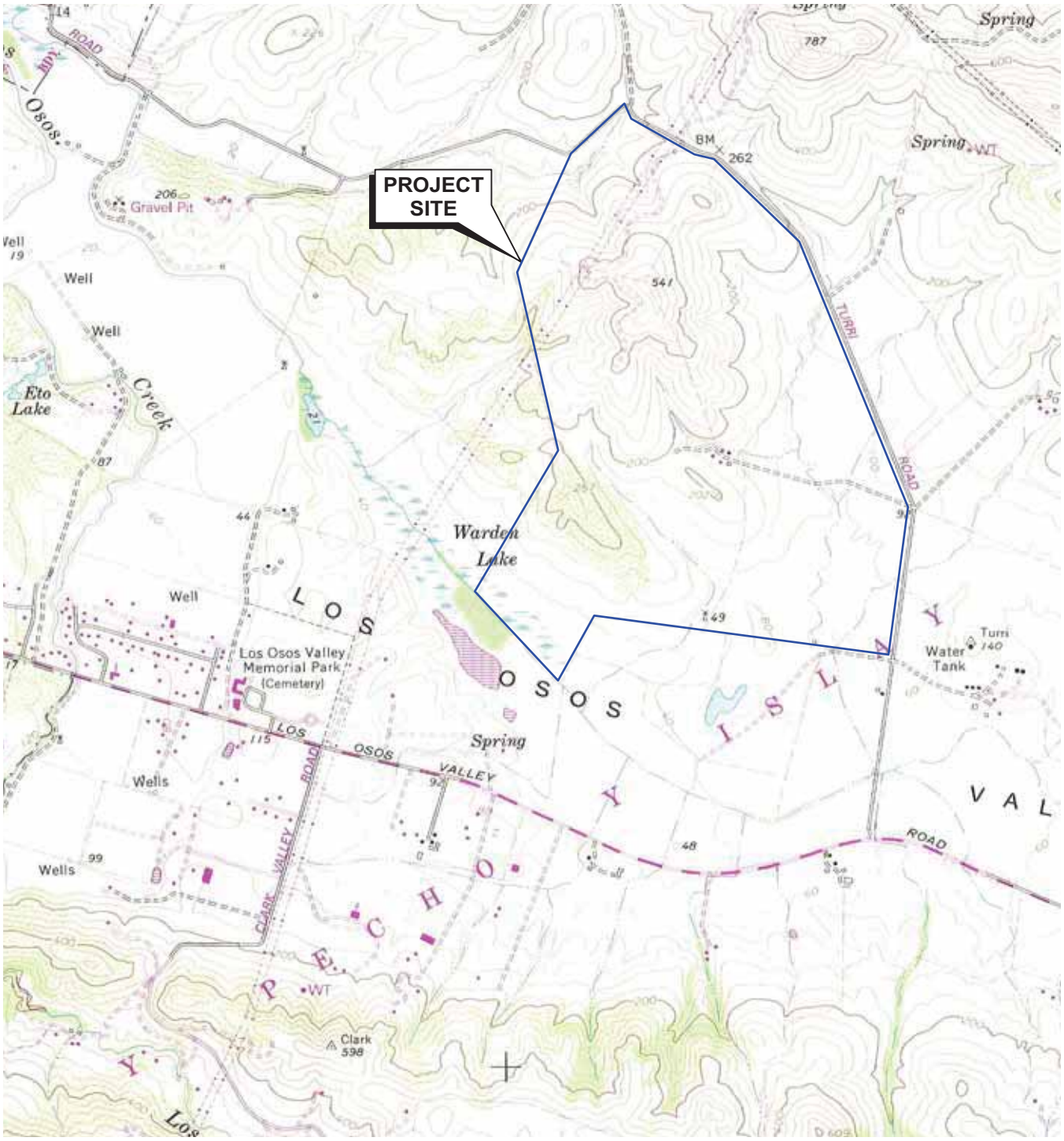
End of Text

PLATES



BASE MAP SOURCE: USGS Morro Bay South 7.5' Quadrangle, revised 1994.

NORTH

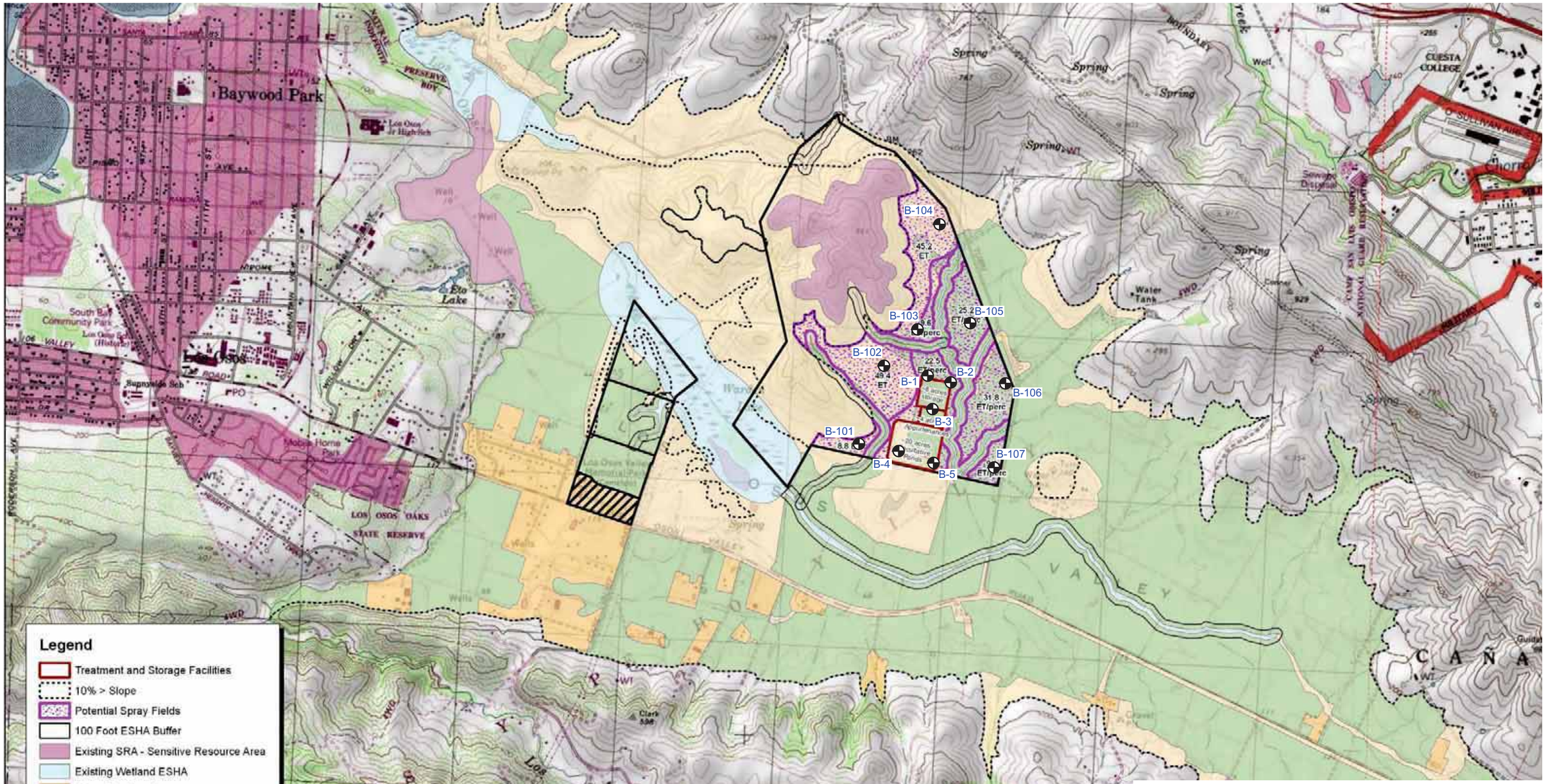
0 1000 2000

FEET

VICINITY MAP

Los Osos Wastewater Project
Tonini Property
San Luis Obispo County, California

PLATE 1



BASE: Exhibit 4, Michael Brandman Associates (10/08)

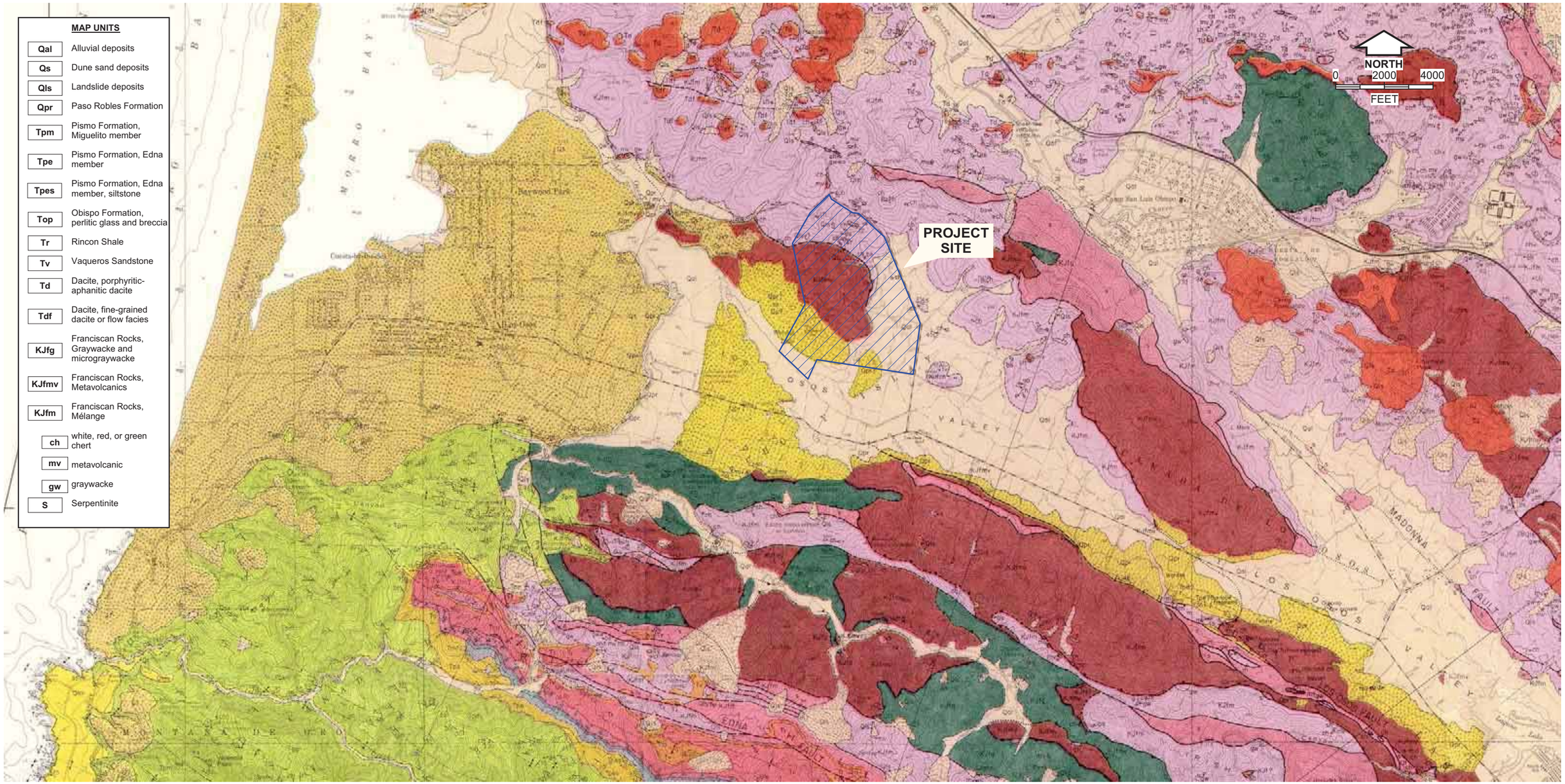
Exploration (Approximate)

Boring Location and Number
B-103

NORTH
0 1000 2000
FEET

FIELD EXPLORATION PLAN
Los Osos Wastewater Project
Tonini Property
San Luis Obispo County, California

PLATE 2



2004\3394.001\3394.001geo.dsf(1-3)

BASE MAP SOURCE: Geologic Map of the the San Luis Obispo-San Simeon Region, USGS Misc. Investigations Series Map I-1097, Sheet 3 of 3 (Hall, et al., 1979).

LEGEND

- Contact - Dashed where approximately located or inferred; queried where doubtful; dotted where concealed
- High-angle fault - Dashed where approximately located or inferred; dotted where concealed and inferred; queried where uncertain. Arrows show relative direction of movement on cross sections when known; queried where uncertain.
- Thrust or reverse fault - Dashed where approximately located or inferred, dotted where concealed and inferred; queried where concealed or doubtful. Sawteeth on upper plate. Dip of fault plane between 30° and 80°
- Photo lineament - Queried where uncertain
- Synform - Trace of axis at surface. Dashed where approximately located. Flanks coverate downward in folds and in rocks whose stratigraphic sequence is unknown.
- Antiform - Trace of axis at surface. Dashed where approximately located. Flanks diverge downward in folds and in rocks whose stratigraphic sequence is unknown.
- Strike and dip of beds uncertain

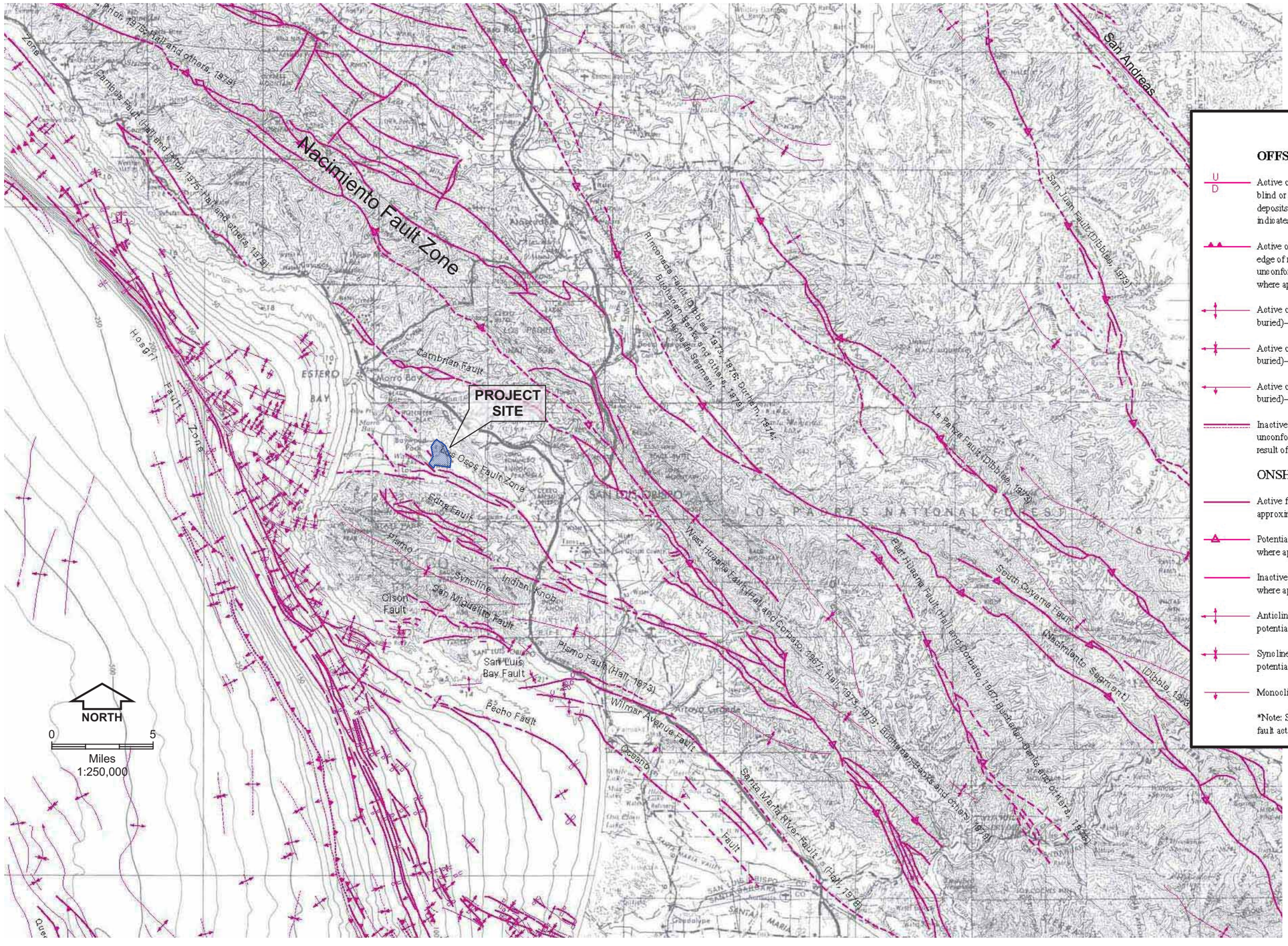
Marker beds

- Conglomerate or gravel bed
- Sandstone
- Siltstone or diatomaceous siltstone
- Tuff
- Breccia

- 30 Strike and dip of flow banding
- x6193 Megafossil locality - U.C.L.A. locality number
- Vollmer Ranch name/property owner

REGIONAL GEOLOGIC MAP
Los Osos Wastewater Project
Tonini Property
San Luis Obispo County, California

PLATE 3



EXPLANATION

OFFSHORE REGION*

U/D — Active or potentially active high angle fault (sea-floor projection of fault tip where blind or buried)—Deforms early/late Pliocene (2.8–3.4 Ma) unconformity or younger deposits or surfaces; U/D (Up/Down) indicates relative sense of displacement, bar indicates dip direction; dashed where approximately located

Active or potentially active low angle fault (sea-floor projection of fault tip or leading edge of ramp where blind or buried)—Deforms early/late Pliocene (2.8–3.4 Ma) unconformity or younger deposits or surfaces; teeth indicate dip direction; dashed where approximately locate

Active or potentially active anticline axial trace (sea-floor projection where buried)—Arrow indicates direction of plunge; dashed where approximately located

Active or potentially active syncline axial trace (sea-floor projection where buried)—Arrow indicates direction of plunge; dashed where approximately located

Active or potentially active monocline axial trace (sea-floor projection where buried)—Arrow indicates direction of plunge; dashed where approximately located

Inactive fault (bold) or fold (light)—Does not deform early/late Pliocene (2.8–3.4 Ma) unconformity; where this unconformity and (or) younger sediments are absent as a result of erosion, structures are mapped as potentially active

ONSHORE REGION*

Active fault trace—Deforms deposits or surfaces ≤500,000 ka; dashed where approximately located

Potentially active fault trace—May deform deposits or surfaces ≤500,000 ka; dashed where approximately located

Inactive active fault trace—Does not deform deposits or surfaces ≤500,000 ka; dashed where approximately located

Anticline axial trace—Arrow indicates direction of plunge; solid where active or potentially active; dotted where inactive

Syncline axial trace—Arrow indicates direction of plunge; solid where active or potentially active; dotted where inactive

Monocline axial trace—Solid where active or potentially active; dotted where inactive

*Note: See text for discussion of mapping techniques and age criteria used to identify fault activity.

REGIONAL FAULT MAP
Los Osos Wastewater Project
Tonini Property
San Luis Obispo County, California

BASE MAP: Lettis et al. (2004), Faults and Folds in Onshore and Offsore Regions of South-Central California.

PLATE 4

MAP UNITS

Qal	Stream deposit
Qe	Eolian deposit
Qf	Fluvial and alluvial deposits
Qc	Colluvial deposit
Qm	Marine terrace deposit
Qoa	Older alluvial deposit
Tca	Cereaga sandstone
Tmpm	Miguelito member of Pismo Formation
KJf	Franciscan Complex
KJfmv	Metavolcanics
KJfch	Red, white or green cherts
KJfg	Graywacke
S	Serpentinite

BASE MAP SOURCE: Quaternary Geologic Map of Los Osos Fault Zone, Los Osos Fault Zone, San Luis Obispo County, CA, Plate 5 (Lettis and Hall, 1994).

LEGEND

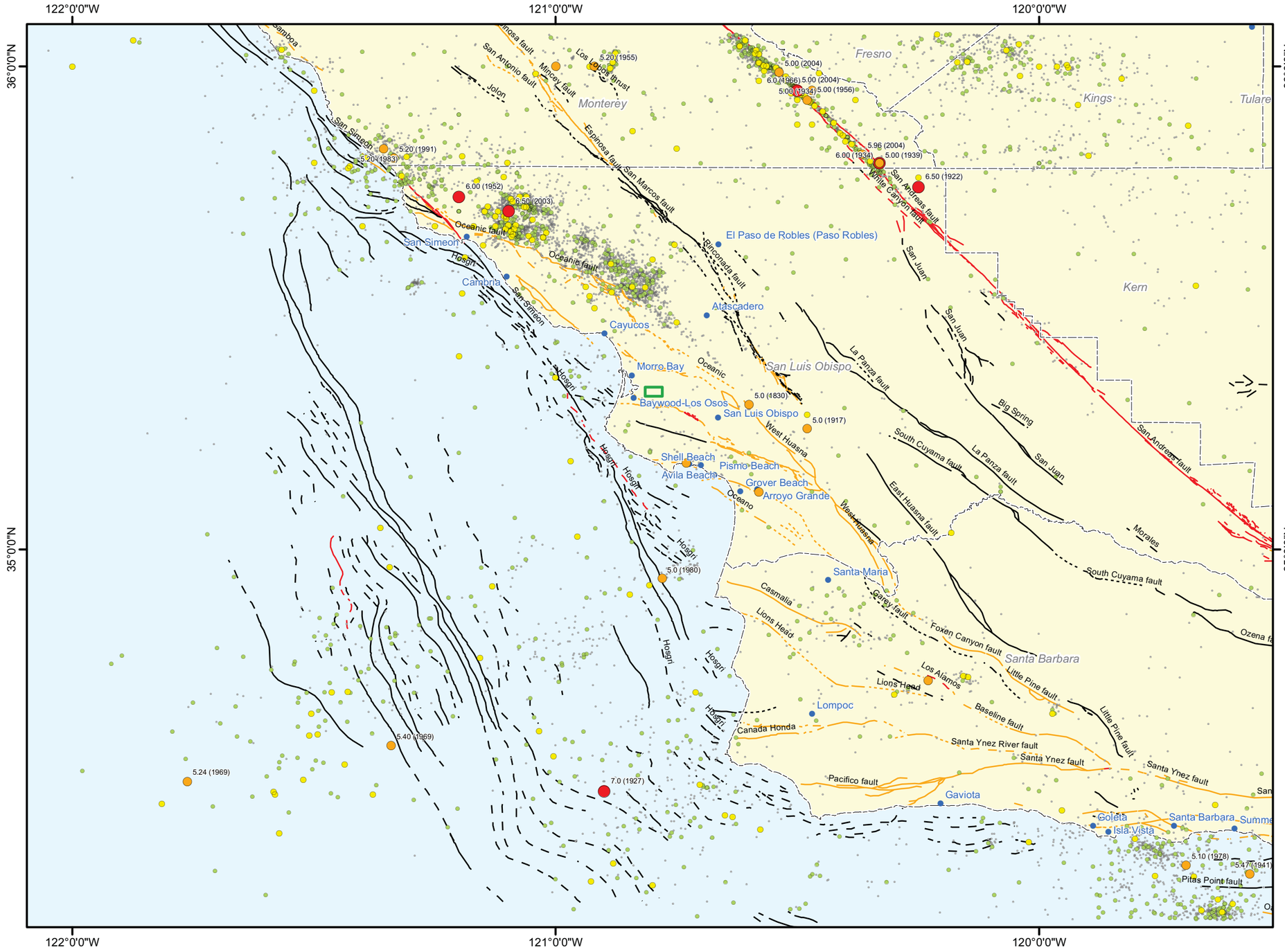
- Fault - Dashed where approximately located; dotted where concealed; U = up/D = down indicates relative sense of displacement; small arrow and number indicate strike and dip of fault exposed in outcrop
- Aerial photo lineament - Or fault-related feature; dashed where less distinct; queried where uncertain; hachures indicate topographic scarp and show direction; ld = linear drainage, tc = tonal contrast, v = vegetation lineament, dd = deflected drainage, bis = break in slope, s = saddle, shb = side hill bench
- Los Osos fault of Hall (1973) - Dashed where approximately located; dotted where concealed
- Edna fault
- Indian Knob fault
- Other faults
- Shoreline angle - Solid where well constrained; double dot dash where concealed; dotted where eroded; altitude shown in meters
- Contact - Dashed where approximately located or inferred; queried where uncertain
- Strike and dip of bedding
- Syncline - Showing trace of axial surfaces and direction of plunge
- Anticline - Showing trace of axial surface and direction of plunge
- Borehole - GS-1 - U.S. Geological Survey (unpublished data, G. Yates, Water Resource Division); MBO-2 - California Department of Water Resources (1972); altitude of subsurface of formations shown in meters
- Borehole - Completed during this study
- Exploratory oil well - Producer, name of well, and depth (meters) are indicated
- Closed depression
- Spring
- Trench location
- Bedrock exposure
- Limit of mapping

NORTH
0 1000 2000
FEET

LOS OSOS FAULT ZONE AND LINEAMENTS

Los Osos Wastewater Project
Tonini Property
San Luis Obispo County, California

PLATE 5



Legend

Project Vicinity

Earthquake Magnitude
Magnitudes equal to and greater than 5 are labeled.

- 2.0 - 2.9
- 3.0 - 3.9
- 4.0 - 4.9
- 5.0 - 5.9
- >6.0

Faults (dashed where inferred, dotted where concealed)

- Active Fault
- Potentially Active Fault
- Inactive Fault

Source:

1) Earthquake Data:
Earthquake epicenters from:
a) ANSS Composite
Catalog Search, 1933 to 2008,
<www.ncedc.org/anss/> (downloaded March 2008)
b) "Seismotectonic framework, coastal central California", Seismotectonics of the Central California Coast Range, Special Paper 292, Geological Society of America, 1994.

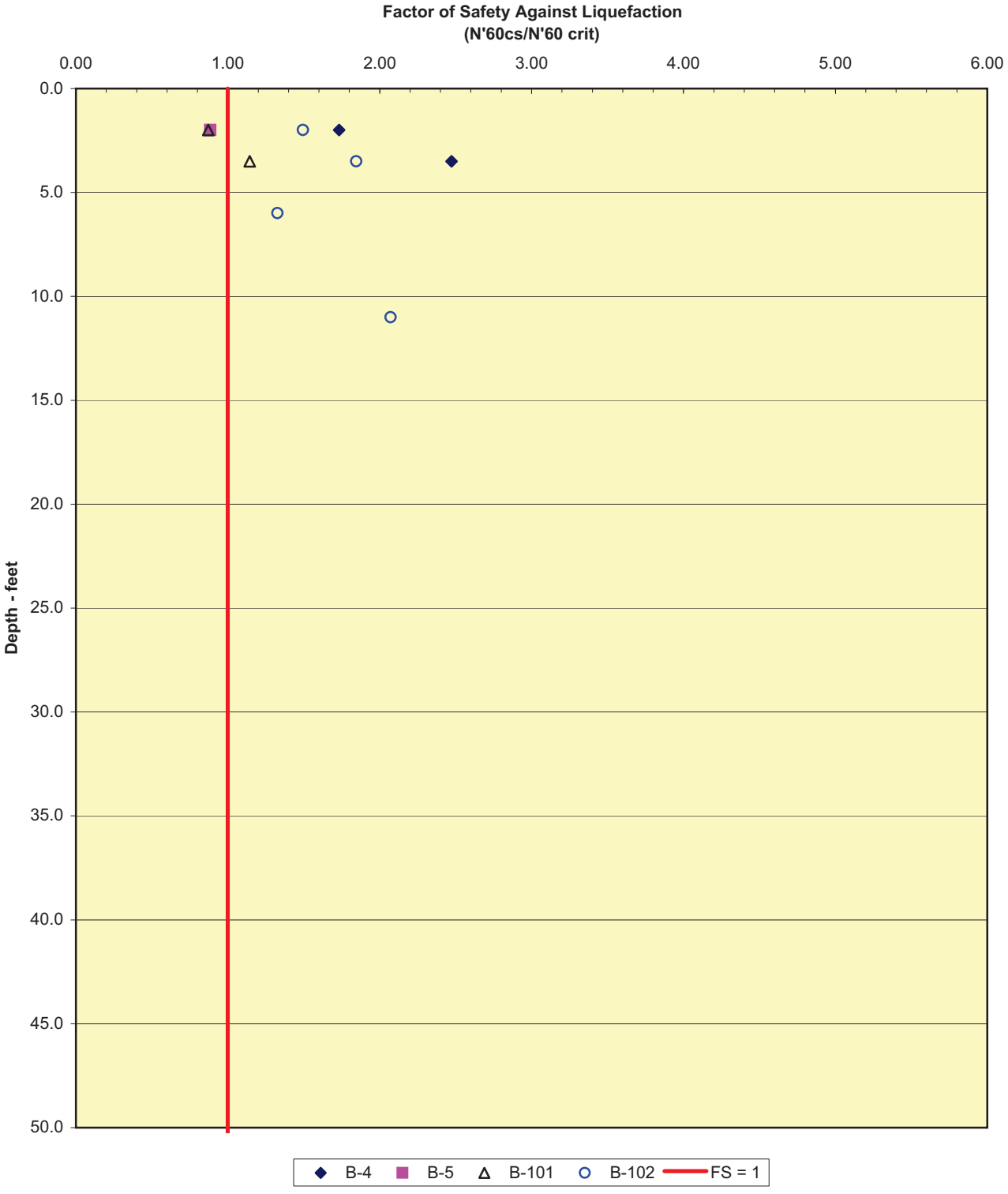
2) Faults:
a) Bryant, 2005
b) Jennings, 1994

N
W E
S

0 7.5 15 30
Miles

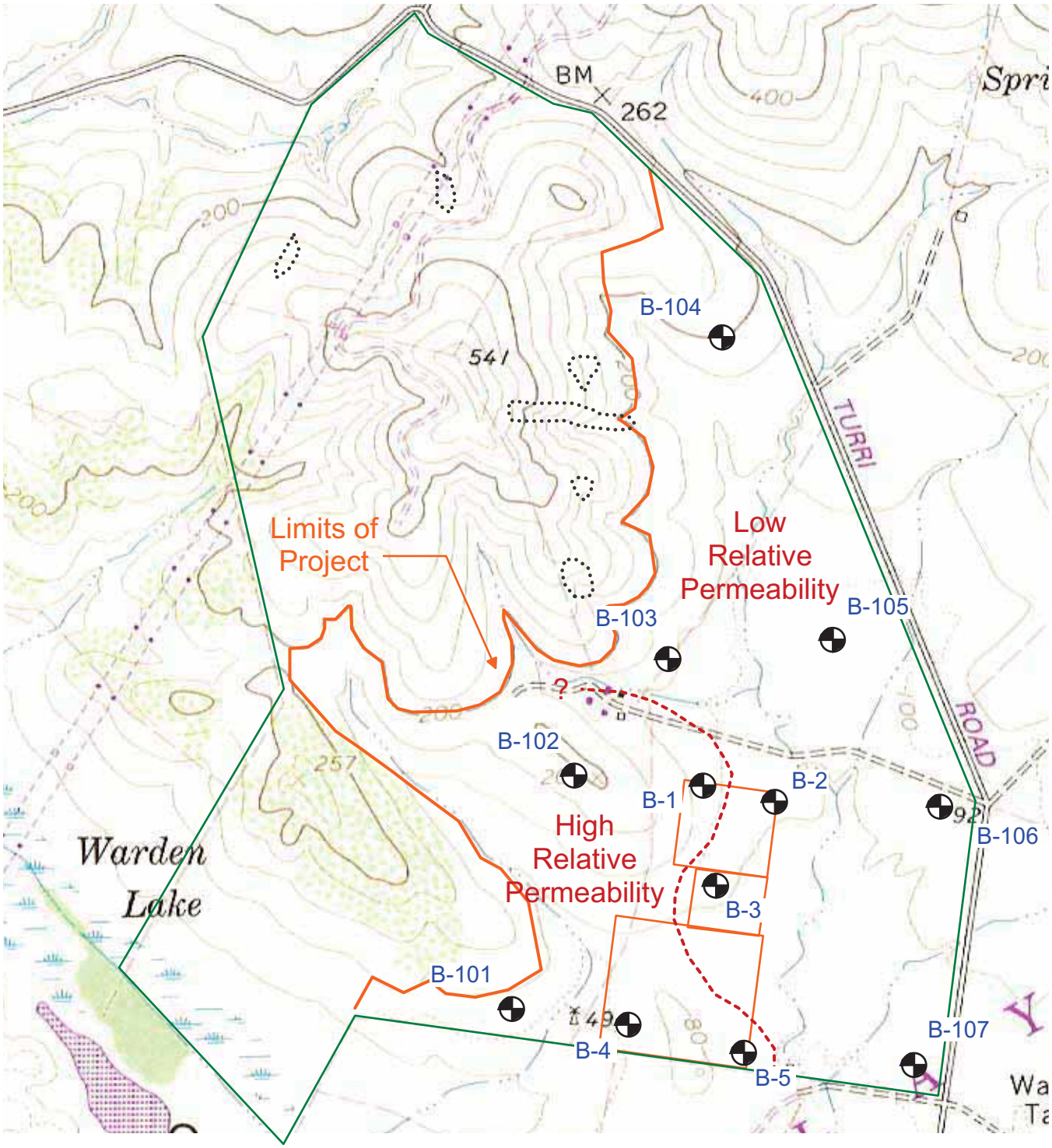
HISTORICAL SEISMICITY MAP
Los Osos Wastewater Project
Tonini Property
San Luis Obispo County, California

N:\Projects\3014_SLOcounty\3014-031_LosOsosWWP_Tonini Property\Outputs\Working\mxd\Plate6-Earthquakes.mxd, 11/13/08, vengls



SUMMARY OF LIQUEFACTION POTENTIAL
Los Osos Wastewater Project
Tonini Property
San Luis Obispo County, California

PLATE 7



BASE MAP SOURCE: USGS Morro Bay South 7.5' Quadrangle, revised 1994.

LEGEND

Features indicative of potential landsliding or slope instability (landslides, debris flows, creep, and erosion)

Interpreted contact between surficial material with relatively high permeability (Qal_1 and Qs) and surficial material with relatively low permeability (Qal_2)

NORTH

0 500 1000

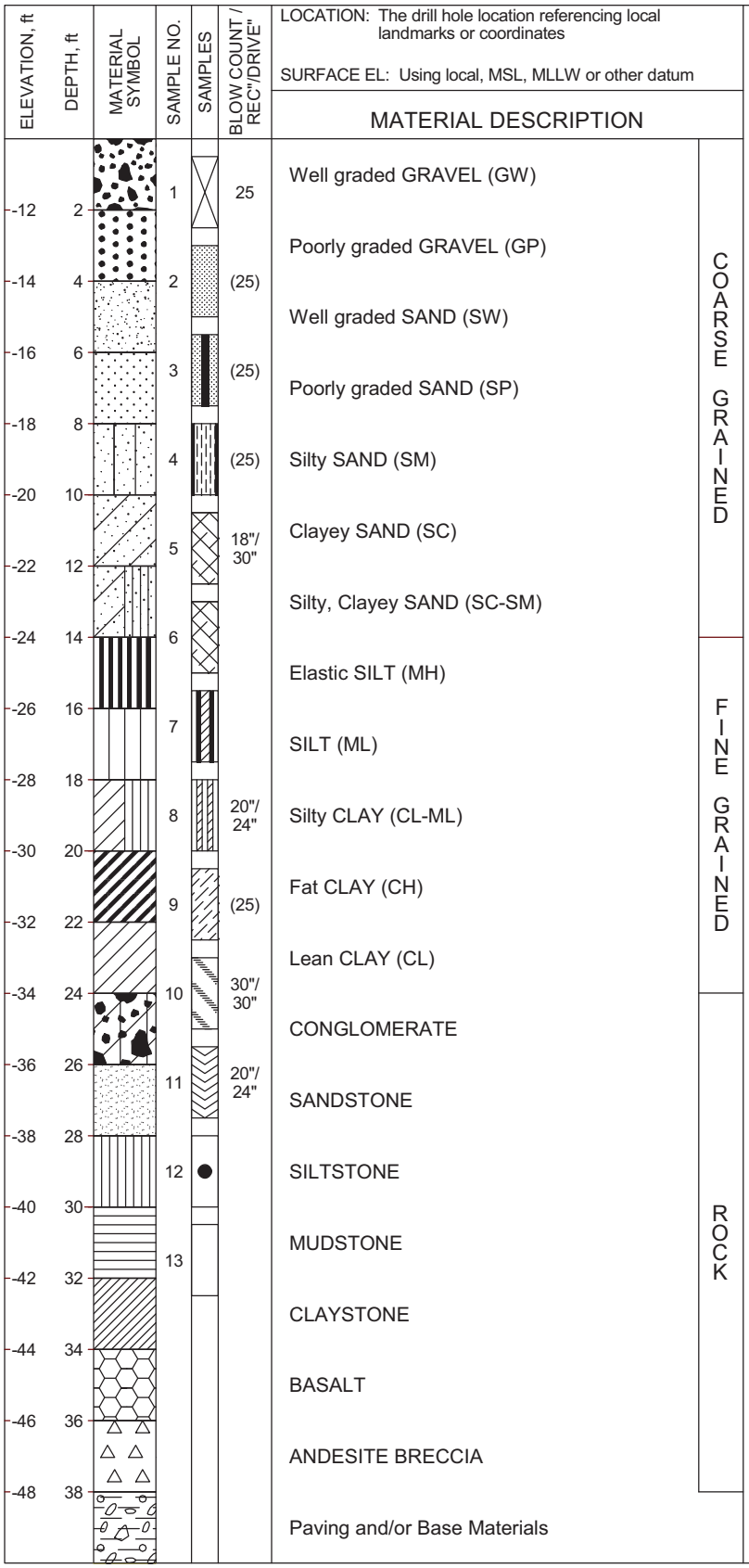
FEET

SOIL CONSTRAINTS MAP

Los Osos Wastewater Project
Tonini Property
San Luis Obispo County, California

PLATE 8

APPENDIX A



General Notes

Soil Texture Symbol

Sloped line in symbol column indicates transitional boundary

Samplers and sampler dimensions (unless otherwise noted in report text) are as follows:

Symbol for:

1	SPT Sampler, driven 1-3/8" ID, 2" OD
2	CA Liner Sampler, driven 2-3/8" ID, 3" OD
3	CA Liner Sampler, disturbed 2-3/8" ID, 3" OD
4	Thin-walled Tube, pushed 2-7/8" ID, 3" OD
5	Bulk Bag Sample (from cuttings)
6	CA Liner Sampler, Bagged
7	Hand Auger Sample
8	CME Core Sample
9	Pitcher Sample
10	Lexan Sample
11	Vibracore Sample
12	No Sample Recovered
13	Sonic Soil Core Sample

Sampler Driving Resistance

Number of blows with 140 lb. hammer, falling 30" to drive sampler 1 ft. after seating sampler 6"; for example,

Blows/ft	Description
25	25 blows drove sampler 12" after initial 6" of seating
86/11"	After driving sampler the initial 6" of seating, 36 blows drove sampler through the second 6" interval, and 50 blows drove the sampler 5" into the third interval
50/6"	50 blows drove sampler 6" after initial 6" of seating
Ref/3"	50 blows drove sampler 3" during initial 6" seating interval

Blow counts for California Liner Sampler shown in ( )

Length of sample symbol approximates recovery length

Classification of Soils per ASTM D2487 or D2488

Geologic Formation noted in bold font at the top of interpreted interval

Strength Legend

Q = Unconfined Compression
u = Unconsolidated Undrained Triaxial
t = Torvane
p = Pocket Penetrometer
m = Miniature Vane

Water Level Symbols

- Initial or perched water level
- Final ground water level
- Seepages encountered

Rock Quality Designation (RQD) is the sum of recovered core pieces greater than 4 inches divided by the length of the cored interval.

KEY TO TERMS & SYMBOLS USED ON LOGS

PLATE A-1

WEATHERING

FRESH	The rock shows no discoloration, loss of strength, or any other effect due to weathering.
SLIGHTLY WEATHERED	Discoloration or oxidation is limited to surface, or short distance from fractures. Body of rock not weakened with exceptions, such as siltstones and shales.
MODERATELY WEATHERED	Discoloration or oxidation extends from fractures usually throughout. Body of rock is slightly weakened.
INTENSELY WEATHERED	Discoloration or oxidation throughout. Usually can be broken with moderate to heavy manual pressure or by light hammer blow.
DECOMPOSED	The rock is discolored and is entirely changed to soil, but the original fabric of the rock is preserved. The properties of the soil depend upon the composition and structure of the parent rock.

FRACTURE DENSITY

UNFRACTURED	No fractures.
VERY SLIGHTLY FRACTURED	Core recovery mostly in lengths greater than 3 feet.
SLIGHTLY FRACTURED	Core recovery mostly in lengths from 1 to 3 feet with scattered lengths less than 1 foot or greater than 3 feet.
MODERATELY FRACTURED	Core recovery mostly 0.3 to 1.0 foot lengths with most lengths about 0.6 foot.
INTENSELY FRACTURED	Lengths average from 0.1 to 0.3 foot with scattered fragmented intervals. Core recovered mostly in lengths less than 0.3 foot.
VERY INTENSELY FRACTURED	Core recovered mostly as chips and fragments with few scattered short core lengths.

BEDDING THICKNESS

MASSIVE	Greater than 10 feet
VERY THICKLY BEDDED	3 to 10 feet
THICKLY BEDDED	1 to 3 feet
MODERATELY BEDDED	0.3 to 1 feet
THINLY	0.1 to 0.3 feet
VERY THINLY	0.03 to 0.1 feet
LAMINATED	Less than 0.03 feet

ROCK HARDNESS

VERY HARD	The rock cannot be scratched with a knife blade.
HARD	Can be scratched with knife with difficulty. Heavy hammer blow required to break specimen.
MODERATELY HARD	Can be scratched with a knife with light to moderate pressure. Core or fragment breaks with moderate hammer blow.
MODERATELY SOFT	Can be grooved 1/16" deep with knife with moderate to heavy pressure. Core or fragment breaks with light hammer blow or heavy manual pressure.
SOFT	Can be gouged easily by knife. Can be scratched with fingernail. Breaks with light to moderate manual pressure.
VERY SOFT	Can be readily indented, grooved, or gouged with fingernail, or carved with knife. Breaks with light manual pressure.

BEDDING/JOINTING

FRACTURES/FOOT: The number of breaks in the core per foot including drilling-induced breaks, breaks from hammering on the core barrel to remove the core, and breaks from naturally occurring planes of weakness in the rock. It does not include intentional breaks in the core made by the logger to fit the core into the box.
Weak zones such as shear zones with many breaks are defined as contributing +50 fractures per foot to the interval.

NUMBER OF SETS: Refers to the number of fracture/joint sets including bedding.

ORIENTATION: Sketches in plan (box) view after realignment of core or alignment of bedding dips. The degree of inclination indicated numerically represents the actual fracture/jointing dip measured.

FRACTURE/JOINTING ROUGHNESS

STEPPED: There are near vertical steps and ridges on the fracture surface.
ROUGH: Large annular asperities, some ridge and high-side angle steps are evident.
SLIGHTLY ROUGH: Asperities are clearly visible and the fracture surface feels abrasive.
SMOOTH: Essentially smooth to touch, may be slickensided.

COMPRESSION-WAVE VELOCITY:

Solid line indicates average values.

MISCELLANEOUS:

Drilling rate varies with pressure on bit.
Core Recovery is the ratio of the length of core recovered in each run to the total length of the core run, in percent.
RQD is the ratio of the sum of the lengths of rock core pieces (4 inches or longer).
Color guide based on Munsell Color System.

TERMS AND DEFINITIONS USED FOR ROCK

LOCATION: Approximately 825' west of creek; approximately 400' south of driveway
N 35 W 121 WGS84

SURFACE EL: 108 ft +/- (rel. MSL datum)

ELEVATION, ft	DEPTH, ft	SAMPLE NO.	SAMPLERS	SAMPLER BLOW COUNT	MATERIAL DESCRIPTION	UNIT WET WEIGHT, pcf	UNIT DRY WEIGHT, pcf	WATER CONTENT, %	% PASSING #200 SIEVE	LIQUID LIMIT, %	PLASTICITY INDEX, %	UNDRAINED SHEAR STRENGTH, S_u, ksf
		A			**ALLUVIUM (Qal1)**							
		1		(16)	Sandy SILT (ML): (Disturbed Agricultural Soil) stiff, brown, dry	117	112	5				p 4.5+
-106	2					130	110	18				
		2		77	Lean CLAY (CL): stiff to hard, brown, moist Silty SAND (SM): very dense, reddish brown, moist			11	20			
-104	4											
		3		(57)	- dense, interbedded with light brown Clayey SAND (SC)	124	111	11				
-102	6											
-100	8											
-98	10	4		26	- medium dense							
-96	12											
-94	14											
		5		(47)	- dense	126	107	18	15			
-92	16											
-90	18											
-88	20	6		42								
-86	22											
-84	24											
-82	26											
-80	28											
-78	30											
-76	32											
-74	34											
-72	36											
-70	38											

The log and data presented are a simplification of actual conditions encountered at the time of drilling at the drilled location. Subsurface conditions may differ at other locations and with the passage of time.

COMPLETION DEPTH: 21.5 ft
DEPTH TO WATER: Not Encountered
BACKFILLED WITH: Cuttings
DRILLING DATE: October 30, 2008

DRILLING METHOD: 8-inch-dia. Hollow Stem Auger
HAMMER TYPE: 140-lb Automatic Trip
DRILLED BY: JET Drilling
LOGGED BY: G D Eckrich
CHECKED BY: J Blanchard

LOG OF BORING NO. B-1

Los Osos WWP, Tonini Property
San Luis Obispo County, California

PLATE A-3

LOCATION: Approximately 375' west of creek; approximately 350' south of driveway
N 35 W 121 WGS84

SURFACE EL: 81 ft +/- (rel. MSL datum)

ELEVATION, ft	DEPTH, ft	SAMPLE NO.	SAMPLERS	SAMPLER BLOW COUNT	MATERIAL DESCRIPTION	UNIT WET WEIGHT, pcf	UNIT DRY WEIGHT, pcf	WATER CONTENT, %	% PASSING #200 SIEVE	LIQUID LIMIT, %	PLASTICITY INDEX, %	UNDRAINED SHEAR STRENGTH, S_u, ksf
80	0	A			**ALLUVIUM (Qal2)**							
		1		(15)	Fat CLAY (CH): (Disturbed Agricultural Soil) very dark brown, moist	125	106	19		77	62	p 4.5+
78	2	2		13	Fat CLAY (CH): stiff to hard, very dark brown, moist							
76	4	3		(12)	**Franciscan Metavolcanics (KJfmv)** "Lean CLAY (CL)": (Residual Soil) medium stiff, olive brown, moist, heterogeneous, approximately 5-10% decomposed angular volcanic clasts	116	98	18				
74	6											
72	8											
70	10	4		62	"Lean CLAY with gravel (CL)": (Residual Soil) very stiff, olive brown, moist, decomposed angular volcanic clasts with oxidation staining							
68	12											
66	14	5		(50/9")	Greenstone (Rx): intensely weathered, very intensely fractured, hard, very dark brown to dark green, moist, oxidation staining							
64	16											
62	18											
60	20	6		ref/5"								
58	22											
56	24											
54	26											
52	28											
50	30											
48	32											
46	34											
44	36											
42	38											

The log and data presented are a simplification of actual conditions encountered at the time of drilling at the drilled location. Subsurface conditions may differ at other locations and with the passage of time.

COMPLETION DEPTH: 20.5 ft
DEPTH TO WATER: Not Encountered
BACKFILLED WITH: Cuttings
DRILLING DATE: October 30, 2008

DRILLING METHOD: 8-inch-dia. Hollow Stem Auger
HAMMER TYPE: 140-lb Automatic Trip
DRILLED BY: JET Drilling
LOGGED BY: G D Eckrich
CHECKED BY: J Blanchard

LOG OF BORING NO. B-2

Los Osos WWP, Tonini Property
San Luis Obispo County, California

PLATE A-4

ELEVATION, ft	DEPTH, ft	MATERIAL SYMBOL	SAMPLE NO.	SAMPLERS	SAMPLER BLOW COUNT	LOCATION: Approximately 520' west of creek; approximately 1000' south of driveway N 35 W 121 WGS84 SURFACE EL: 79 ft +/- (rel. MSL datum) MATERIAL DESCRIPTION	UNIT WET WEIGHT, pcf	UNIT DRY WEIGHT, pcf	WATER CONTENT, %	% PASSING #200 SIEVE	LIQUID LIMIT, %	PLASTICITY INDEX, %	UNDRAINED SHEAR STRENGTH, S_u, ksf
78	0		A			**ALLUVIUM (Qal2)**							
			1		(18)	Fat CLAY with sand (CH): (Disturbed Agricultural Soil) stiff to hard, very dark gray, moist	130	115	13				p 4.5+
76	2		2		11				17				
	4					Fat CLAY (CH): stiff, reddish brown, moist, black mottling							
74			3		(22)		130	110	19		55	41	
	6												
72	8												
70													
	10		4		19	- stiff to hard							p 4.5+
68	12												
66													
	14					**Franciscan Metavolcanics (KJfmv)**							
64			5		(44)	"Fat CLAY with gravel (CH)": (Residual Soil) very stiff, reddish brown to light brown, moist, abundant oxidation staining, angular volcanic clasts up to 3/4" diameter	121	100	21				
	16												
62	18												
60													
	20		6		(50)	Greenstone (Rx): weathered to Clayey GRAVEL with Sand (GC), decomposed, very intensely fractured, very soft, red brown to olive brown, moist							
58	22												
56													
	24												
54			7		11	- wet, approximately 3" seam of green Silty SAND (SM)							
	26												
52													
	28												
50													
	30		8		(50/3")								
48													
	32												
46													
	34												
44			9		50/9"	- very dark gray							
	36												
42													
	38												
40						Greenstone (Rx): moderately weathered, hard, red to							

The log and data presented are a simplification of actual conditions encountered at the time of drilling at the drilled location. Subsurface conditions may differ at other locations and with the passage of time.

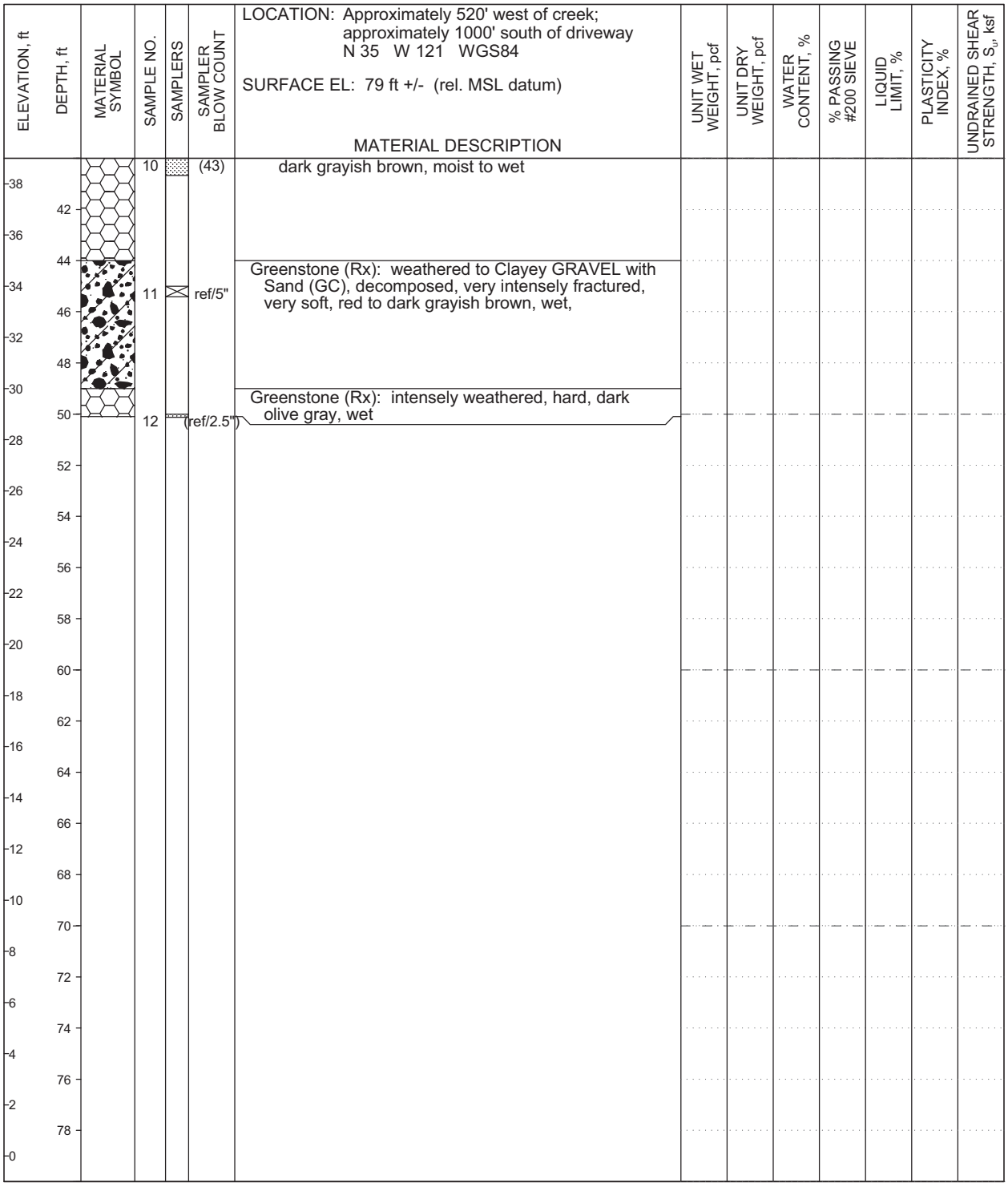
COMPLETION DEPTH: 50.1 ft
DEPTH TO WATER: 27.0 ft
BACKFILLED WITH: Cuttings
DRILLING DATE: October 30, 2008

DRILLING METHOD: 8-inch-dia. Hollow Stem Auger
HAMMER TYPE: 140-lb Automatic Trip
DRILLED BY: JET Drilling
LOGGED BY: G D Eckrich
CHECKED BY: J Blanchard

LOG OF BORING NO. B-3

Los Osos WWP, Tonini Property
San Luis Obispo County, California

PLATE A-5a



The log and data presented are a simplification of actual conditions encountered at the time of drilling at the drilled location. Subsurface conditions may differ at other locations and with the passage of time.

COMPLETION DEPTH: 50.1 ft
DEPTH TO WATER: 27.0 ft
BACKFILLED WITH: Cuttings
DRILLING DATE: October 30, 2008

DRILLING METHOD: 8-inch-dia. Hollow Stem Auger
HAMMER TYPE: 140-lb Automatic Trip
DRILLED BY: JET Drilling
LOGGED BY: G D Eckrich
CHECKED BY: J Blanchard

LOG OF BORING NO. B-3

Los Osos WWP, Tonini Property
San Luis Obispo County, California

PLATE A-5b

LOCATION: Approximately 1200' west of creek; approximately 120' north of fence line
N 35 W 121 WGS84

SURFACE EL: 60 ft +/- (rel. MSL datum)

ELEVATION, ft	DEPTH, ft	SAMPLE NO.	SAMPLERS	SAMPLER BLOW COUNT	MATERIAL DESCRIPTION	UNIT WET WEIGHT, pcf	UNIT DRY WEIGHT, pcf	WATER CONTENT, %	% PASSING #200 SIEVE	LIQUID LIMIT, %	PLASTICITY INDEX, %	UNDRAINED SHEAR STRENGTH, S_u, ksf
		A			**ALLUVIUM (Qal1)**							
		1		(18)	Silty SAND (SM): (Disturbed Agricultural Soil) medium dense, light brown, dry	118	112	5	32			
-58	2	2		15	- oxidation and black mottling							
-56	4											
		3		(24)	Lean CLAY (CL): very stiff, reddish brown, moist	122	96	27				p 3.8
-54	6											
-52	8											
-50	10	4		43								
					Clayey SAND (SC): dense, yellowish brown, moist, gradational contact with unit above			10	27			
-48	12											
-46	14				Poorly-graded SAND (SP): medium dense, light brown, moist							
		5		(29)								
-44	16				Lean CLAY (CL): very stiff to hard, reddish brown, moist							p 4.3
-42	18											
-40	20	6		23								
-38	22											
-36	24											
-34	26											
-32	28											
-30	30											
-28	32											
-26	34											
-24	36											
-22	38											

The log and data presented are a simplification of actual conditions encountered at the time of drilling at the drilled location. Subsurface conditions may differ at other locations and with the passage of time.

COMPLETION DEPTH: 21.5 ft
DEPTH TO WATER: Not Encountered
BACKFILLED WITH: Cuttings
DRILLING DATE: October 30, 2008

DRILLING METHOD: 8-inch-dia. Hollow Stem Auger
HAMMER TYPE: 140-lb Automatic Trip
DRILLED BY: JET Drilling
LOGGED BY: G D Eckrich
CHECKED BY: J Blanchard

LOG OF BORING NO. B-4

Los Osos WWP, Tonini Property
San Luis Obispo County, California

PLATE A-6

ELEVATION, ft	DEPTH, ft	MATERIAL SYMBOL	SAMPLE NO.	SAMPLERS	SAMPLER BLOW COUNT	LOCATION: Approximately 400' west of creek; approximately 80' north of fence line N 35 W 121 WGS84 SURFACE EL: 78 ft +/- (rel. MSL datum) MATERIAL DESCRIPTION	UNIT WET WEIGHT, pcf	UNIT DRY WEIGHT, pcf	WATER CONTENT, %	% PASSING #200 SIEVE	LIQUID LIMIT, %	PLASTICITY INDEX, %	UNDRAINED SHEAR STRENGTH, S_u, ksf
			A			**ALLUVIUM (Qal1)**							
			1		(10)	Silty SAND (SM): (Disturbed Agricultural Soil) loose, reddish brown, moist	108	104	4	16			
-76	2		2		15	Sandy CLAY (CL): stiff, light brown to reddish brown, moist, abundant oxidation mottling							
-74	4												
			3		(26)	- stiff to hard	132	113	16				p 4.5+ p 4.0
-72	6												
-70	8												
-68	10		4		21								p 4.5+ p 2.5
						Franciscan Metavolcanics (KJfmv) "Lean CLAY with sand (CL)": (Residual Soil) stiff to hard, reddish brown, moist, black mottling, weathered volcanic clasts							
-66	12												
-64	14												
						Franciscan Metavolcanics (KJfmv)							
			5		(26)	Greenstone (Rx): weathered to Clayey SAND (SC), decomposed, soft, pale brown to reddish brown, moist, approximately 5-10% black stringers, pockets of Sandy CLAY (CL)							
-62	16												
-60	18												
-58	20		6		29								
-56	22												
-54	24												
-52	26												
-50	28												
-48	30												
-46	32												
-44	34												
-42	36												
-40	38												

The log and data presented are a simplification of actual conditions encountered at the time of drilling at the drilled location. Subsurface conditions may differ at other locations and with the passage of time.

COMPLETION DEPTH: 21.5 ft
DEPTH TO WATER: Not Encountered
BACKFILLED WITH: Cuttings
DRILLING DATE: October 30, 2008

DRILLING METHOD: 8-inch-dia. Hollow Stem Auger
HAMMER TYPE: 140-lb Automatic Trip
DRILLED BY: JET Drilling
LOGGED BY: G D Eckrich
CHECKED BY: J Blanchard

LOG OF BORING NO. B-5

Los Osos WWP, Tonini Property
San Luis Obispo County, California

PLATE A-7

LOCATION: Approximately 300' west of drainage swale; approximately 80' north of fence line
N 35 W 121 WGS84

SURFACE EL: 72 ft +/- (rel. MSL datum)

ELEVATION, ft	DEPTH, ft	MATERIAL SYMBOL	SAMPLE NO.	SAMPLERS	SAMPLER BLOW COUNT	MATERIAL DESCRIPTION	UNIT WET WEIGHT, pcf	UNIT DRY WEIGHT, pcf	WATER CONTENT, %	% PASSING #200 SIEVE	LIQUID LIMIT, %	PLASTICITY INDEX, %	UNDRAINED SHEAR STRENGTH, S_u, ksf
70	2		1		(9)	**ALLUVIUM (Qal1)** Silty SAND (SM): (Disturbed Agricultural Soil) dark reddish brown, moist	116	107	7	20			
			2		7	Silty SAND (SM): loose, dark reddish brown, moist, oxidation mottling							
68	4					Lean CLAY with sand (CL): medium stiff, brown, moist							
66	6		3		(29)	- very stiff, pale brown to reddish brown, oxidation mottling							
64	8												
62	10		4		19	Clayey SAND (SC): medium dense, pale brown to reddish brown, moist, black mottling							
60	12												
58	14												
56	16												
54	18												
52	20												
50	22												
48	24												
46	26												
44	28												
42	30												
40	32												
38	34												
36	36												
34	38												

The log and data presented are a simplification of actual conditions encountered at the time of drilling at the drilled location. Subsurface conditions may differ at other locations and with the passage of time.

COMPLETION DEPTH: 11.5 ft
DEPTH TO WATER: Not Encountered
BACKFILLED WITH: Cuttings
DRILLING DATE: October 30, 2008

DRILLING METHOD: 8-inch-dia. Hollow Stem Auger
HAMMER TYPE: 140-lb Automatic Trip
DRILLED BY: JET Drilling
LOGGED BY: G D Eckrich
CHECKED BY: J Blanchard

LOG OF BORING NO. B-101

Los Osos WWP, Tonini Property
San Luis Obispo County, California

PLATE A-8

LOCATION: Approximately 1700' west of creek; approximately 900' south of barn
N 35 W 121 WGS84

SURFACE EL: 200 ft +/- (rel. MSL datum)

ELEVATION, ft	DEPTH, ft	SAMPLE NO.	SAMPLERS	SAMPLER BLOW COUNT	MATERIAL DESCRIPTION	UNIT WET WEIGHT, pcf	UNIT DRY WEIGHT, pcf	WATER CONTENT, %	% PASSING #200 SIEVE	LIQUID LIMIT, %	PLASTICITY INDEX, %	UNDRAINED SHEAR STRENGTH, S_u, ksf
198	2	1		(17)	**Dune Sand Deposits (Qs)** Silty SAND (SM): (Disturbed Agricultural Soil) light brown, moist	101	99	2	21			
		2		12	Silty SAND (SM): medium dense, light brown to pale brown, dry							
196	4											
		3		(17)	- reddish brown, moist							
194	6											
192	8											
190	10	4		20								
188	12											
186	14											
184	16											
182	18											
180	20											
178	22											
176	24											
174	26											
172	28											
170	30											
168	32											
166	34											
164	36											
162	38											

The log and data presented are a simplification of actual conditions encountered at the time of drilling at the drilled location. Subsurface conditions may differ at other locations and with the passage of time.

COMPLETION DEPTH: 11.5 ft
DEPTH TO WATER: Not Encountered
BACKFILLED WITH: Cuttings
DRILLING DATE: October 30, 2008

DRILLING METHOD: 8-inch-dia. Hollow Stem Auger
HAMMER TYPE: 140-lb Automatic Trip
DRILLED BY: JET Drilling
LOGGED BY: G D Eckrich
CHECKED BY: J Blanchard

LOG OF BORING NO. B-102

Los Osos WWP, Tonini Property
San Luis Obispo County, California

PLATE A-9

LOCATION: Approximately 10' east of fence line; approximately 400' north of driveway
N 35 W 121 WGS84

SURFACE EL: 127 ft +/- (rel. MSL datum)

ELEVATION, ft	DEPTH, ft	SAMPLE NO.	SAMPLERS	SAMPLER BLOW COUNT	MATERIAL DESCRIPTION	UNIT WET WEIGHT, pcf	UNIT DRY WEIGHT, pcf	WATER CONTENT, %	% PASSING #200 SIEVE	LIQUID LIMIT, %	PLASTICITY INDEX, %	UNDRAINED SHEAR STRENGTH, S_u, ksf
126	0				**ALLUVIUM (Qal2)**							
	2	1		(17)	Fat CLAY (CH): (Disturbed Agricultural Soil) very dark brown, moist	117	93	26		84	63	
124		2		12	Fat CLAY (CH): stiff, very dark brown to brown, moist							
	4											
122		3		(34)	**COLLUVIUM (Qcol)** Lean CLAY (CL): very stiff, olive brown, moist, non-homogeneous, fissured with oxidized shear planes							
	6											
120	8											
118					**Franciscan Metavolcanics (KJfmv)**							
	10	4		47	"Gravelly Lean CLAY (CL)": (Residual Soil) hard, olive brown, moist, moderately weathered angular volcanic clasts with oxidation staining							
116	12											
114	14											
112	16											
110	18											
108	20											
106	22											
104	24											
102	26											
100	28											
98	30											
96	32											
94	34											
92	36											
90	38											
88												

The log and data presented are a simplification of actual conditions encountered at the time of drilling at the drilled location. Subsurface conditions may differ at other locations and with the passage of time.

COMPLETION DEPTH: 11.5 ft
DEPTH TO WATER: Not Encountered
BACKFILLED WITH: Cuttings
DRILLING DATE: October 30, 2008

DRILLING METHOD: 8-inch-dia. Hollow Stem Auger
HAMMER TYPE: 140-lb Automatic Trip
DRILLED BY: JET Drilling
LOGGED BY: G D Eckrich
CHECKED BY: J Blanchard

LOG OF BORING NO. B-103

Los Osos WWP, Tonini Property
San Luis Obispo County, California

PLATE A-10

LOCATION: Approximately 1500' northeast of gravel pit; approximately 500' west of Turri Road
N 35 W 121 WGS84

SURFACE EL: 220 ft +/- (rel. MSL datum)

ELEVATION, ft	DEPTH, ft	SAMPLE NO.	SAMPLERS	SAMPLER BLOW COUNT	MATERIAL DESCRIPTION	UNIT WET WEIGHT, pcf	UNIT DRY WEIGHT, pcf	WATER CONTENT, %	% PASSING #200 SIEVE	LIQUID LIMIT, %	PLASTICITY INDEX, %	UNDRAINED SHEAR STRENGTH, S_u, ksf
		1		(22)	**COLLUVIUM (Qcol)** Fat CLAY (CH): (Disturbed Agricultural Soil) very dark brown, dry	105	96	10				
-218	2	2		32	**Franciscan Melange (KJfm)** "Fat CLAY (CH)": (Residual Soil) stiff to hard, brown to very dark brown, dry							
-216	4											
		3		(64)	CLAYSTONE (Rx): "Fat CLAY (CH)" intensely weathered, soft, bluish gray, dry							
-214	6											
-212	8											
-210	10	4		41								
-208	12											
-206	14											
-204	16											
-202	18											
-200	20											
-198	22											
-196	24											
-194	26											
-192	28											
-190	30											
-188	32											
-186	34											
-184	36											
-182	38											

The log and data presented are a simplification of actual conditions encountered at the time of drilling at the drilled location. Subsurface conditions may differ at other locations and with the passage of time.

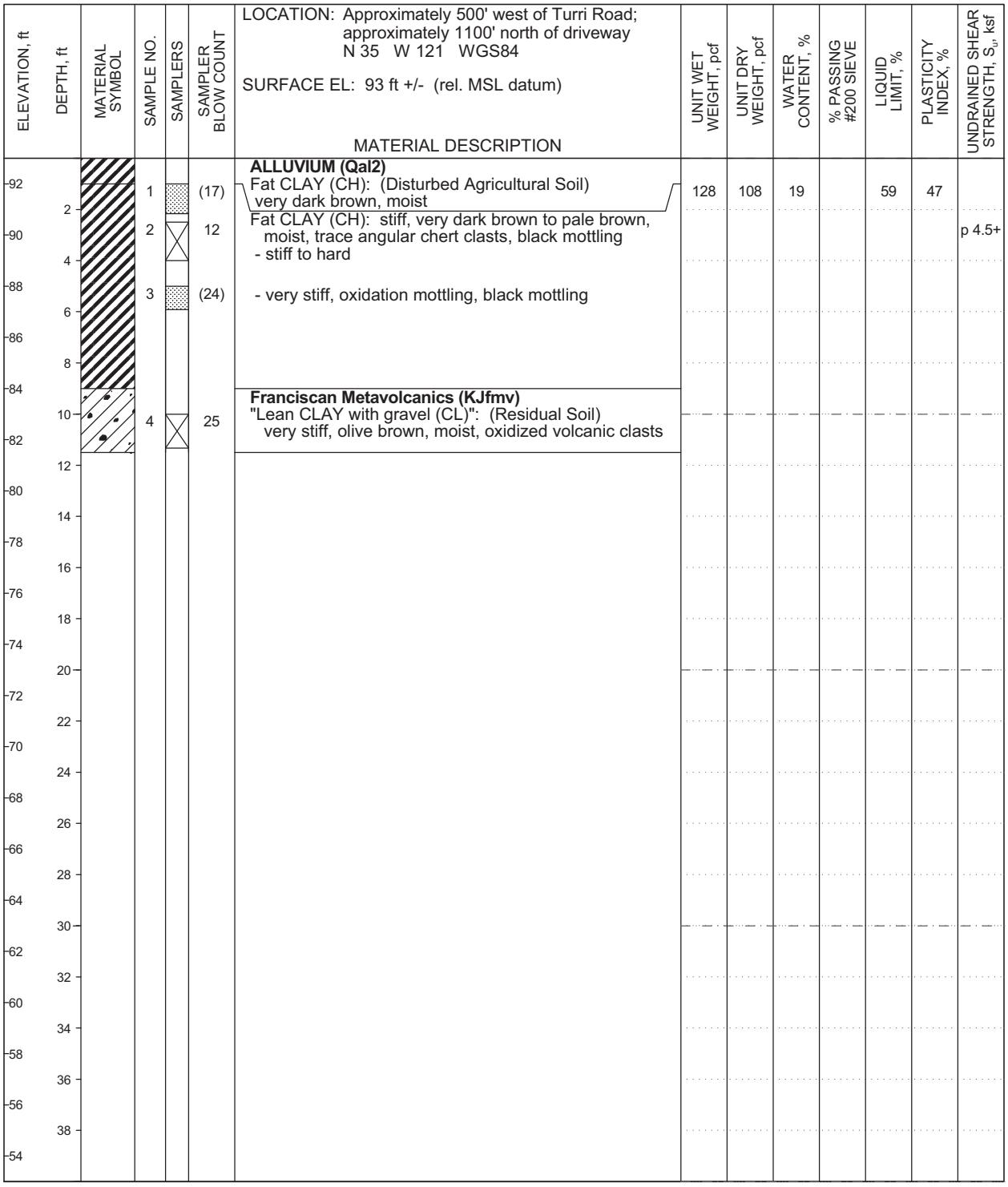
COMPLETION DEPTH: 11.5 ft
DEPTH TO WATER: Not Encountered
BACKFILLED WITH: Cuttings
DRILLING DATE: October 31, 2008

DRILLING METHOD: 8-inch-dia. Hollow Stem Auger
HAMMER TYPE: 140-lb Automatic Trip
DRILLED BY: JET Drilling
LOGGED BY: G D Eckrich
CHECKED BY: J Blanchard

LOG OF BORING NO. B-104

Los Osos WWP, Tonini Property
San Luis Obispo County, California

PLATE A-11



The log and data presented are a simplification of actual conditions encountered at the time of drilling at the drilled location. Subsurface conditions may differ at other locations and with the passage of time.

COMPLETION DEPTH: 11.5 ft
DEPTH TO WATER: Not Encountered
BACKFILLED WITH: Cuttings
DRILLING DATE: October 30, 2008

DRILLING METHOD: 8-inch-dia. Hollow Stem Auger
HAMMER TYPE: 140-lb Automatic Trip
DRILLED BY: JET Drilling
LOGGED BY: G D Eckrich
CHECKED BY: J Blanchard

LOG OF BORING NO. B-105

Los Osos WWP, Tonini Property
San Luis Obispo County, California

PLATE A-12

LOCATION: Approximately 200' west of Turri Road; approximately 20' south of driveway
N 35 W 121 WGS84

SURFACE EL: 90 ft +/- (rel. MSL datum)

ELEVATION, ft	DEPTH, ft	SAMPLE NO.	SAMPLERS	SAMPLER BLOW COUNT	MATERIAL DESCRIPTION	UNIT WET WEIGHT, pcf	UNIT DRY WEIGHT, pcf	WATER CONTENT, %	% PASSING #200 SIEVE	LIQUID LIMIT, %	PLASTICITY INDEX, %	UNDRAINED SHEAR STRENGTH, S_u, ksf
					ALLUVIUM (Qal2)							
		1		(17)	Fat CLAY (CH): (Disturbed Agricultural Soil) very dark brown, moist	128	110	17				
-88	2	2		13	Fat CLAY (CH): stiff, very dark brown to olive brown, moist, approximately 5% subangular clasts							
-86	4				- stiff to very stiff, oxidation and black mottling							p 4.5+
		3		(31)		139	117	18				
-84	6											
-82	8											
-80	10	4		25	- very stiff to hard							p 3.5
-78	12				**Franciscan Metavolcanics (KJfmv)** "Clayey GRAVEL (GC)": (Residual Soil) very dark brown, moist, moderately weathered angular volcanic clasts							
-76	14											
-74	16											
-72	18											
-70	20											
-68	22											
-66	24											
-64	26											
-62	28											
-60	30											
-58	32											
-56	34											
-54	36											
-52	38											

The log and data presented are a simplification of actual conditions encountered at the time of drilling at the drilled location. Subsurface conditions may differ at other locations and with the passage of time.

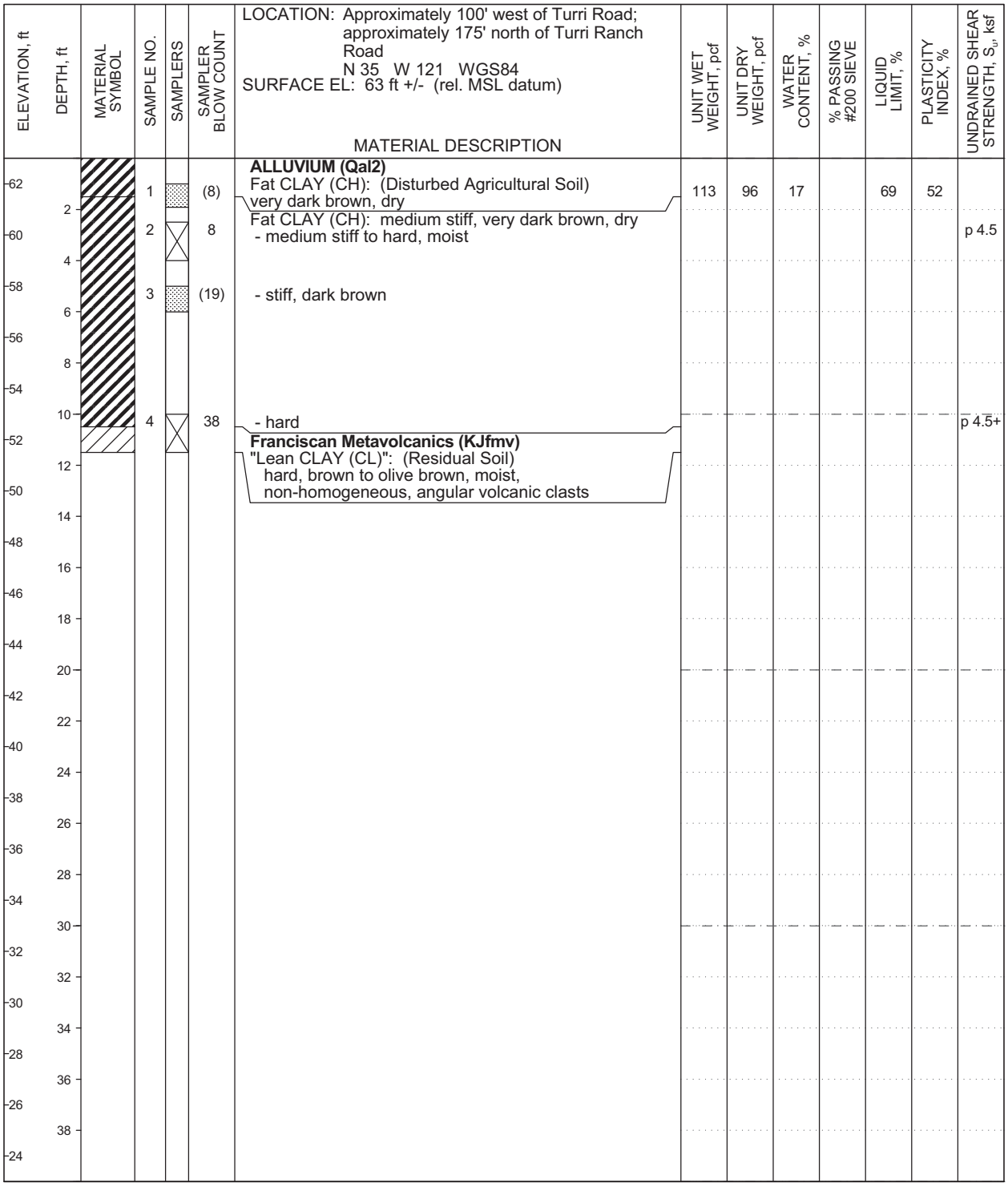
COMPLETION DEPTH: 11.5 ft
DEPTH TO WATER: Not Encountered
BACKFILLED WITH: Cuttings
DRILLING DATE: October 30, 2008

DRILLING METHOD: 8-inch-dia. Hollow Stem Auger
HAMMER TYPE: 140-lb Automatic Trip
DRILLED BY: JET Drilling
LOGGED BY: G D Eckrich
CHECKED BY: J Blanchard

LOG OF BORING NO. B-106

Los Osos WWP, Tonini Property
San Luis Obispo County, California

PLATE A-13



The log and data presented are a simplification of actual conditions encountered at the time of drilling at the drilled location. Subsurface conditions may differ at other locations and with the passage of time.

COMPLETION DEPTH: 11.5 ft
DEPTH TO WATER: Not Encountered
BACKFILLED WITH: Cuttings
DRILLING DATE: October 31, 2008

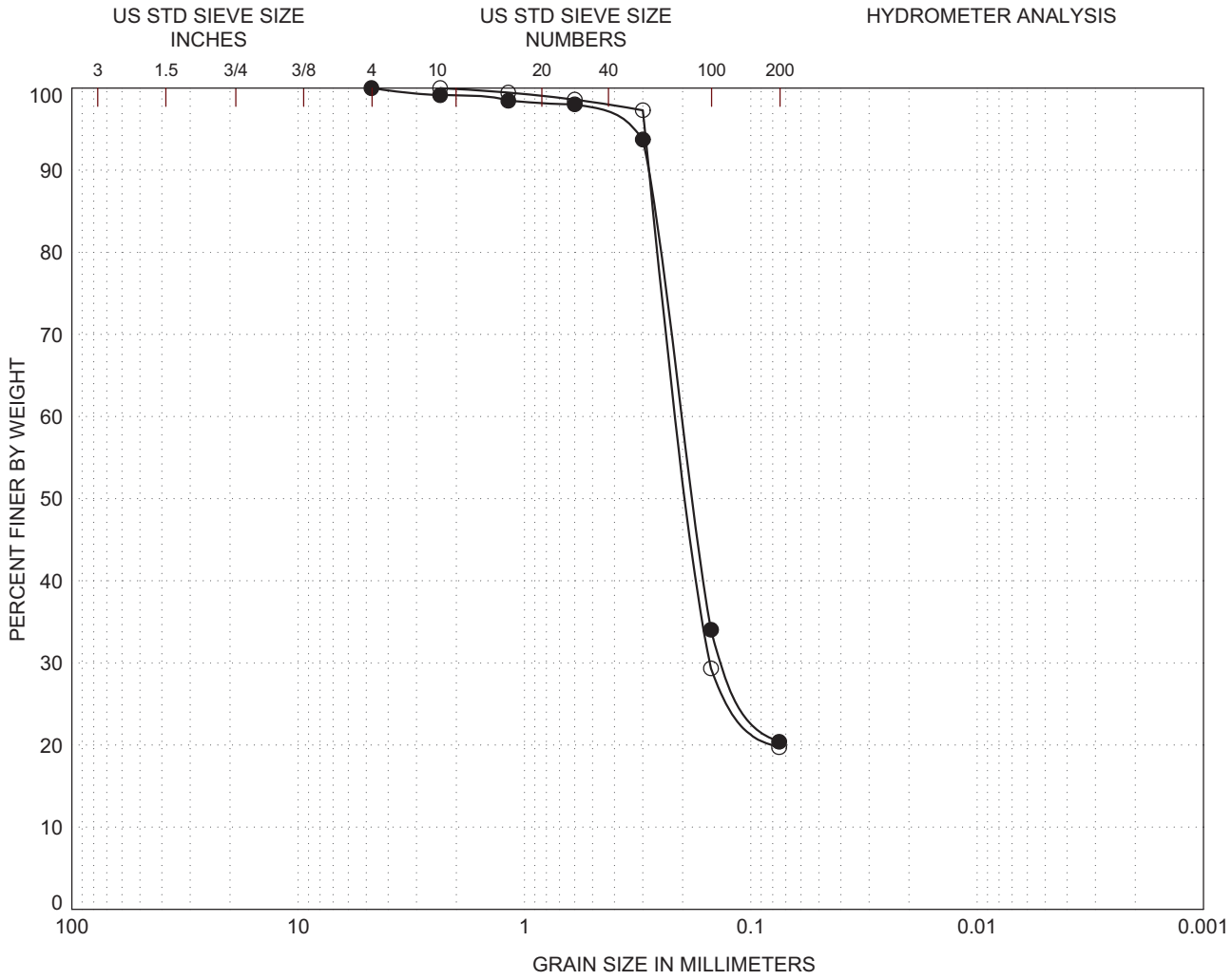
DRILLING METHOD: 8-inch-dia. Hollow Stem Auger
HAMMER TYPE: 140-lb Automatic Trip
DRILLED BY: JET Drilling
LOGGED BY: G D Eckrich
CHECKED BY: J Blanchard

LOG OF BORING NO. B-107

Los Osos WWP, Tonini Property
San Luis Obispo County, California

PLATE A-14

APPENDIX B

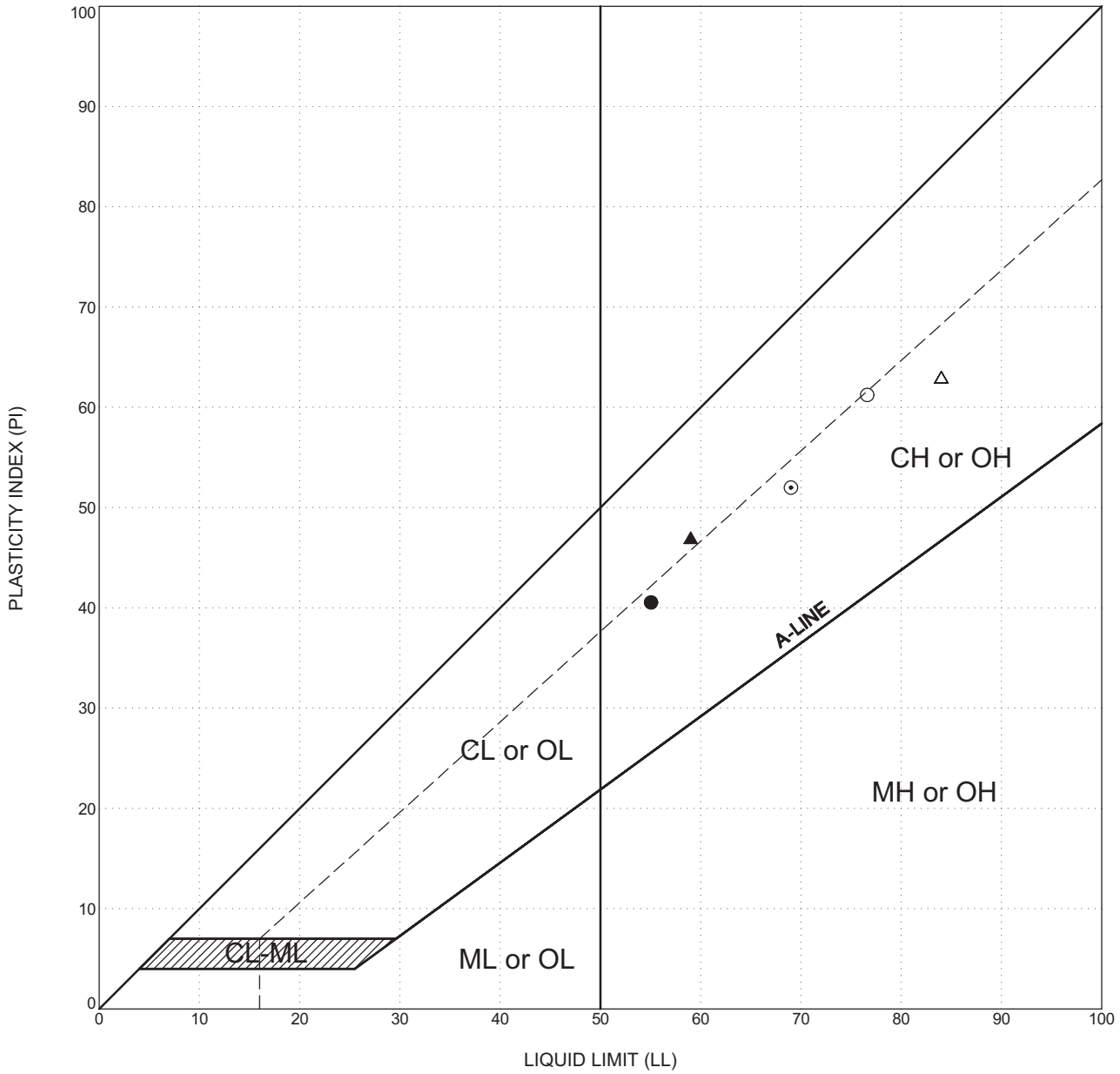


GRAVEL		SAND			SILT or CLAY
Coarse	Fine	Coarse	Medium	Fine	

LEGEND	(location)	(depth,ft)	CLASSIFICATION	Cc	Cu
○	B-1	2.5	Silty SAND (SM)		
●	B-101	1.0	Silty SAND (SM)		

GRAIN SIZE CURVES
Los Osos WWP, Tonini Property
San Luis Obispo County, California

PLATE B-1



LEGEND			CLASSIFICATION	ATTERBERG LIMITS TEST RESULTS		
	location	depth, ft		LIQUID LIMIT(LL)	PLASTIC LIMIT(PL)	PLASTICITY INDEX (PI)
○	B-2	1.0	Fat CLAY (CH)	77	15	62
●	B-3	5.0	Fat CLAY (CH)	55	14	41
△	B-103	1.0	Fat CLAY (CH)	84	21	63
▲	B-105	1.0	Fat CLAY (CH)	59	12	47
⊙	B-107	1.0	Fat CLAY (CH)	69	17	52

PLASTICITY CHART
Los Osos WWP, Tonini Property
San Luis Obispo County, California

PLATE B-2

Drill Hole	Depth (ft)	Soil Type	Initial Dry Density, pcf	Initial Moisture Content	Permeability, cm/s
B-101	1.0	Silty SAND (SM)	105.9	7.5%	$8.8x10^{-5}$
B-102	1.0	Silty SAND (SM)	67.2	49.6%	$1.1x10^{-3}$
B-103	1.0	Fat CLAY (CH)	97.4	25.8%	$3.1x10^{-9}$
B-105	1.0	Fat CLAY (CH)	108.0	19.0%	$2.3x10^{-9}$
B-106	5.0	Fat CLAY (CH)	112.2	18.0%	$2.0x10^{-8}$
B-107	1.0	Fat CLAY (CH)	105.8	17.5%	$4.4x10^{-8}$

Test Method: ASTM D5084, Method A
ASTM D2434 for B-101 at 1.0 foot and B-102 at 1.0 foot

PERMEABILITY TEST RESULTS

Boring, Sample No., and Depth	B-3, Sample A, 0 to 5 feet
Initial Water Content, %	10.6
Initial Dry Unit Weight, pcf	104.5
Assumed Specific Gravity, G_s	2.70
Degree of Saturation, %	46.9
Final Water Content, %	26.1
$EI_{measured}$	109
EI_{50}	**105**
ASTM Expansion Potential	**High**
Description:	**Fat CLAY (CH)**

Boring, Sample No., and Depth	B-3, Samples 1 & 2 1 to 4 feet
Initial Water Content, %	11.2
Initial Dry Unit Weight, pcf	104.2
Assumed Specific Gravity, G_s	2.70
Degree of Saturation, %	48.9
Final Water Content, %	24.9
$EI_{measured}$	94
EI_{50}	**93**
ASTM Expansion Potential	**High**
Description:	**Fat CLAY with SAND (CH)**

EXPANSION INDEX TEST RESULTS
Los Osos WWP, Tonini Property
San Luis Obispo County, California

Q.8 - TECHNICAL REPORT: BIOLOGY

Michael Brandman Associates

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Palm Springs
760.322.8847

Sacramento
916.447.1100

San Bernardino
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San Ramon
925.830.2733

March 26, 2009

Mark Hutchinson, Environmental Programs Manager
County of San Luis Obispo
Department of Public Works, Environmental Programs Division

Subject: **Biological Resources Letter Report – Additional Surveys for Tonini Sprayfields, Los Osos Wastewater Project**

Dear Mr. Hutchinson:

At the request of the County of San Luis Obispo (County), Michael Brandman Associates has completed a Biological Resources Letter Report as an addendum to existing environmental documentation prepared for the Los Osos Wastewater Project located within unincorporated San Luis Obispo County, California.

The enclosed letter report addresses the findings of a one-day reconnaissance-level survey conducted within the areas proposed for sprayfields on the Tonini property. The findings of the survey are documented within this addendum letter report to facilitate the preparation of the Final Environmental Impact Report and Preferred Project Evaluation for the Los Osos Wastewater Project. The primary purpose of the survey was to document existing conditions within an approximately 73-acre area that is proposed for additional treated effluent disposal through sprayfields and evapotranspiration. The survey also confirmed the presence of the non-listed rare plant, Blochman's dudleya (*Dudleya blochmaniae* ssp. *blochmaniae*), and two potential den sites for the California State species of special concern, American badger (*Taxidea taxus*). The survey also confirmed the location of areas on the property that are targeted for ongoing protocol-level surveys for the critically endangered and fully protected Morro Bay kangaroo rat (*Dipodomys heermanni morroensis*).

The letter report also incorporates the findings of previous studies conducted for the Los Osos Wastewater Project by MBA and others, including protocol-level survey and habitat assessment efforts conducted by Dr. Francis Villablanca for the Morro Bay kangaroo rat, and general biological surveys conducted by the County Department of Public Works Environmental Programs Division. Should you require any additional information or have questions regarding the findings of enclosed letter report, please do not hesitate to contact me at 714.508.4100 or kosmundson@brandman.com.

Sincerely,

Karl L. Osmundson, Project Manager/Biologist
Michael Brandman Associates
220 Commerce, Suite 200
Irvine, CA 92602

Enc: Biological Resources Letter Report

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SECTION 1: INTRODUCTION

As part of the biological resources technical studies for the Los Osos Wastewater Project, Michael Brandman Associates (MBA) and the County of San Luis Obispo (County) Department of Public Works Environmental Programs Department conducted a follow-up reconnaissance-level survey on February 20, 2009 within an additional 73-acre area proposed for sprayfield disposal on the Tonini property. This addendum letter report documents the findings of the follow-up survey in order to facilitate the preparation of the Final Environmental Impact Report and Preferred Project Evaluation for the Los Osos Wastewater Project.

1.1 - General Location of Sprayfields

As analyzed for the Draft EIR, the areas proposed for sprayfields for the Preferred Project are located within the Tonini property (Tonini Ranch), which encompasses Assessors Parcel Number (APN) 067-011-020 located approximately 0.50 mile north of the intersection of Los Osos Valley Road and Turri Road, east of the unincorporated community of Los Osos, San Luis Obispo County, California. The center of the Tonini property corresponds to 35°18'51.67"N latitude, 120°47'02.42" longitude, as depicted on the San Luis Obispo, California United States Geological Survey (USGS) 7.5-minute topographic map.

1.2 - Brief Description of Sprayfields

A complete description of the Preferred Project, including details of the sprayfield design and operational requirements, is provided within Appendix Q.3 of the Final EIR for the Los Osos Wastewater Project.

The Preferred Project proposes to use a total 248 acres of the Tonini property for sprayfields with evapotranspiration as part of the disposal method of treated effluent from the proposed wastewater treatment facility. This represents an increase from that which had been analyzed in the Draft EIR by 73 acres. In order to meet evapotranspiration demands, all sprayfields are proposed within lands on the Tonini property that have a slope of 20 percent or less. Therefore, given the slope constraints, the additional 73 acres are contained within portions of the western half of the Tonini property that have a slope of 20 percent or less. In general, the additional 73 acres extend further to the west from previously surveyed areas. As with previous areas, the additional sprayfield areas have been designed to be a minimum of 100 feet from coastal streams, wetlands, cultural sites, and other sensitive resources determined to exist on the property. Additional 100-foot setbacks are provided from the southern and western property boundaries, and additional 30-foot setbacks are provided from Turri Road to provide a buffer from neighboring properties.

Operation of the sprayfields as a disposal option would be restricted to the dry season. During non-wet periods, the treatment plant will pump a maximum of 80 AF monthly (842 AFY) of treated effluent to the Tonini sprayfields. With the elimination of percolation within the lower elevation portions of the Tonini property, the 248 acres of total sprayfields would provide a maximum effluent disposal capacity of 918 AF per year in a wet year, which was determined to be less than the maximum buildout effluent disposal requirement of 842 AF per year. Treated effluent will be conveyed away from the treatment plant facility to the sprayfields via a system of 12-inch pipelines. A total of 6,500 linear feet of pipelines will be required. Major conveyance pipelines would be buried with connections to smaller lateral lines that would lie on the ground surface and connect to sprayheads positioned at various locations.

SECTION 2: METHODOLOGY

Analysis of the biological resources associated with the refined sprayfield area began with a thorough review of relevant literature followed by a general biological survey.

2.1 - Literature Review

Prior to the habitat assessment survey, a literature review was conducted that focused on existing documentation prepared for the Los Osos Wastewater Project in addition to records of previous observations of special status species on the Tonini property. The methodology established in the Draft EIR Appendix G was continued. Additional information pertaining to previous observations of special status species and suitable habitat determinations on the Tonini property was provided via personal communication with Ms. Kate Ballantyne and Mr. Eric Wier with the County of San Luis Obispo Department of Public Works Environmental Programs Department. The literature review also included aerial imagery of the survey areas, as well as the topographic electronic copies of the San Luis Obispo, California USGS 7.5-minute topographic quadrangle map.

The following is a list of documents and information reviewed in preparation of this letter report.

- Draft EIR for the Los Osos Wastewater Project. November 2008. Available on file at Michael Brandman Associates.
- Biological Resources Assessment for the Los Osos Wastewater Project. July 2008. Available on file at Michael Brandman Associates.
- Draft Biological Assessment for the Los Osos Wastewater Project. March 2009. County of San Luis Obispo Department of Public Works, Environmental Programs Division.
- Draft Biological Assessment for the Los Osos Wastewater Project - Fisheries. March 2009. County of San Luis Obispo Department of Public Works, Environmental Programs Division.

- Draft Memorandum of Morro Bay Kangaroo Rat (*Dipodomys heermanni morroensis*) Habitat Assessment Relative to Los Osos Sewer Project Proposed for Tonini Ranch. February 12, 2009.
- California Natural Diversity Database (CNDDB). Data provided by the participants of the California Department of Fish and Game's RareFind 3 Application. Query conducted February 18, 2009.
- California Native Plant Society (CNPS). Data provided by the participants of the California Native Plant Society Inventory of Rare and Endangered Plants (http://cnps.web.aplus.net/cgi-bin/inv/inventory.cgi). Query conducted February 18, 2009.
- Consortium of California Herbaria. Data provided by the participants of the Consortium of California Herbaria (http://ucjeps.berkeley.edu/consortium/). Query conducted February 18, 2009.
- Cal flora Observation Library and Mapviewer. Data provided by the participants of the Calflora Observation Library and Mapviewer (http://www.calflora.org/cgi-bin/occform.cgi). Query conducted February 18, 2009.

2.2 - Habitat Assessment Survey

A reconnaissance-level survey of the sprayfield areas on the Tonini property was conducted on February 20, 2009 by MBA biologist Karl Osmundson and County Natural Resources Specialists Ms. Kate Ballantyne and Mr. Eric Wier. The survey area encompassed an approximately 350-acre area, which generally included all areas proposed for sprayfields in the western half of Assessors Parcel Number (APN) 067-011-020. The survey did not include areas contained within the Pacific Gas and Electric (PG&E) easement or areas to the west of the easement due to the fact that no project elements are currently proposed within these areas on the property.

The survey was conducted on foot by walking meandering transects throughout the entire 350-acre area. The primary purpose of the survey was to document existing conditions within an approximately 73-acre area that is proposed for additional treated effluent disposal through sprayfield evapotranspiration methods. The survey also confirmed the presence of the non-listed rare plant, Blochman's dudleya (*Dudleya blochmaniae* ssp. *blochmaniae*), potential burrows for the California State species of special concern, American badger (*Taxidea taxus*), and the location of areas on the property that are targeted for ongoing protocol-level surveys for the critically endangered and fully protected Morro Bay kangaroo rat (*Dipodomys heermanni morroensis*).

The locations of previous observations of sensitive resources were plotted onto aerial imagery to determine connectivity of suitable habitat and/or likely dispersing routes between the locations of observations and the survey area. Parameters assessed pertaining to the habitat requirements for plant and wildlife species include the presence of suitable physical characteristics in topography, vegetation

and plant community compositions, and soils. The presence of suitable nesting, roosting, foraging, including suitable prey base, or dispersing habitat was also assessed. Any evidence of previous disturbance on the project site was carefully documented. All observations were recorded in a field notebook.

SECTION 3: SURVEY RESULTS

3.1 - Weather Conditions

The reconnaissance-level survey was conducted on February 20, 2009, between the hours of 0830 and 1330. Weather conditions during this survey included mostly clear skies with a temperature range of 55 to 65 degrees Fahrenheit, with winds ranging from approximately 1 to 5 miles per hour out of the west.

3.2 - Existing Conditions

The reconnaissance-level survey confirmed that the refined sprayfield area is contained within undeveloped land on the Tonini property that is characterized by actively grazed non-native grassland. General land use beyond the survey area consists of open undeveloped grassland and agricultural land in all directions.

3.2.1 - Topography and Soils

The refined sprayfield area encompasses lower elevation slopes on the Tonini property that range in elevation from approximately 40 to 350 feet above mean sea level. Similar to the remaining grazed and cultivated land on the Tonini property, the observed surface soils throughout the majority of the refined sprayfield area are disturbed from trampling and grazing. The soils mapped within the refined sprayfield area include Briones-Tierra complex (15 to 50 percent slopes), Concepcion loam (5 to 9 percent slopes), Cropley clay (2 to 9 percent slopes), Diablo and Cibo clays (15 to 30 percent slopes), Diablo and Cibo clays (30 to 50 percent slopes), Pismo-Tierra complex (9 to 15 percent slopes), and Tierra sandy loam (2 to 9 percent slopes). Areas mapped as Diablo and Cibo clays support a few isolated rock outcrop and minor terrace escarpment features, presumably derived of serpentinite parent material, that are suitable for Blochman's dudleya. In addition, areas mapped as Pismo-Tierra complex and Tierra sandy loam are derived from erosion of alluvial and local sandstones and may provide suitable conditions for the Morro Bay kangaroo rat.

3.2.2 - Disturbance

The proposed refined sprayfield area occurs within land that is heavily grazed by cattle. The grazing has resulted in damage to the ground surface from trampling and stress to vegetation. No other significant disturbances were observed.

3.2.3 - Habitats/Vegetation Communities

The refined sprayfield area will occur within portions of a single habitat type or vegetation community: non-native grassland. A complete description of this community and extent to which it occurs within the survey area is provided below.

Non-Native Grassland

Non-native grassland is described as a dense to sparse cover of non-native annual grasses often associated with numerous weedy species and native annual forbs (wildflowers), especially in years with plentiful rain. Seed germination occurs with the onset of winter rains. Some plant growth occurs in winter, but most growth and flowering occurs in the spring. Plants then die in the summer, and persist as seeds in the uppermost layers of soil until the next rainy season. Dominant plant genera typically found within non-native grasslands include brome (*Bromus* sp.), wild oats (*Avena* sp.), fescue (*Vulpia* sp.), and barley (*Hordeum* sp.).

The non-native grassland that characterizes the refined sprayfield area is similar to that which occupies the remaining grazed portions of the Tonini property. In general, the non-native grassland is considered low in habitat quality due to the lack of species diversity, prevalence of non-native and disturbance-tolerant annuals, and intensive disturbance from cattle grazing. Plant identification was problematic due to grazing damage and the time of year in which the survey took place (i.e. many annuals were in the early stages of growth lacking identifiable characteristics). Many areas were heavily trampled and supported a high percent cover of bare earth and "early-showing" non-native forbs such as filaree (*Iridium* sp.). In general, the non-native grasslands within the sprayfields are dominated by a mix of bromes (*Bromus* spp.), barleys (*Hordeum* spp.), and fescues (*Vulpia* spp.). Salt grass (*Distichlis spicata*) was identified within the non-native grassland that occupies the lower elevation southeastern portions of the property toward Warden Lake. Other annuals observed within areas protected from grazing include the native rancher's fiddleneck (*Amsinckia menziesii* var. *intermedia*) and non-native wild radish (*Raphanus sativus*). Additional non-native grassland extends further to the west into the PG&E easement and western property boundary and further to the north across Turri Road. No sign of any native bunch grass or other native grass stands were evident within the non-native grassland during the survey.

Despite the overall low quality, there are a few areas contained within the grassland habitat that support rock outcrops and are less disturbed, consequentially supporting very different microhabitats and plant species compositions. A number of native species were identified in association with these rock outcrops amongst the grazed grassland habitat, including the CNPS List 1B.1 rare plant, Blochman's dudleya, in addition to common species such as sand mat (*Cardionema ramosissimum*), sand pygmyweed (*Crassula connata*), and bush monkeyflower (*Mimulus aurantiacus*).

3.2.4 - General Wildlife

The new sprayfield area provide habitat for wildlife species that commonly occur in grassland communities. A single reptilian species, western fence lizard (*Sceloporus occidentalis*), was observed during the survey. Avian species observed or detected during the survey include California horned lark (*Eremophila alpestris actia*), Say's phoebe (*Sayornis saya*), black phoebe (*Sayornis nigricans*), turkey vulture (*Cathartes aura*), American kestrel (*Falco sparverius*), red-winged blackbird (*Agelaius phoeniceus*), western meadowlark (*Sturnella neglecta*), Bullock's oriole (*Icterus bullockii*), yellow-rumped warbler (*Dendroica coronata*), brown-headed cowbird (*Molothrus ater*), western bluebird (*Sialia mexicana*), western scrub jay (*Aphelocoma californica*), red-tailed hawk (*Buteo jamaicensis*), lark sparrow (*Chondestes grammacus*), dark-eyed junco (*Junco hyemalis*), orange-crowned warbler (*Vermicora celata*), wrentit (*Chamaea fasciata*), spotted towhee (*Pipilo maculatus*), house finch (*Carpodacus mexicanus*), Anna's hummingbird (*Calypte anna*), and California towhee (*Pipilo crissalis*). Mammalian species observed or detected during the survey include American badger, desert cottontail (*Sylvilagus audubonii*), mule deer (*Odocoileus hemionus*), domestic cattle (*Bos primigenius taurus*), and domestic dog (*Canis familiaris*). Although no live specimens were observed, a few shells of the common Chorro shoulderband snail (*Helminthoglypta morroensis*) were also observed during the survey.

SECTION 4: SENSITIVE BIOLOGICAL RESOURCES

4.1 - Special Status Plant Species

4.1.1 - Blochman's dudleya

Blochman's dudleya is not federally- or State-listed as threatened or endangered however is designated as a California Native Plant Society List 1B.1 rare plant. The species is generally found in sandy openings of shrub-dominated habitat types correlated with areas that are influenced by strong maritime weather patterns. Vegetation community associations include coastal sage scrub, coastal bluff scrub, maritime chaparral, and grasslands. Blochman's dudleya sites are primarily supported by clay or serpentinite substrates, as well as rocky areas with little soil development. Soils at known occurrence locations include Las Flores loamy fine sand and Terrace Escarpments. This species is known from a number of sites within San Luis Obispo County, including a location approximately two miles north of Cayucos on a seabluff, a location approximately four miles north of Cayucos east of Point Estero and northwest of Highway 1, a location west of the intersection of Los Osos Valley Road and Highway 101 just outside city limits of San Luis Obispo, a location eight miles west of San Luis Obispo near Morro Bay, and a location at the west base of Bishop Peak. Two occurrences have been recorded in the local area, including a recent observation in 2001 within Camp San Luis Obispo, east of the Los Osos community, and a second occurrence recorded over 50 years ago located along Cabrillo Highway.

General biological surveys conducted by the County Department of Public Works in January 2009 determined that portions of the areas proposed for sprayfields support a few concentrations of Blochman's dudleya. The general biological survey conducted by MBA and the County Department of Public Works in February 2009 identified all significant concentrations within the area, most of which are restricted to isolated rock outcroups and minor terrace escarpments located in the northern portions of the Tonini property that are supported by Diablo and Cibo clays. Based on the survey findings, the total population on the Tonini property is estimated to include approximately 1,000 individuals, with the largest concentration estimated at approximately 200 individuals. As a result of the presence of this species, the areas proposed for sprayfields have been adjusted to exclude the extreme northern portions of the property adjacent to Turri Road that support the highest concentrations of individuals.

4.2 - Special Status Wildlife Species

4.2.1 - Morro Bay Kangaroo Rat

The Morro Bay kangaroo rat is a federally-endangered, and California State-endangered and fully protected species. In 2000, the U.S. Fish and Wildlife Service (USFWS) released the Draft Revised Recovery Plan for this species that detailed its current status and distribution, and conservation objectives for the recovery and delisting of this species from endangered levels. The USFWS has designated critical habitat for this species within areas along the coast in the northwestern portion of Montana De Oro State Park. This species optimum habitat consists of early succesional coastal sage scrub habitat supported by old, stabilized dune terraces mapped with Baywood fine sandy soils. Optimum vegetation includes herbaceous annuals with scattered native woody perennial shrubs no more than 2 feet in height. The historical range of this species is highly restricted to areas within and surrounding the community of Los Osos and Montana De Oro State Park. The majority of the original distribution of the species is correlated with the distribution of Baywood fine sandy soils west of Los Osos Creek; however, an eastern extension of the historic range occurs east of Los Osos Creek in which the species is known from both Baywood fine sands and Tierra sandy loams.

Recent survey efforts headed by Dr. Francis Villablanca in conjunction with the USFWS determined that central and southern portions of the proposed sprayfield area on the Tonini property that support Pismo-Tierra complex and Tierra sandy loam soils may provide suitable conditions for the Morro Bay kangaroo rat. These determinations were confirmed during the general biological survey conducted in February 2009 by MBA and the County Department of Public Works. Protocol-level surveys and trapping, as approved by the USFWS and CDFG, have been on-going within portions of these areas on the Tonini property. Portions of the proposed sprayfield area supported by Tierra sandy loam have been subject to the first year of protocol surveys in 2008 by Dr. Villablanca. These surveys resulted in negative findings on the Tonini property. The second year of surveys within these areas result will proceed in the spring of 2009. If the second year of surveys also result in negative findings, as expected, this species will be presumed absent from those areas.

The areas mapped as Pismo-Tierra complex soils were not included in the first year of protocol surveys mentioned above, and these new areas will have to be surveyed for their first year beginning in the spring of 2009. If the species is not detected during the first year surveys in 2009, the second year of protocol surveys will be conducted in 2010. If the second year of surveys within the new suitable habitat areas also result in negative findings, this species will be presumed absent from all areas surveyed on the Tonini property.

4.2.2 - American Badger

The American badger is not federally- or State-listed as threatened or endangered however is designated as a California species of special concern. This species is an uncommon permanent resident throughout the majority of California, with the exception of the North Coast areas. This species preferred habitat includes dry open stages of grasslands, savannas, mountain meadows, and shrub and forest types supported by friable soils for burrow construction. Badgers are carnivorous, preying primarily upon fossorial rodents, reptiles, insects, earthworms, eggs, birds, and carrion. The species is a yearlong resident that is highly mobile within its relatively large home range, often traveling long distances in search of resources. American badgers have the ability to dig their own burrows to use as refuge, and may dig multiple burrows over short periods of time as it moves through an area. Badgers mate in the summer and early fall. Gestation and delayed implantation are followed by young being born in burrows around March and April.

During general biological surveys conducted within the additional sprayfields area in February 2009 by MBA and the County Department of Public Works, single potential American badger burrow was identified within areas proposed for sprayfields. An additional burrow was identified within areas that will be avoided by the sprayfields. None of the burrows displayed any definitive sign of recent activity.

4.2.3 - Nesting Birds

The refined sprayfields area contains suitable nesting habitat for bird and raptor species protected under the Migratory Bird Treaty Act (MBTA) and California Fish and Game (CFG) Code. Additional nesting habitat occurs within 500 feet of the sprayfields. The non-native grassland provides suitable nesting opportunities for raptor species such as northern harrier, and bird species such as California horned lark and western meadowlark. The isolated eucalyptus trees that fall within the sprayfield area provide additional nesting opportunities for raptor species such as red-tailed hawk and great-horned owl, and species such as yellow-rumped warbler, house finch, and Bullock's oriole.

4.3 - Jurisdictional Waters and Wetlands

The refined sprayfields area has been designed to avoid waters and wetlands on the Tonini property with 100-foot setbacks. Therefore, no waters or wetlands regulated by the U.S. Army Corps of

Engineers, Regional Water Quality Control Board, California Department of Fish and Game, or California Coastal Commission occur within the refined sprayfields area.

4.4 - Other Unique Features/Resources

4.4.1 - Wildlife Corridors and Linkages

For any given species, wildlife movement is dependent upon the availability and access to areas that support the resources that are vital to the individual and the overall population. Wildlife movement activities may fall into three general categories that include dispersal (e.g., juvenile animals moving from natal areas, thus individuals extending range distributions), seasonal migration (e.g. seasonal movement to and from breeding grounds, seeking lower elevations or lower latitudes during the winter), and home range activities(foraging for food or water, defending territories, searching for mates, breeding areas, or cover). Species may be highly mobile within their home ranges, which can be many square miles in size and encompass a variety of habitat types depending on the species and the availability of resources at any given time throughout the year.

The refined sprayfields area is contained within expansive non-native grassland habitat that continues in all directions. The area is not characterized by any land features that are typically associated with wildlife movement, including steep gullied land, drainage features, floodplains, valleys canyons ridgetops, vegetation breaks (distinct canopy edges, long linear stands, cleared areas), or existing roads, paths, or trails. Currently, wildlife movement and use in the area is unrestricted due to the lack of adjacent developments and barriers, and the homogeneity and openness of the habitat. Therefore, the refined sprayfields area does not function to facilitate wildlife movement as a corridor or linkage, nor does it contribute to any existing corridors or linkages in the local or regional area.

4.4.2 - Raptor Foraging

Important raptor foraging areas are generally characterized by habitat types that are both compatible with foraging behavior (promote appropriate lines of sight, provide unobstructed access to prey, contain adequate perches, etc.) and support an adequate prey base for target raptors with the potential to range through the area. Raptor foraging areas of local and regional importance are not fragmented or constrained by development or other incompatible land uses, and are relatively large in size. For year-round resident raptors, important foraging areas may be used frequently and repeatedly, and usually occur in close proximity to nest locations and territories. Wintering raptors with the potential to occasionally range through an area may use multiple foraging sites less frequently along a migratory route and within a wintering location.

The non-native grassland within the refined sprayfields area provides foraging habitat for common and sensitive raptor species that are known to occur in the area as year-round residents or seasonal migrants. This habitat is contiguous with additional non-native grassland that occurs within the Tonini property and areas further to the north, south, east, and west. Raptors with the potential to

forage through the area include species such as red-tailed hawk, barn owl (*Tyro alba*), great-horned owl (*Bubo Virginians*), white-tailed kite (*Elanus leucurus*), ferruginous hawk (*Buteo regalis*), northern harrier (*Circus cyaneus*), merlin (*Falco columbarius*), and prairie falcon (*Falco mexicanus*). All foraging areas within the sprayfields area are adjacent to larger, more expansive, undeveloped lands that provide additional foraging habitat that is less disturbed, not subject to grazing, and overall better in quality.

SECTION 5: CONCLUSIONS

The new areas proposed for sprayfields are characterized by actively grazed non-native grasslands, a common habitat type in the local area. No sensitive natural communities or native vegetation communities occur on or within 100 feet of the areas proposed for sprayfields. With the exception of the presence of marginal habitat for the federally-endangered, and California State-endangered and fully protected Morro Bay kangaroo rat, the additional sprayfield areas do not provide suitable habitat for any federally- or State-listed endangered or threatened plant or wildlife species. The survey confirmed the presence of two potential burrows for the American badger, a non-listed California State species of special concern, both of which are presumed inactive, and one of which is contained within the additional sprayfield areas. The survey also confirmed the presence of a number of concentrations of Blochman's dudleya, a non-listed CNPS List 1B.1 rare plant. These concentrations collectively support approximately 1,000 individuals, the largest of which supports approximately 200 individuals and will be avoided in the sprayfield design.

Suitable nesting habitat for bird and raptor species protected under the Migratory Bird Treaty Act (MBTA) and California Fish and Game (CFG) Code occurs on and within 500 feet of the refined sprayfield area. Additionally, the non-native grasslands provide good quality functioning foraging habitat for common and sensitive raptor species. None of the areas proposed for sprayfields contribute to the assemblage of any functioning wildlife corridors or habitat linkages, or support or provide access to and from any significant nursery sites.

No additional federally- or State-regulated waters, wetlands, or other resources under the jurisdiction of the U.S. Army Corps of Engineers (USACE), Regional Water Quality Control Board (RWQCB), California Department of Fish and Game (CDFG), or California Coastal Commission (CCC) were confirmed within the refined sprayfields area during the survey.

Q.9 - TECHNICAL REPORT: CULTURAL

March 20, 2009

Ken Lord
Director of Natural and Cultural Resources
Michael Brandman Associates
220 Commerce, Suite 200
Irvine, CA 92602

RE: Summary of archaeological fieldwork and findings for the Los Osos Wastewater Preferred Project Evaluation.

Dear Ken:

This letter report presents an initial summary of archaeological fieldwork and findings for the Preferred Project Evaluation for the Los Osos Wastewater Project, San Luis Obispo County, California. Field efforts were conducted by Far Western on March 10-12, 2009 and consisted of: (1) intensive survey of an additional 136 acres to cover the wastewater spray field expansion; (2) hand excavation for boundary definition at site CA-SLO-2574, located adjacent to the proposed wastewater plant (Figure 1); and (3) geoarchaeological backhoe testing at five locations previously identified as sensitive for buried cultural deposits (Jones and Mikkelsen 2008:14-16; Figure 2).

Far Western supervisory personnel consisted of Project Principal Investigator and Manager Pat Mikkelsen, M.A.; Project Director Deborah Jones, M.A.; Field Director John Berg, M.A; and Geoarchaeologist Vickie Clay, M.A. Lei Lynn Odom of the Northern Chumash Council served as Native American consultant. Backhoe services were provided by Frank Merrill Backhoe. Kate Ballantyne, Environmental Resource Specialist with the County of San Luis Obispo Department of Public Works, served as liaison.

Survey Methods and Findings

The intensive field survey was conducted on March 10, 2009, directed by John Berg. A five-person team walked the 136-acre survey area in five- to ten-meter-spaced transects. Crew members closely inspected sensitive areas, including the drainage and lands surrounding the Tonini homestead (now identified as site CA-SLO-2573/H) and in areas where any surface artifacts (e.g., chert flakes) were observed. Of note, prior proposed project plans excluded most of the Tonini homestead and a thorough inspection of this area was not undertaken during the 2008 field effort. Ground surface visibility ranged from relatively high in the grazed pastureland zones and exposed areas surrounding the farm structures, to low in areas with denser surface groundcover, along access roads, or in driveway areas covered with a layer of local crushed gravel-paver. During the field survey, all archaeological sites and isolated artifacts were mapped, recorded on appropriate field forms, and photographed.

The intensive field survey resulted in the recording of two prehistoric archaeological sites (field numbers T-5 and T-6), expansion of site CA-SLO-2573/H, and observation of a single isolate. Site T-5 is located roughly 75 meters south-southwest of CA-SLO-2574 at the base of the hill slope and north of a wet drainage marked by a cluster of trees. The small lithic scatter (measuring 49 by 23 meters) is composed of a few chert flakes and two flake tools. The second site, T-6, is located some 650 meters north-northeast of CA-SLO-2573/H (the Tonini homestead). The newly recorded deposit is a small chert lag quarry site consisting of three cores

and associated primary flakes, measuring 40 by 19 meters and located on hill slope pastureland set above a drainage. A single isolated handstone was found about 100 meters east of site T-6.

In addition, a prehistoric component consisting of flaked and ground stone tools and flaking debris was observed at CA-SLO-2573/H, enlarging the site slightly; it now measures 100 meters north-south by 200 meters east-west. Some shell and darkened soil was also noted at the site; however, prehistoric materials have been intermixed with historic-era remains, and the lack of diverse shell remains (only Pismo clam was noted) could indicate that the darkened soils and shell debris resulted from various historic-era activities undertaken at the Tonini homestead.

Site Boundary Definition Methods and Findings

Boundary definition efforts at CA-SLO-2574 were conducted on March 11 and 12, 2009 and began with a site walk-over and placement of pin flags to mark observed surface artifacts. Flagged materials (n=27) were recorded on field forms and plotted on the site map. The high grasses/forbs that previously hindered the initial site recording (Jones and Mikkelsen 2008) now consisted of a low (mowed) groundcover with fair to good surface visibility. Access was also now available to the western portion of the site area which formerly contained several penned bulls. Once the core site deposit was identified, 1 x 0.5-meter units were strategically placed to define the site periphery, excavated in 20 centimeter increments and dry-screened through ¼-inch mesh (Figure 3). Topographic features and areas of prior disturbance were also noted on the site map as these attributes contribute to material dispersal (e.g., erosion, plowing). A total of 22 shovel test pits comprising 2.3 cubic meters of soil was excavated and mapped at CA-SLO-2574 (Table 1).

Table 1. Summary of Shovel Test Units at CA-SLO-2574.

Shovel Test Unit	*Depth*[a]	*Core*	*Tool*	*Flakes*
STU-1	0-40	-	-	14
STU-2	0-20	-	-	14
STU-3	0-20	-	-	6
STU-4	0-20	-	-	10
STU-5	0-20	-	-	4
STU-6	0-20	-	-	9
STU-7	0-20	-	-	4
STU-8	0-20	-	-	2
STU-9	0-20	-	-	-
STU-10	0-20	-	-	-
STU-11	0-20	-	-	-
STU-12	0-20	-	-	4
STU-13	0-20	-	-	1
STU-14	0-20	-	-	7
STU-15	0-20	-	-	1
STU-16	0-20	-	-	-
STU-17	0-20	-	-	3
STU-18	0-20	-	-	-
STU-19	0-20	1	-	8
STU-20	0-20	1	-	2
STU-21	0-20	-	1	5
STU-22	0-20	-	-	1
		2	1	95

Note: [a] - Depth in centimeters.

The definition of CA-SLO-2574 site boundaries was based upon the 22 shovel test unit yields and surface artifact distribution, unimpeded by access and poor surface visibility. The site deposit, as now defined, extends 240 meters north-south by 250 meters east-west. Although the site was initially recorded in 2008 along the leeward side of the hill located south of the Tonini homestead, current testing showed that the deposit extends further westward and upslope to the hilltop. The 27 recorded surface artifacts included two bifaces, 17 flake tools, two core tools, four cores, one millingstone fragment, and a handstone. Artifact yields from shovel test units ranged from zero to 14 chert flakes per 0.1 cubic meter unit; eleven of the units yielded from four to 14 flakes. Surface artifact distribution and unit artifact yield defined the core site area. Low-yield and sterile units, considered in conjunction with disturbance and topographic features, aided in establishing the site limits. Of note, disturbance including hill cut and leveling activities, as well as slope erosion, occur within the eastern portion of the site deposit. Disturbance in the western site area appears restricted predominantly to cattle grazing, with some slope erosion.

Mechanical Trenching Methods and Findings

Five exploration trenches were excavated on March 12, 2009 along Los Osos Valley Road (Trenches 1-4) and Turri Road (Trench 5). Prior to excavation, the trench locations were marked in white paint during a March 6, 2009 field visit attended by County representatives Kate Ballantyne, Ray Dienzo, and Tim Cate, and Far Western archaeologist Deborah Jones. Ray Dienzo, Project Engineer and Public Utilities Coordinator, notified Underground Service Alert and updated Jones on the utility responses. Backhoe trench operator Frank Merrill was supervised by Far Western Geoarchaeologist Vickie Clay and her assistant Steven Neidig. County maintenance staff assisted with traffic control at each of the trench locations.

Trench dimensions averaged 1.0 meters (3.3 feet) wide, 1.8 meters (6 feet) deep, and 6 meters (20 feet) long. Trench soils were excavated in one-foot lifts and monitored for archaeological materials by examining and troweling the backdirt pile deposits as they were removed from the trenches. In addition, the geoarchaeologist entered the trench at a depth of 1.2 meters (4 feet), cleaned sidewalls, described stratigraphy and soils, and inspected for potential buried cultural deposits. Trench excavation was then continued to a depth of six or seven feet with deposits observed and measured from outside the trench. After excavations were complete, photographs were taken, a stratigraphic profile was drawn, and the backhoe operator refilled and compacted the trench.

All the trenches were excavated in Holocene alluvium adjacent to creeks. Stratigraphic profiles indicated that both high energy channels and low energy overbank flood deposits are present in these areas. Such deposits do contain the potential for buried cultural deposits; however, none were identified within any of the trenches.

Summary of Findings

Survey of an additional 136 acres of land on the Tonini property resulted in the recording of two prehistoric archaeological sites and one isolated artifact. The sites include T-5, a small lithic and tool scatter, and T-6, a small quarry deposit; the isolate is a handstone. A prehistoric component was also identified at CA-SLO-2573/H in previously unsurveyed portions of the Tonini homestead, resulting in an expanded site boundary. Based on surface artifact distribution and findings from 22 shovel-test-units, boundary definition excavations at CA-SLO-2574 revealed that the moderate-density habitation site extends both eastward and westward beyond the initial provisional boundaries. Finally the excavation of five mechanical trenches within the project right-of-way along Los Osos Valley and Turri roads, found no buried cultural deposits.

Management Recommendations

Avoidance of archaeological resources has been the preferred management measure undertaken by the County. During prior project planning, the County created a 100-foot buffer surrounding the four project sites (CA-SLO-2571, -2572, -2573/H, and -2574) identified within the survey area on the Tonini parcel. To maintain this management strategy, buffer zones should be placed around the small, newly recorded lithic scatter (T-5) and quarry (T-6) sites. In addition, identification of a prehistoric component at site CA-SLO-2573/H (the Tonini homestead) will require expanding the buffer zone to the east. At CA-SLO-2574, excavation of 22 shovel-test-units firmly established and expanded site boundaries. However, a 100-foot buffer is not deemed necessary along the eastern and southeastern boundaries as they have been affected by erosion and disturbance impacts resulting in post-depositional dispersal of artifacts across the area, essentially serving as a buffer to intact deposits. Finally, no further geoarchaeological trenching is recommended within the project right-of-way along Los Osos Valley and Turri roads. Although considered unlikely, should buried cultural materials be encountered during project construction efforts, work should be halted in that area until a qualified archaeologist can evaluate the nature and importance of the find. Additional survey will be required if the project changes to include areas not previously surveyed.

Best Regards,

Deborah Jones, M.A.
Senior Archaeologist

Pat Mikkelsen
Principal Investigator and Project Manager

Jones, Deborah and Patricia Mikkelsen
2008 Archaeological Survey Report and Sensitivity Study for Proposed Projects and Alternatives for the Los Osos Wastewater Project, San Luis Obispo County, California. Report submitted to Michael Brandman Associates, Irvine, California.

Figure 1. Proposed Tonini Project Area - Area Surveyed and Archaeological Site Locations.

Is Not For Public Distribution

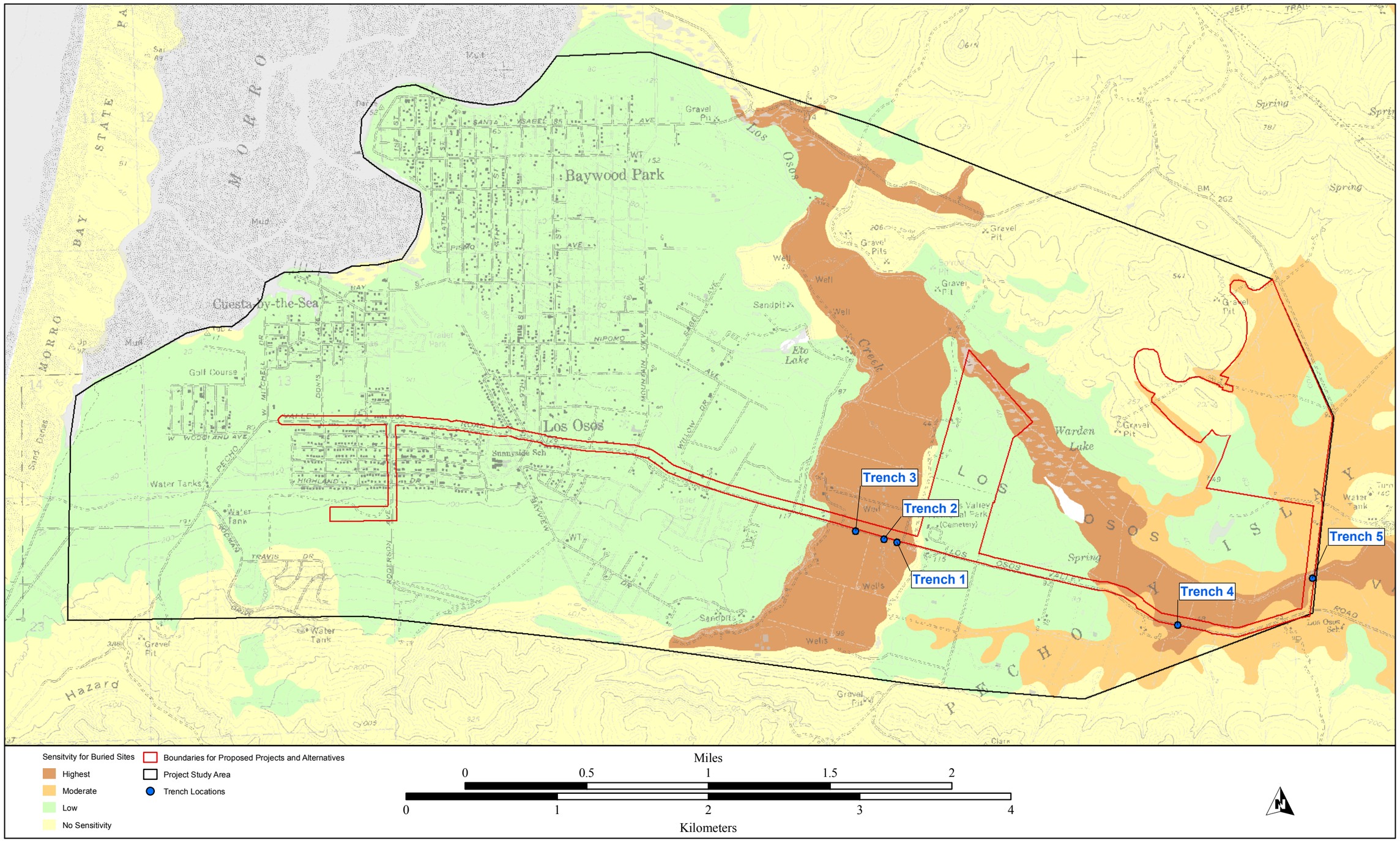

Figure 2. Geoarchaeological Trench Locations - Los Osos Valley/Turri Road.

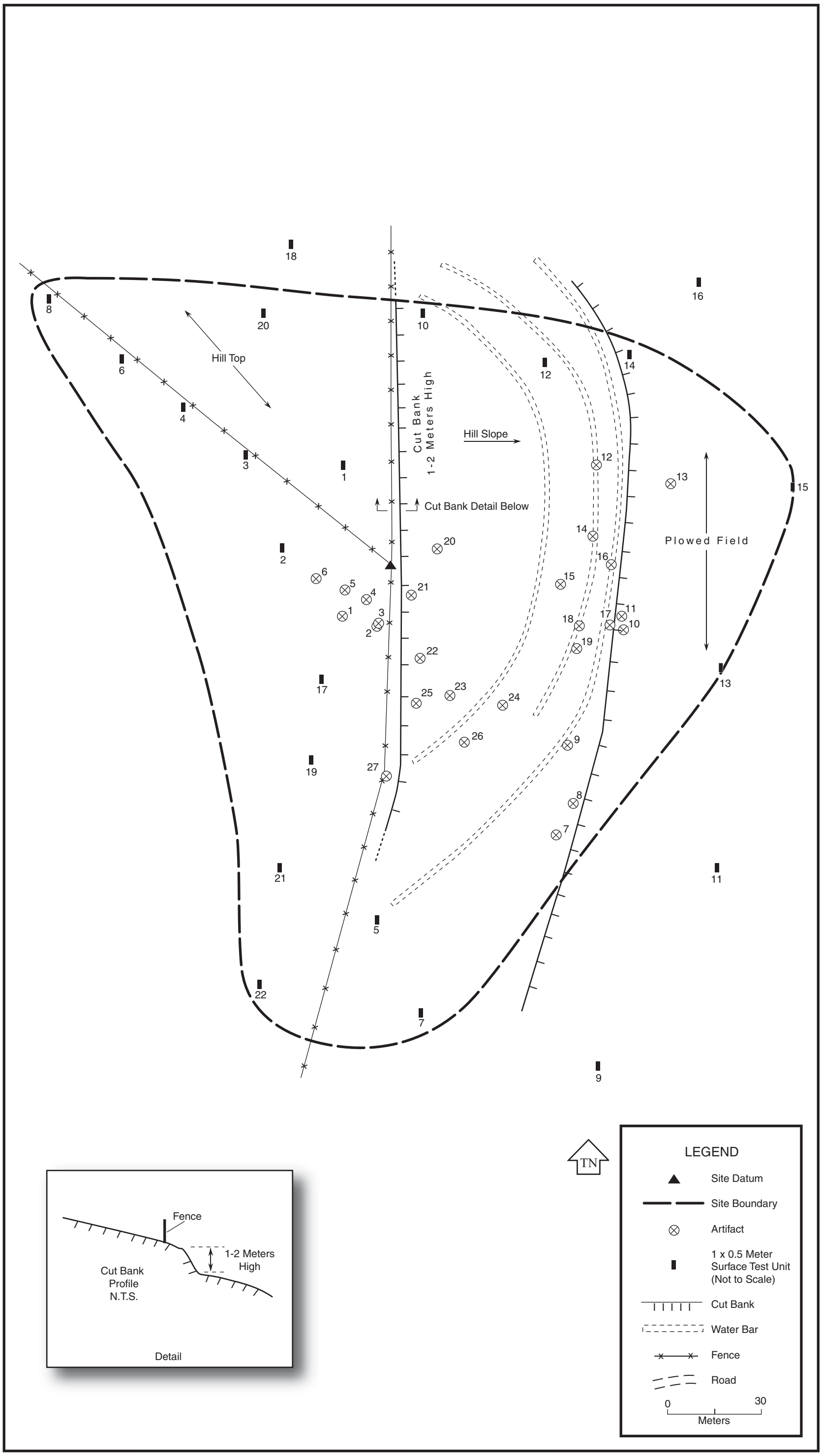

Figure 3. Site Map for CA-SLO-2574.

Q.10 - REFERENCES

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