
IV. ENVIRONMENTAL IMPACT ANALYSIS

N. UTILITIES & SERVICE SYSTEMS

1. SEWER

INTRODUCTION

This section of the Draft Environmental Impact Report (DEIR) addresses the subject of utilities and service systems with respect to the proposed Big Wave Wellness Center and Office park project (“proposed project”) and includes an examination of the existing services provided to the project site, the impacts that the proposed project would have on existing services, as well as the implementation of proposed services to the project site. The utilities and service systems section is subdivided into the following subsections: (1) Sewer; (2) Water; (3) Solid Waste; and (4) Energy.

METHODOLOGY

This subsection of the DEIR analyzes the wastewater treatment and disposal plans for the proposed project. The analysis includes: the projected wastewater flows, proposed wastewater treatment facilities, plans for recycling and onsite percolation system (i.e., drain fields or leach fields), and provisions for system operation and management. The following discussion presents the findings and conclusions of Questa Engineering Corporation. Additional related information regarding project-related hydrology and water quality impacts is provided in Section IV.H (Hydrology & Water Quality) of this DEIR. The analysis is based on review of the following:

- the applicant’s conceptual facilities plan and background information for the project;
- applicable regulatory requirements for wastewater treatment, recycling and onsite disposal;
- existing wastewater service and facilities in the area; and
- available information on soil and groundwater conditions for the project site and vicinity.

ENVIRONMENTAL SETTING

Existing Wastewater Service

Some properties in the project vicinity utilize individual onsite wastewater treatment and disposal systems (i.e., septic systems). However, most properties are served by public sewer providers, including City of Half Moon Bay, Granada Sanitary District and Montara Water and Sanitary District. These three agencies are members of Sewer Authority Midcoast, a joint powers authority that operates the sewage treatment plant and provides contract sewer maintenance service.

Sewer Authority Mid-Coastside

Municipal wastewater treatment for the Princeton area is provided by the Sewer Authority Mid-Coastside (SAM), which includes the Granada Sanitary District, the City of Half Moon Bay, and the Montara Water and Sanitary District. SAM was created in 1976 as a Joint Exercise of Powers Agreement and serves a population of approximately 22,000 people with a service area of roughly 12 square miles. SAM owns and operates the regional wastewater treatment plant, an 8-mile transmission line connecting the member districts to the plant, three main pumping stations, and an ocean outfall where the treated water is dispersed to the Pacific Ocean at a point west of Pilarcitos Creek. The two sanitary districts and the City of Half Moon Bay each operate and maintain wastewater collection facilities (sewer systems) within their respective jurisdiction.

SAM's transmission system has 1.9 miles of gravity pipeline and 5.9 miles of force main. The treatment plant is a secondary system, including primary sedimentation, activated sludge, secondary clarification, disinfection and anaerobic sludge digestion. The remaining biosolids are removed and buried in landfill. The plant has a permitted treatment and disposal capacity of 4.0 million gallons per day (mgd), average dry weather flow (ADWF). The existing average dry weather flows at the plant are about 1.7 mgd.¹

In the past SAM has experienced sewer capacity overflow problems during heavy rain periods. Over the past 10 years SAM has implemented a number of improvements and procedures to control sanitary sewer overflows, including retention facilities and pump station improvements. Additional sewer system improvements are in process or are currently being planned in concert with sewer collection system improvements by the member districts. The environmental review has recently been completed for the construction of wet weather storage facilities in the area known as Burnham Strip in El Granada.² The proposed facilities consist of two 700-foot long, 60-inch diameter buried pipes that would be used to temporarily store up to approximately 205,000 gallons of sewage flow during periods of peak infiltration and inflow. This project is intended to alleviate the excess wet weather sewage flows at the Montara and Portola Pump Stations where significant sewage overflow problems have occurred.

Granada Sanitary District

The project site lies within the boundaries of Granada Sanitary District, which provides sewer and solid waste services to the communities of El Granada, Princeton, Miramar, and the northern portion of Half Moon Bay (Frenchman's Creek north). The Granada Sanitary District sewer system currently extends to the corner of Airport Street and Stanford Avenue, where there is a manhole that would be the probable point of connection for the project. From this manhole there is an 8-inch diameter line that runs west on Stanford Avenue, connecting to a 15-inch line on West Point Avenue, which then connects to the Princeton Pump Station located on West Point Avenue, north of Stanford Avenue. The Princeton Pump Station collects sewage from Princeton, North El Granada and Clipper Ridge. It discharges via a 6-inch

¹ *Sewer Authority Mid-Coastside, 2008, SAM Sewer System Management Plan.*

² *ESA, March 2009, SAM Wet Weather Flow Management Project, Response to Comments Document, prepared for Sewer Authority Mid-Coastside.*

force main which ties into the SAM force main located across State Route 1 (SR 1) near the intersection of Alcatraz Avenue and Sonora Avenue. This section of the SAM force main ties into an 18-inch gravity line that runs along Alhambra Avenue to the El Granada Pump Station. This pump station serves the southern part of El Granada and Miramar. A new Miramar Pump Station is being designed to pump sewage from Miramar directly to the SAM gravity main that runs to the treatment plant. When implemented, this will reduce the pumping demand on the El Granada Pump Station and provide improved capacity for wet weather flows.

Over the past few years the Granada Sanitary District has been actively pursuing a sewer system capacity management program. This has included a sanitary sewer monitoring program that identified inflow and infiltration at six critical sites, and implementation of a web-based GIS portal for its collection system to assist in master planning, capital improvement plans, capacity modeling and system maintenance/management. Since 1988 the District has rehabilitated or replaced 9.7 miles of sewer pipe, roughly 29 percent of the system.³ The District is currently in the process of developing the schedule for further implementation of its capacity assessment.⁴

Project Site Conditions

Detailed review of the project site topography, geology, soils and hydrology is provided in Sections IV.F (Geology & Soils) and IV.H (Hydrology & Water Quality) of this DEIR. The project site comprises approximately 19.4 acres of relatively flat topography that is currently in vegetable crop production. A natural drainage swale (intermittent stream) exists at a low point between the two project site parcels (northern and southern) and leads to the Pillar Point Marsh. The land slopes gently from north to south, with elevations ranging from about 9 feet National Geodetic Vertical Datum (NGVD) along the western side of the southern parcel, to about 27 feet NGVD in the northeastern corner of the northern parcel.

Geologically, the site is underlain by the Half Moon Bay Terrace, a formation consisting of unconsolidated deposits of sand, silt and clay that serves as the principal water-bearing zone in the Moss Beach and El Granada area. Near surface soils on the site, as mapped by the United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS); formerly known as the Soil Conservation Service), consist of Denison clay loam.⁵ These soils are characterized as moderately deep, moderately to slowly permeable, with low infiltration rates and high water holding capacity. Portions of the site are mapped as “imperfectly drained,” which indicates the potential for high water conditions, at least on a seasonal basis.

³ US Environmental Protection Agency Region 9, August 18, 2006. NPDES Compliance Evaluation Report, Sewer Authority Mid-Coastside, Half Moon Bay, Granada Sanitary District, Montara Water and Sanitary District.

⁴ Sewer Authority Mid-Coastside, 2008, SAM Sewer System Management Plan.

⁵ Wagner, R.J. and R.E. Nelson, 1954, Soil Survey of San Mateo Area, U.S. Department of Agriculture, Soil Conservation Service.

A series of 23 geotechnical borings were completed by the applicant's geotechnical consultant⁶ on the project site in May 2000 (southern parcel) and April 2002 (northern parcel). The borings ranged from about 20 feet to 50 feet in depth. A summary of borings in the areas proposed for onsite drain fields is as follows:

Northern Parcel. Borings B1, B3, B8, B13 and B14 were located along or near the area designated for proposed drain fields (refer to Figure III-22). Typical soil profiles from these borings showed the following:

- 0 – 2 feet - Lean to fat clay, moist, medium stiff
- 2 - 6 feet - Sandy lean clay to clayey sand, moist, medium dense
- 6 - 9 feet - Silty sand to clean sand, wet, medium dense to dense

Groundwater was reported at the following depths (below ground surface) on April 10, 2002:

- B1 - 3.8 feet
- B3 - 6.8 feet
- B8 - 6.5 feet
- B13, B14 - 7 feet

Southern Parcel. Borings B1, B5, B7, B8 and B9 were located along or near the area designated for proposed drain fields (refer to Figure III-23). Typical soil profiles from these borings showed the following:

- 0 - 1 feet - Silty, clayey sand, moist, medium dense
- 1 - 4 feet - Sandy lean clay, moist, medium stiff
- 4 – 6 feet - Clayey sand, moist to wet, medium dense
- 6 - 9 feet - Silty sand, wet, medium dense

Groundwater was reported at the following depths (below ground surface) on May 9, 2000:

- B1, B5, B7 - 6 feet
- B8 - 3 feet
- B9 - 8 feet

⁶ Bay Area Geotechnical Group, May 2000 and April 2002, Soil Boring Logs for Commercial Development, Princeton-By-The-Sea.

REGULATORY SETTING

Section IV.H (Hydrology & Water Quality) of the DEIR provides background discussion of the Clean Water Act (CWA), the Porter-Cologne Water Quality Control Act and the Water Quality Control Plan for the San Francisco Bay Region (Basin Plan), which comprise the key laws and regulatory programs governing activities related to wastewater management and water pollution control. Specific requirements applicable to the proposed wastewater treatment and disposal facilities for the project are provided below.

State

San Francisco Bay Regional Water Quality Control Board (RWQCB)

Waste Discharge Permitting Program. The San Francisco Bay Regional Water Quality Control Board (RWQCB) regulates discharges from wastewater treatment facilities in the project area. As provided under the Porter-Cologne Water Quality Control Act and the CWA, this is done through the adoption of National Pollution Discharge Elimination System (NPDES) permits and Waste Discharge Requirements (WDRs) pursuant to policies set forth in the San Francisco Bay Region's Basin Plan. NPDES permits apply to discharges to surface waters; WDRs apply to discharges to land, including soil absorption (leachfield systems). NPDES permits and WDRs specify conditions under which wastewater treatment facilities are allowed to discharge treated wastewater. They set forth prohibitions, water quality requirements, and monitoring and reporting requirements for discharging facilities based upon wastewater treatment methods and the ultimate location for disposal. The specific requirements incorporate general provisions and site specific limitations deemed necessary to protect the beneficial uses of the waters of the state.

Onsite Sewage Disposal Systems. Since the project includes the proposed use of an onsite soil absorption (drain field) system as part of the wastewater system, it qualifies as an onsite sewage disposal system. Criteria governing the siting and design of onsite sewage disposal facilities in the project area are outlined in the RWQCB's Basin Plan⁷: "*Policy on Discrete Sewerage Facilities*" and "*Minimum Guidelines for the Control of Individual Wastewater Treatment and Disposal Systems.*" The RWQCB's Policy and Minimum Guidelines provide the overall siting criteria and other general requirements for onsite wastewater systems in the San Francisco Bay Region. All systems with flows of greater than 2,500 gpd are regulated by the RWQCB. Since wastewater flows for the project are estimated to be approximately 26,000 gpd, the facilities would be permitted and governed by the requirements of the RWQCB.

⁷ *San Francisco Bay Regional Water Quality Control Board, 2006, Water Quality Control Plan (Basin Plan) for the San Francisco Bay Basin.*

Following is an overview of some of the key regulatory/design requirements for onsite wastewater disposal systems contained in the RWQCB's Policy and Minimum Guidelines that are applicable to the drain field element of the proposed project:

- **Soil Depth.** A minimum of 3 feet of soil depth is required below the leaching trenches of a conventional drain field system. For systems discharging secondary or tertiary treated water using drip dispersal or pressure distribution systems, this may be reduced to 2 feet of soil depth over bedrock or an impermeable soil layer, depending on ground slope, percolation rate, and groundwater mounding considerations. The soil within and below the leaching trenches must be permeable and of a suitable texture and structure for absorption of sewage effluent. Coarse sand and gravels are unacceptable due to the lack of fine soil particles for filtration and treatment; heavy clay soils, on the other hand, are generally unsuitable due to inadequate permeability.
- **Percolation Rates.** Percolation rates for all systems are required to be within the range of 1 to 120 minutes per inch (MPI). The percolation rate is a measure of the time (in minutes) for the water level to drop one inch in a standard percolation test hole.
- **Depth to Groundwater.** For drain field systems, the required depth to groundwater below the bottom of the leaching trench varies between 3 and 20 feet, depending on soil characteristics and percolation rate. This requirement may be reduced to a minimum of 2 feet with the incorporation of supplemental treatment (secondary or tertiary) or by using an alternative disposal system design, such as an above-ground sand mound system.
- **Setbacks from Wells and Watercourses.** Required minimum setback distances between wastewater disposal fields and various water features are as follows:

▪ Wells	100 feet
▪ Streams and Water Bodies	100 feet
▪ Reservoirs	200 feet
▪ Drainageways	50 feet
- **Reserve Capacity.** The Minimum Guidelines require that all drain field systems be installed as dual fields, with each field sized to accommodate 100% of the design wastewater flow. A diversion valve (manually operated) is used to allow alternate use of the two drain fields, usually on a 6-month to 12-month cycled.
- **Cumulative Impacts.** Larger commercial and community-type drain field systems require that the long-term cumulative effects be considered in the system sizing and design. Cumulative impacts refer mainly to the potential hydraulic and water quality (e.g., nitrate loading) effects on groundwater (and downstream surface waters) due to the large volume and concentration of wastewater disposal in a given area.

- **Public Entity.** The RWQCB Policy on Discrete Sewerage Facilities requires that a public entity assume legal authority and responsibility for new community wastewater treatment and disposal systems. Community systems are defined in the Policy as "...collection sewers plus treatment facilities serving multiple discharges under separate ownership, such as package plants or common septic tanks, plus disposal facilities such as evaporation ponds or leachfields."

California Department of Public Health (CDPH)

Title 22 - Water Recycling Criteria

Wastewater treatment facilities proposing to utilize the treated water for recycling (as proposed by the project) are governed by requirements contained in California Code of Regulations, Title 22-Water Recycling Criteria. The California Department of Public Health (CDPH) is responsible for administering Title 22, which requires review of all wastewater recycling projects for conformance with the adopted regulations and criteria. The CDPH acts in an advisory capacity to the RWQCB, who normally incorporate Title 22 requirements into WDRs and NPDES permits, along with CDPH findings and recommendations. Some of the key provisions of Title 22 Water Recycling Criteria are summarized here.

- **Treatment.** Recycling water for toilet flushing and unrestricted landscape irrigation requires "disinfected tertiary recycled water". Among other things, this requires that, following secondary (biological) treatment, the oxidized wastewater must be filtered and disinfected by an approved process and meet the following requirements:
 - **Total Coliform.** "The median concentration of total coliform bacteria measured in the disinfected effluent does not exceed a most probable number (MPN) of 2.2 per 100 mL utilizing the bacteriological results of the last seven days for which analyses have been completed, and the number of total coliform bacteria does not exceed a MPN of 23 per 100 mL in more than one sample in any 30 day period. No sample shall exceed a MPN of 240 total coliform bacteria per 100 mL."
 - **Turbidity.** "... the filter effluent turbidity does not exceed 2 NTU, the turbidity of the influent to the filters is continuously measured, the influent turbidity does not exceed 5 NTU, and that there is the capability to automatically activate chemical addition or divert the wastewater should the filter influent turbidity exceed 5 NTU at any time."

Title 22 includes daily coliform analysis and continuous turbidity monitoring to verify compliance with the above effluent quality requirements. The sampling requirements are established to assure protection of the public health because there is significant risk of human exposure to the recycled water.

- **Reliability and Storage.** Title 22 includes provisions for emergency storage of sewage influent (minimum one day of design flow) and redundancy in various treatment processes to ensure continuous and reliable operation. Additionally, Title 22 requires provisions for long-term

storage (minimum of 20 days) or an alternate method of disposal for periods when recycling is not possible, e.g., due to the lack of irrigation demand during rainy periods or when/if the treated effluent fails to meet bacteriological limits.

- Use Area Requirements. Title 22 contains the following requirements pertaining to the areas where tertiary recycled water can be applied:
 - (a) No application of tertiary recycled water shall occur within 50 feet of a domestic well, unless supported by a geological investigation;
 - (b) No impoundment of tertiary recycled water shall occur within 100 feet of any domestic water well;
 - (c) No runoff of irrigation water from the recycled use area shall occur unless determined not to pose a public health threat and authorized by the regulatory agency;
 - (d) No spray, mist or runoff shall enter dwellings, designated outdoor eating areas, or food handling facilities;
 - (e) Drinking water fountains shall be protected against contact with recycled water spray, mist or runoff;
 - (f) Standard warning signs shall be posted where recycled water is used that are accessible to the public;
 - (g) No physical connection shall be allowed between recycled water systems and potable water systems;
 - (h) No hose bibs shall be allowed in the recycled water system in areas accessible to the public; quick couplers shall be used instead.
 - (i) No recycled water agency shall deliver recycled water for any internal use to any individually-owned residential units including free-standing structures, multiplexes, or condominiums.

Any project proposing water recycling is required to submit for review and approval to the California Department of Public Health (CDPH), an Engineering Report in compliance with the provisions of Title 22, Section 60323 of the California Code of Regulations. This report is required to follow the document titled “Guidelines for the Preparation of an Engineering Report for the Production, Distribution, and Use of Recycled Water”, issued by CDPH. This report is normally completed prior to, or in conjunction with, the filing of a Report of Waste Discharge with the Regional Water Quality Control Board. This would be a requirement of the proposed project.

Local

San Mateo County Septic System Regulations

The San Mateo County Code, Chapter 4, Articles 1 through 6, contains the locally adopted standards and requirements for onsite sewage disposal systems (septic systems) developed to implement the RWQCB's Minimum Guidelines. They have been reviewed and approved by the RWQCB. The County regulations address conventional septic tank-drain field systems and apply to individual residential systems and other small multi-family or commercial facilities with wastewater flows of 2,500 gallons per day (gpd) or less. Systems with flows greater than 2,500 gpd are permitted by the RWQCB; however, the County is involved in the issuance of building permits for the installation of facilities approved by the RWQCB.

Soil percolation tests for the wastewater infiltration drain field must be reviewed and approved by the County Environmental Health Division. The County will also be involved in the review of the specifications, location, and design of the proposed wastewater disposal, recycling and landscape irrigation systems; however, the final review and permit authority rests with the State RWQCB.

Granada Sanitary District (GSD)

In order to complete the project, there must be a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments. While the project lies within the GSD's boundaries, the applicant has not conceded that GSD will or may serve the project, nor that GSD has regulatory authority over it. This document is not intended to resolve regulatory authority, but if it is ultimately determined that GSD will serve or may serve the project, the applicant will need to secure a determination that the GSD has sufficient capacity to serve the project.

The project site lies within the service area boundaries of Granada Sanitary District, which has designated Urban and Rural zones. The project site is within the designated Urban Zone of the District. The District's position is that its Wastewater Ordinance covers the use of private wastewater systems (i.e., onsite septic systems) as well as connections to the public sewers owned and maintained by the District. According to correspondence from the District Counsel,⁸ the District would have primary jurisdiction and permitting authority for the installation and use of any private wastewater disposal system within the District. There is a difference of opinion regarding the extent to which the GSD has jurisdiction over permitting of private wastewater systems in district boundaries. The County of San Mateo takes no position regarding this authority or scope of GSD to require permits.

For properties in the Rural Zone where public sanitary sewer is not available, the District Ordinance (Section 501) provides specific criteria and standards for private wastewater disposal systems that are generally equivalent to the septic system regulations contained in San Mateo County Code. For properties located in the Urban Zone, connection to the public sewer is required. The only exception to

⁸ Wittwer, Jonathan, December 5, 2008, *Granada Sanitary District Scoping Comments for Big Wave EIR*, submitted to San Mateo County Planning and Building Department.

this is a provision of the Ordinance that allows for the continued use of existing private wastewater disposal systems on properties designated as rural lands located in the Urban Zone, which is not relevant to the proposed project.

Notwithstanding the above, Section 614 the Ordinance provides a mechanism for the District to enter into a Development Agreement with property owners within the District to address special circumstances related to the provision of sanitary sewer service. Specifically, a Development Agreement under Section 614 may be employed for any of the following purposes:

- (a) To provide for the manner in which wastewater services shall be provided to the property.
- (b) To provide for the construction of new wastewater facilities to be dedicated to the District for the purpose of serving the property.
- (c) To provide for the manner in which the improvements to be constructed on the property shall be connected to the District's wastewater system.

Authorization of a Development Agreement with the District requires approval of a resolution of the Granada Sanitary District Board. The applicant has not conceded that GSD necessarily possesses all of the regulatory authority that GSD asserts over the project. The purpose of this document is to identify potential environmental impacts and mitigation measures for them, rather than to resolve open issues regarding the scope of GSD's regulatory authority. If it is ultimately determined that some or all of GSD's regulations apply to the project, the applicant will need to work with GSD to ensure that the project complies with applicable GSD regulations.

ENVIRONMENTAL IMPACTS

Thresholds of Significance

Based on Appendix G to the CEQA Guidelines, the proposed project would have a significant environmental impact in regards to sewer services if it would:

- require or result in the construction of new wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects.
- result in a determination by the wastewater treatment provider which serves or may serve the project that it does not have adequate capacity to serve the project's projected demand in addition to the provider's existing commitments.
- fail to satisfy applicable state regulatory requirements adopted for the purpose of avoiding or mitigating an environmental effect.
- result in a public service condition that is inconsistent with pertinent local plans and policies, adopted for the purpose of avoiding or mitigating an environmental effect.

Proposed Project

The proposed project would recycle all wastewater, through onsite treatment/water recycling and for use in toilet flushing and agricultural irrigation. All excess wastewater not recycled for irrigation or toilet flushing would be infiltrated through three drain fields and discharged into the onsite wastewater infiltration system. During drought periods the project proposes to ration water by reducing agricultural irrigation and would send the majority of the recycled water to the infiltration drain fields for groundwater recharge. The wastewater system and treatment alternative includes connection to the Granada Sanitary District for the discharge and treatment of sewage.

Onsite Treatment/Water Recycling

Wastewater Treatment Plant

The proposed wastewater treatment system for the project would consist of four primary components (refer to Figures III-25 through 27):

- Sewage collection system consisting of pipes and manholes;
- Treatment system consisting of an onsite membrane bioreactor (MBR), ultraviolet (UV)-disinfected tertiary wastewater treatment plant and sludge treatment/handling facilities, designed to satisfy, at a minimum, state Title 22 standards for application of treated wastewater;
- Treated wastewater distribution system and a storage tank for operational and wet weather storage of treated wastewater; and
- Treated wastewater disposal through a combination of toilet flushing uses, via a subsurface drip emitter infiltration system for agricultural and landscaping irrigation uses, as well as through infiltration via three drain fields.

A detailed discussion of the wastewater collection, treatment and disposal system is provided below:

Collection System

All sanitary wastewater from both the Office Park and the Wellness Center would be collected in a gravity sewer system terminating in the southern corner of the project site where the MBR plant would be located. According to Figures III-25 and -26, the sanitary sewer systems would include a network of 6-inch and 8-inch diameter pipes and 13 manholes. According to email correspondence from the applicant⁹, the connecting sewer line from the Office Park property to the Wellness Center property would either be installed: (a) in the roadway with an encroachment permit from San Mateo County; or (b) under the seasonal creek using horizontal directional drilling methods. The final sewer grades would be determined based on the sewer route chosen. As discussed in Section III (Project Description), the proposed project

⁹ Holmes, Scott, June 6, 2009 and July 21, 2009, email correspondence.

also includes provisions for a possible gravity sewer line connection to the Granada Sanitary District sewer system. This would consist of an 8-inch line running from the onsite MBR plant, along the southern side of the Wellness Center property to Airport Street, and in a southerly direction along Airport Street approximately 150 feet to the Granada Sanitary District manhole located at the intersection of Airport Street and Stanford Avenue.

Treatment System

The proposed MBR plant proposed for the project would be constructed by Enviroquip, using processes and equipment recognized by CDPH as compliant with Title 22 requirements for tertiary recycled water. The MBR is designed to utilize a single complete mix reactor in which all the steps of the conventional activated sludge process occur with a membrane filter system submerged in the reactor. The membrane filter system filters the water continuously from the reactor by the suction of a pump. For the proposed project, the system will include initial screening of influent, an anoxic basin, and a pre-aeration basin ahead of the MBR basin. The filtered water from the MBR will then pass through an ultra-violet (UV) light disinfection system as the final step in the production of recycled water. The applicant proposes to build a treatment plant sized to handle double the required capacity for redundancy and to allow potential future expansion of service. Initially, only the equipment required for the project would be installed and the additional concrete tanks for expansion would be used as the clearwell for irrigation storage and dosing the infiltration field. The proposed effluent quality for the MBR plant is listed in Table IV.N-1, along with relevant standards for tertiary recycled water (i.e., Title 22).

**Table IV.N-1
Membrane Bioreactor (MBR) Process Plant Treatment Criteria**

Pollutant	Proposed Project Wastewater Plan Discharge	Title 22 Standards²
Biochemical Oxygen Demand (BOD) 30-Day Average	<5mg/l	Not specified ¹
Total Nitrogen	<10 mg/l	Not specified
Total Suspended Solids	<3 mg/l	Not specified
Turbidity	<0.2 NTU	<2 NTU
Total Coliform	<23 MPN/100ml	<2.2 MPN/100ml – 7-day median 23 MPN/100ml – no more than once/30-days 240 MPN/100ml – single sample max.
<i>Notes:</i> NTU = Nephelometric Turbidity Unit; MPN = Most Probable Number ¹ Must be fully oxidized wastewater ² California Code of Regulations, Division 4, Chapter 3 Water Recycling Criteria		

The system will also produce sludge that would either be: (1) pressed and hauled to Ox Mountain Landfill; or (2) blended into a worm composting operation constructed in portable spreaders located on the adjacent 12-acre row crop farm. Sludge from the plant after composting is planned to meet Class A sludge standards for agricultural uses.

The treatment plant would be completely covered with aluminum plates and hatches and sealed with rubber gaskets or a sealed fiberglass enclosure. A vacuum fan would distribute all process air through a

soil scrubber constructed adjacent to the plant. The scrubber would be 150 square feet in area, covered in loam, wood or root chips, and planted in native vegetation.

Treated Wastewater Storage

The MBR plant would include a 30,000-gallon storage tank for treated wastewater. The tank would serve to store and regulate the flow of recycled water for irrigation and toilet recycling. It would also be used for flow equalization and for dosing the infiltration (leachfield) system. Separate submersible pumps would be provided for the toilet flushing and irrigation dosing systems. As the storage tank reaches capacity, the water would be pumped to the infiltration system. This tank would also be covered with the aluminum plate system.

Water Recycling

The recycled water produced by the MBR plant is proposed to be used onsite for toilet flushing within project buildings, and for irrigation of landscaping, crops and wetland restoration areas. During the dry season the project proposes to recycle all of the treated wastewater. During the wet season, excess water would either be discharged to the Granada Sanitary District system or dispersed onsite via subsurface disposal fields (leachfield). Areas proposed for irrigation with recycled water include: (1) native plants used for ornamental landscaping; (2) wetland restoration areas (initial three years only); (3) and row crops. Subsurface drip irrigation methods would be used.

Drain Field System

An onsite drain field (infiltration) system would be installed to percolate surplus treated water during the wet season or at any other time needed. The plan for the drain field is to install a series of leaching beds on both the Office Park property (two fields) and the Wellness Center property (one field). The beds would be constructed using leaching chambers (rather than drain rock), and would each cover an area of approximately 11,000 square feet (33,000 square feet total). Based on an assumed wastewater loading rate of 0.6 gallons per day per square foot (gpd/ft²), the applicant estimates the leachfields to have a disposal capacity of approximately 20,000 gpd. Percolation testing of the soils would be completed to verify the final design parameters and sizing.

According to the preliminary utility plans,¹⁰ the leaching beds would be 20-feet wide by 3-feet deep, and would extend in a long linear configuration adjacent to and/or around several of the buildings or adjacent roadways on the two parcels. The proposed cross-section detail of the leachfield beds shows two parallel leaching chambers, six-feet on center, and silty soil used to backfill the leaching bed area. The leaching chambers in each field would have approximately 12,000 gallons of storage capacity. Treated wastewater would be pumped into the chambers as needed; a typical dose volume of 8,000 gallons is proposed.

¹⁰ MacLeod and Associates, April 7, 2009, Preliminary Grading/Drainage & Utility Plans, Big Wave Wellness Center.

Optional Connection to Granada Sanitary District

The wastewater plans for the project indicate that the project may seek approval for connection to the Granada Sanitary District sewer system as a contingency for surplus wastewater flow during the wet season, or for other emergency needs. The point of connection would be the existing manhole at the intersection of Airport Street and Stanford Avenue, near the southeast corner of the project site.

Estimated Wastewater Flows

According to the project plans,¹¹ the wastewater flow for the proposed project is estimated to be 26,000 gpd for average conditions. This is based on the applicant's estimate that water demand and wastewater flow will be approximately equal. Refer to Table IV.N-2 in the Water subsection for the supporting assumptions and calculations for this estimate. During drought periods the applicant proposes to ration water to reduce the average domestic water demand by about 20 percent, to approximately 21,000 gpd, which would result in an equivalent reduction in wastewater flow.

Wastewater Recycling Flows

The applicant estimates¹² that approximately 16,000 gpd (out of the 26,000 gpd total) will be recycled for toilet flushing in the Office Park and the Wellness Center buildings. This is based on the assumption that the amount of water use for toilet flushing will be 70 percent in the Office Park (14,000 gpd) and 30 percent in the Wellness Center (approximately 2,000 gpd). The remaining flow of approximately 10,000 gpd of recycled water would be available for landscape and crop irrigation, or for percolation via the onsite infiltration (drain field) systems.

System Operation and Management

The applicant proposes to fully automate and fully alarm the MBR plant to comply with Title 22 requirements. The applicant proposes monitoring of the MBR system, including 24-hour composite sampling. Operation of the system would require a State-Certified Wastewater Treatment Plant Operator, Grade 4. It is also proposed that residents of the proposed project would provide labor and staff support for treatment plant operations, with the plan to eventually become certified operators.

The wastewater system for the project is planned to serve the Wellness Center and Office Park properties, which will be under separate ownership. As a consequence of serving multiple discharges under separate ownership, the wastewater system will be classified a community system. Per the provisions of the RWQCB's "Policy on Discrete Sewerage Systems", this will require that a public entity assume legal and financial responsibility for the wastewater facilities. To comply with this requirement, the applicant proposes to either: (a) secure an agreement with Granada Sanitary District to own and operate the project wastewater facilities; (b) modify the project plans to bring all property under single ownership; or (c)

¹¹ *Big Wave Project, January 1, 2009, Facilities Plan: Draft #2.*

¹² *Big Wave Project, Undated, Facilities Plan: Draft #3.*

obtain an exemption from the RWQCB to their requirement for a public entity for discrete sewerage systems.

Project Impacts and Mitigation Measures

Impact UTIL-1 Wastewater Treatment Facilities and Capacity

The project proposes to construct and operate its own onsite wastewater treatment system, such that no new wastewater treatment facilities will need to be constructed or expanded to serve the project. Municipal wastewater treatment service in the project area is provided by the regional facility operated by the Sewer Authority Mid-Coastside (SAM). The treatment plant has rated capacity of 4.0 million gallons per day (mgd), and existing average dry weather flows of 1.7 mgd (i.e., the plant has surplus treatment capacity of approximately 2.3 mgd). The estimated wastewater flows from the project are approximately 26,000 gallons per day (gpd). If the project were to be connected to the SAM system, e.g., for emergency, short-term purposes, the additional flow contribution to the system would amount to about 1.1 percent of the available surplus treatment capacity in the system. This is a ***less-than-significant*** impact and no mitigation measures are required.

Impact UTIL-2 Wastewater Collection System Capacity

The project proposes to have a sewer connection to the Granada Sanitary District as a contingency for surplus flows during the wet season and for other emergency purposes. The applicant has not provided estimates of the amount of sewage flow that would be directed to the sewer system from the project. However, based on the analysis in this DEIR, it should be anticipated that there will be times when the entire daily sewage flow (26,000 gpd) would be discharged to the sewer. This would occur, for example, as a result of having to suspend water recycling due to non-compliance with Title 22 treatment limits. No hydraulic analysis has been completed by the applicant to confirm that the existing 8-inch sewer line in Stanford Avenue has sufficient capacity to accommodate additional flows of 26,000 gpd. Analysis by the DEIR authors indicate that an average flow of 26,000 gpd would likely require a minimum sewer line diameter of 12 inches or greater; thus the existing 8-inch line would not be adequate for the project. The Princeton Pump Station may also have inadequate capacity for the additional surcharge of 26,000 gpd sewage flow from the project. The potential lack of adequate capacity for the project wastewater flows in the existing Granada Sanitary District sewage collection system may require improvements that have not been accounted for in the project plans. This is a ***potentially significant*** impact.

Mitigation Measure UTIL-2 Wastewater Collection System Capacity

The applicant shall either: (a) revise the project design to limit the maximum amount of sewage flow to the Granada Sanitary District sewer system to that which can be accommodated by the existing 8-inch sewer line in Stanford Avenue and the Princeton Pump Station; or (b) provide necessary expansion of the capacity of the sewer system to accommodate the addition of the expected maximum sewage flow of 26,000 gpd from the project.

Impact UTIL-3 Granada Sanitary District Regulations¹³

The proposed project lies within the designated Urban Zone of the service area of the Granada Sanitary District, a local wastewater permitting agency. The District Wastewater Ordinance covers the use of private wastewater systems (i.e., onsite septic systems) as well as connections to the public sewers owned and maintained by the District. According to District Ordinance (Section 501) the Big Wave project site, which lies within the Urban Zone of the District, would be required to connect to public sewer and would not be permitted to operate a private onsite wastewater system. Therefore, the wastewater plans for the project are in conflict with the District Ordinance. While to date no efforts have been made to resolve this regulatory conflict, the project would be required to comply with all applicable requirements of local permitting agencies. Therefore, this is a *less-than-significant* impact and no mitigation measures are required.

Impact UTIL-4 Wastewater Recycling and Disposal Requirements*Title 22 Water Recycling Criteria*

The proposed MBR treatment system and associated facilities described for the project appear to be capable of complying with Title 22 requirements for recycled wastewater. However, some requirements are not clearly addressed in the preliminary plans presented for environmental review. For example, Title 22 requires emergency storage capacity for influent wastewater equal to at least one full day of sewage flow, i.e., 26,000 gallons in this case. The preliminary plans do not indicate that an emergency storage tank of this capacity will be provided. An alternative means of meeting this requirement could be the sewer connection to the Granada Sanitary District (GSD) system. However, it is not clear from the applicant if this is a firm part of the plan or an option that may or not be included.

Title 22 also requires an alternate means of wastewater disposal or long-term storage (minimum of 20 days) for periods when the recycled water may be out of compliance with effluent specifications. The preliminary plans for the drain field, as discussed below, do not indicate that it has been sized for the entire wastewater flow of 26,000 gpd; therefore, it would not be able to satisfy this particular requirement of Title 22. Winter discharge to the GSD sewer system would be acceptable; however, as discussed above, it is uncertain if the connection to the GSD sewer system discussed in the plans is optional or a firm part of the proposed project.

Drain Field System

The wastewater facilities plan includes leachfield beds for onsite percolation of treated water primarily during the winter season when irrigation uses are minimal or nil. The leachfield would also be available for use at any other time there is surplus wastewater requiring disposal. The utility plans indicate the design of the leachfield has been prepared to conform to guidelines and criteria contained in the U.S. EPA

¹³ As noted above, there is some uncertainty regarding the whether it is the County or GSD that has regulatory authority over onsite wastewater systems with the GSD. However, due to the size and nature of the wastewater system for the proposed project, the overall regulatory authority for the project will be the RWQCB.

“Design Manual for Onsite Wastewater Treatment and Disposal System”. This EPA Design Manual is referenced in San Mateo County Onsite Sewage Disposal Regulations. While the EPA Design Manual contains useful technical information that may be incorporated in the system design, it will not be the governing document for the proposed drain fields. As discussed earlier under Regulatory Setting, the size of the project and the nature of the proposed wastewater system require that it be permitted by the RWQCB. The RWQCB Basin Plan contains policies and guidelines for drain field systems; and these will be the criteria against which the project plans will be reviewed. The RWQCB may consider exemptions from their standard criteria on a case-by-case basis, and may also incorporate recommendations from Granada Sanitary District, the San Mateo County Health Department, or others. At a minimum, however, the proposed drain fields should comply with the RWQCB guidelines.

Review of the leachfield design presented in the preliminary utility plans indicated several points of uncertainty or clear departure from the RWQCB guidelines, as follows:

1. Percolation and Wastewater Loading Rates. The applicant plans to conduct percolation testing for drain field design, but the work has not yet been undertaken. Instead, the drain field sizing has been estimated on the basis of soil conditions. The estimated wastewater loading rate of 0.6 gpd/ft² may be reasonable for the site, based on review of available soils information. However, this will have to be confirmed with formal percolation testing; and this should be completed during the wet weather (winter) season, to properly account for soil moisture and water table conditions that would be representative of the time of year when the drain fields will have their predominant use.
2. Vertical Separation to Groundwater. No investigations of wet weather groundwater conditions have been completed to determine if the proposed drain field areas will comply with the minimum 2-ft vertical separation requirement (below the drain field bottom). Geotechnical borings in May of 2000 and April 2002 provide some limited information, showing the water table at depths as shallow as 3 feet, and typically around 6 to 7 feet below grade in the areas where the drain fields will be located. The water table will rise higher in the wet weather season, and how high will determine whether or not the proposed drain field areas can comply with the RWQCB minimum guidelines. With 3-foot deep leaching beds, the winter water table should be at least 5 feet below grade to comply with RWQCB guidelines. A wet weather groundwater monitoring investigation will need to be completed to obtain accurate information on winter groundwater levels.
3. Groundwater Mounding Effects. In addition to measuring the water table conditions under existing conditions, the RWQCB will require the applicant to determine how much the water table is likely to rise (i.e., groundwater mounding) in response to the percolation of wastewater from the drain fields and other changes in the project site. In particular, use of permeable pavement to maximize rainfall percolation could contribute to a rise in the water table in the drain field areas. A groundwater mounding rise of 1 to 2 feet or more would not be uncommon for the given site conditions and the intensity of wastewater loading proposed. In reviewing the project the RWQCB typically uses the mounded groundwater height, not the pre-development condition,

as the benchmark for determining compliance with the 2-ft vertical separation from the drain field. This criterion has the potential to greatly reduce the allowable wastewater loading rate, below the rate that might be indicated by percolation test results or soil conditions. The result would be the requirement for much greater drain field area than what has been proposed in the applicant's preliminary plans.

In addition to the above soil and groundwater criteria, other aspects of the proposed drain field design that are not consistent with typical practice and would likely be questioned during the RWQCB review include the following:

- Leaching Bed Cross-section Detail. The cross-section detail shows the use of silty soils for backfill of the leaching bed rather than the use of drain rock, which is the standard design practice. The full 20-foot width of the proposed leaching bed cross-section would not be counted as effective infiltration area for sizing calculations unless backfilled with drain rock, pea gravel, or similar coarse filter media.
- Building Setbacks. The cross-section detail shows no setback between the leaching bed and adjacent buildings, which is contrary to County septic system and building regulations, and similar requirements of Granada Sanitary District. Both San Mateo County and Granada Sanitary District require a 10-foot setback between buildings and drain fields.
- Leachfield Dosing Plan. The applicant has indicated that dispersal of wastewater to the leaching beds would be done typically with large volume doses of 8,000 gallons at a time. This will tend to create short-term saturated flow conditions. This is not consistent with current practices for drain field operations, which generally emphasize the use of smaller, frequent doses spread over the course of the day to promote unsaturated flow in the soils and better long-term performance.

Demonstration of the ability of the project wastewater facilities to comply with Title 22 Water Recycling Criteria and RWQCB Minimum Guidelines for drain field systems is critical to establishing project feasibility. Available information is insufficient to make this finding. This is a *potentially significant* impact.

Mitigation Measure UTIL-4 Wastewater Recycling and Disposal Requirements

The applicant shall comply with State Health Department and RWQCB requirements for wastewater recycling.

Impact UTIL-5 Wastewater and Recycling Water Flow Estimates

As discussed under Water Supply Impact UTIL-8, the projected volume of wastewater recycling for toilet flushing appears to have been overestimated by the project applicant. The applicant estimates that approximately 16,000 gpd of recycled water will be used for toilet flushing at the Office Park and Wellness Center. Per the discussion under UTIL-8, the corrected estimate of water for toilet flushing could be two-thirds this amount. The estimates of toilet flushing flows have been used by the applicant to

estimate: (a) the amount of recycled water available for irrigation uses; and (b) the total amount of wastewater flow to be disposed of by other means (i.e., leachfield beds) during the winter non-irrigation period. As a consequence of overestimating the toilet flushing flows, further analysis is needed to determine whether or not there are sufficient irrigation areas and necessary capacity in the drain fields for the corrected (larger) amount of wastewater flow. This is a *potentially significant* impact.

The following mitigation measure would reduce this impact to a *less-than-significant* level:

Mitigation Measure UTIL-5 Wastewater and Recycling Water Flow Estimates

The applicant shall revise the project plans and water budget analysis to correct the inconsistencies in the water recycling assumptions and calculations, and shall use this information to verify: (a) the adequacy of plans for irrigation uses of recycled water; and (b) the sufficiency of the proposed leachfields for winter season dispersal of all wastewater flow not distributed for toilet flushing. This information shall be provided for review and approval by the RWQCB.

Impact UTIL-6 Creek Crossing by Sewage Pipeline

The preliminary utility plans for the project show a gravity sewer line running from the North Parcel to the South Parcel along the westerly side of Airport Street. It appears that the proposed alignment for the sewer line, as well as other utilities, crosses through the open creek channel area, on the downstream side of the existing concrete headwall. Correspondence from the applicant¹⁴ explains that the utilities are intended to be installed under the drainage channel by jack and bore or horizontal directional drilling methods to avoid any disturbance to the drainage channel. This method of pipeline installation is feasible; however, it requires the pipelines be installed a minimum depth of 3 to 4 feet below the creek bottom to comply with requirements of the California Department of Fish and Game (CDFG) for this type of work and to avoid disturbance to the drainage channel. The elevation of the creek bottom at the proposed point of crossing is approximately 15 feet NGVD. Therefore, the sewer line will be at an elevation of approximately 11 to 12 feet NGVD where it crosses the creek. This elevation is about 3 feet lower than the sewer invert elevation (14.32 feet) shown on the Preliminary Utility Plan (4/07/09) at the northernmost sanitary sewer manhole on the south side of the creek crossing on the Wellness Center parcel. Therefore, the sewer line will have to be lowered by about 3 feet from this point forward throughout the Wellness Center property.

The applicant has further indicated¹⁵ that an alternative route for the connecting sewer line would be in Airport Street, subject to obtaining an encroachment permit from San Mateo County. If this route is selected and approved by the County, the sewer line could probably be installed with a minimum of one foot clearance below the invert of the two existing 48-inch diameter culverts in Airport Street. This would put the sewer line invert at an elevation of about 13 feet, which would be higher than via the creek undercrossing, but still lower than the proposed 14.32-foot invert elevation at the manhole on Wellness

¹⁴ Holmes, Scott, June 26, 2009, Email Correspondence.

¹⁵ Holmes, Scott, July 21, 2009, Email Correspondence.

Center parcel. Regardless of which route is selected, the sewer line would still have to be deepened which would either: (a) lower the hydraulic profile at the treatment plant and may also affect the feasibility of having a gravity overflow to the Granada Sanitary District manhole located at the intersection of Airport Street and Stanford Avenue; or (b) require the use of a lift station on either the Office Park or Wellness Center parcel. Since this has not been accounted for in the project plans, this is a ***potentially significant*** impact.

Assuming compliance with CDFG requirements, the following mitigation measure will reduce this impact to a ***less-than-significant*** level:

Mitigation Measure UTIL-6 Creek Crossing by Sewage Pipeline

The project applicant shall modify the current plans for sewer connection between the North and South parcels to provide either: (a) re-alignment and profile correction to accommodate a gravity sewer line; or (b) incorporation of a lift station on either the North or South parcel.

CUMULATIVE IMPACTS

By providing a self-contained onsite wastewater treatment, recycling and disposal system, the project will not add to the demand for wastewater treatment capacity at the SAM facility, and will, therefore, not contribute to cumulative wastewater treatment impacts. However, since the project will rely on the regional wastewater system for periodic or short-term emergency and surplus wet weather flows, the project will contribute to cumulative impacts on Granada Sanitary District and SAM collection system. This is a potentially significant cumulative impact, since bottlenecks and infiltration and inflow in the sewage collection system has been a chronic source of wet weather sewage overflow problems in the recent past and is the subject of continuing corrective efforts by SAM and its member sewer districts. By having to rely on the SAM sewer system as a wet weather contingency, the project has the potential to impact collection system flows during the most vulnerable times.

LEVEL OF SIGNIFICANCE AFTER MITIGATION

Some of the identified wastewater-related impacts can be mitigated to a level of less than significant through compliance with requirements of permitting agencies and implementation of the recommended mitigation measures. Some aspects of the proposed wastewater treatment and disposal system have been found to be in conflict with existing policies and requirements of several agencies that have jurisdiction and permitting authority over various aspects of the wastewater system, including the RWQCB, CDPH, CDFG, San Mateo County, and Granada Sanitary District. The agencies, through the established permitting process, will ensure compliance, or, where appropriate, issue the necessary waiver, to the applicable requirements. Assuming the applicant will resolve these wastewater regulatory issues, impacts would be ***less than significant***.

IV. ENVIRONMENTAL IMPACT ANALYSIS

N. UTILITIES & SERVICE SYSTEMS

2. WATER

METHODOLOGY

This subsection of the DEIR analyzes the proposed project plans to provide water supply for the project, including water for both domestic and irrigation needs. The analysis covers the evaluation of projected water demand and the adequacy of the proposed sources of supply, in terms of water quantity and water quality. The following discussion presents the findings and conclusions of Questa Engineering Corporation. Additional review of water supply, in terms of hydrological setting and impacts, is provided in Section IV.H (Hydrology & Water Quality) of this DEIR. The analysis is based on review of the following:

- the applicant's conceptual facilities plan and background information for the project;
- regulatory requirements for small water systems and water recycling; and
- pertinent literature related to the ground water conditions and water service in the project area.

ENVIRONMENTAL SETTING

Regional Groundwater Resources

The project site is located in the Mid-Coast area of unincorporated San Mateo County, northwest of the community of Princeton by the Sea and south of the Half Moon Bay Airport. As described in Section IV.H (Hydrology & Water Quality), the project area is underlain by the Half Moon Bay Terrace, which is the principal water-bearing formation and a major source of water supply in the vicinity. The Half Moon Bay Terrace has an areal extent of approximately 25 square miles, including several identified sub-basins. The project site lies within the Airport Terrace sub-area of the Airport Sub-basin.

In April 2009 Kleinfelder, Inc. completed a groundwater study of the Mid-Coast area of San Mateo County, roughly between Frenchman's Creek to the south and Martini Creek to the north.¹⁶ The study was commissioned by San Mateo County to assist in long-term groundwater basin and watershed planning. As part of the study Kleinfelder developed generalized water balance models to estimate the basins' inputs (e.g., rainfall and creek recharge) and outputs (e.g., pumping and outflow), and how variations in annual rainfall affect groundwater levels and storage.

¹⁶ *Planning & Building Department of San Mateo County, April 2009, Kleinfelder Midcoast Groundwater Study – Summary and Errata.*

According to the study, approximately 513 acre-feet per year (AFY) of groundwater (167 million gallons per year (MGY)) is pumped from the Airport Sub-basin for agricultural, municipal, and individual domestic uses. The average annual withdrawals are estimated as follows:

- 169 AFY by Coastside Community Water District (CCWD);
- 224 AFY by Montara Water and Sanitary District;
- 96 AFY by approximately six agricultural wells; and
- 24 AFY by about 87 domestic and other wells.

Recharge to groundwater basin occurs principally by percolation of rainfall and infiltration of creek water. Through an examination of 55 years of precipitation records, water well monitoring data and other factors, Kleinfelder estimated the average inflow to the Airport Sub-basin to be about 2,780 AFY, and estimated this to be equal to the average annual output. Therefore, the study concluded that the groundwater basin appears to be in long-term hydrologic balance under current pumping conditions and should remain so with a moderate increase in water extractions. The study also noted that current pumping rates have occasionally lowered the water table to near sea level during dry years, but that the water table recovers quickly during subsequent wet years.

Municipal Water Service

The main supplier of municipal water service in the project area is the CCWD, which serves approximately 18,000 people, including the unincorporated communities of Princeton by the Sea, El Granada, and Miramar, as well as the City of Half Moon Bay.¹⁷ CCWD obtains its water from four sources: (1) Pilarcitos Lake; (2) Crystal Springs Reservoir; (3) Pilarcitos well field; and (4) the Denniston Project. The first two sources are owned and operated by the San Francisco Water Department (SFWD); the latter two are owned and operated by CCWD. Approximately 35 percent of CCWD's water supply is produced locally through stream diversions and wells along Pilarcitos and Denniston Creeks, while the remaining 65 percent is purchased from the City of San Francisco. CCWD operates two water treatment plants, the Denniston Plant near the Half Moon Bay Airport, and the Nunes Plant in the City of Half Moon Bay. Water from SFWD is conveyed through the Pilarcitos pipeline to the Nunes Plant, which has a capacity of 4.5 mgd, from there it is stored in ten storage tanks with a total capacity of 8.1 million gallons. Within the district there are three pressure zones, five pump stations, 500 hydrants and 52 miles of water mains. The majority of the water use in the district is for residential use, with residential customers accounting for 91 percent of the connections and 59 percent of the total water demand.

¹⁷ CCWD, www.coastsidewater.org/water-district-map.

Project Site Water¹⁸

The project site lies outside the CCWD boundaries and does not currently have municipal water service. Water for historical agricultural operations on the property has been provided by an existing onsite well located near the northern side of the northern parcel. According to the Water Well Driller's Report,¹⁹ the well is 100-foot deep, and screened between 20 to 60 feet and 80 to 100 feet, and has a 20-foot deep annular well seal. The well was installed in 1986, and there is a 1987 letter from the San Mateo County Department of Health Services indicating their approval of the well for "...agricultural, single family residential and commercial, industrial use." The County letter indicates that the well water quality data (chemical and bacteriological) reviewed at the time showed conformance with applicable standards for potable use. The County also advised that additional water quality analysis may be required to determine the suitability of the well water as a source of supply for a public water system.

In June 2009 a pumping test was conducted in accordance with San Mateo County procedures and water quality testing was completed for samples taken from the well following the pumping test.²⁰ The static water level at the start of the test was 8'-2" below grade. The pumping test was run for 8 hours, producing a stabilized rate of approximately 33 gallons per minute (gpm) with drawdown of about 18.3 feet (final water level at 26.5'). Over a 7-hour recovery period the water level returned to a depth of 9'-1/2", or about 95 percent of the drawdown amount. The pump was set at a depth of 60 feet for the test.

In correspondence following the pumping test,²¹ the applicant indicated that the existing 20-foot well seal will be extended to a depth of 50 feet to meet the State community well standards. This will be accomplished by drilling a 50-foot deep caisson around the existing well, plugging the screened section with a pig and tremi concreting the seal between the soil and well casing as the caisson is being pulled.

Water samples were taken on June 16, 2009 and June 30, 2009, and were analyzed by Monterey Bay Analytical Services (MBAS).²² The laboratory results indicated compliance with all drinking water standards except for color, iron and manganese, which had reported levels above the secondary drinking water standards for these constituents. Secondary drinking water standards relate to levels of consumer acceptance, rather than health effects. Elevated levels of iron and manganese cause brown and black staining of sinks and other household fixtures. The bacteriological test results were negative for total coliform. Historically, the onsite well has been used solely as a source of irrigation water for the

¹⁸ *The project site is in the sphere of influence of the CCWD, contiguous to District boundaries and eligible for annexation. Annexation would require application to LAFCo and because the CDP A-2-SMC-99-63 restricts the District's ability to provide water to areas in the boundaries of the district at the time of the CDP, LAFCo approval of the annexation would require a condition of approval that the CDP be amended to remove the restriction.*

¹⁹ *Department of Water Resources, September 9, 1986, Water Well Driller's Report No. 154360 by Earth Flow Drilling Co.*

²⁰ *San Mateo County, June 16, 2009, Completed Pump Test Form for Big Wave, Signed by Scott Holmes, RCE C28972.*

²¹ *Holmes, Scott, June 29, 2009, Email Correspondence.*

²² *MBAS, July 4, 2009 and July 8, 2009, Laboratory Report Nos. AA57890 and AA58212.*

agricultural operations on both the northern and southern parcels. Based on information from the applicant, over the past five years the agricultural operations have consisted of irrigated crops during the period of March through November. Typically, this has included two to three harvests of peas and beans, followed by three different types of pumpkins. Annual irrigation water requirements have averaged about 0.6 acre-feet per acre (7 inches of applied water), for a total of about 12 AFY.

Conversion of this well to a source of domestic supply would require a coastal permit and compliance with County and State standards for community water wells and water systems. Approval from the Coastal Commission would also require protection of the Pillar Point Marsh, including assurance that aquifer withdrawals would not exceed groundwater recharge rate locally or otherwise cause an adverse decline impact on groundwater conditions. See Section IV.H (Hydrology & Water Quality) for further discussion of this issue.

REGULATORY SETTING

Federal

United States Environmental Protection Agency

The Safe Drinking Water Act (SDWA), established on December 16, 1974, is the main federal law that ensures the quality of Americans' drinking water by setting standards for drinking water quality and provides guidance to the states, localities, and water suppliers who implement those standards.

State

State Water Resources Control Board

The Porter-Cologne Act entrusts the State Water Resources Control Board (SWRCB) and the nine Regional Water Quality Control Boards (RWQCBs) with protecting California's waters (California Water Code 13001). As discussed in Section IV.H (Hydrology & Water Quality), the RWQCBs are responsible for developing Basin Plans and regulating all pollutant or nuisance discharges that may affect either surface water or groundwater in the region's jurisdiction (California Water Code 13240). Any person proposing to discharge waste within any region must file a report of waste discharge with the appropriate RWQCB (California Water Code 13260). No discharge may take place until a RWQCB issues Water Discharge Requirements (WDR) or a waiver of the WDRs (California Water Code 13264).

California Department of Water Resources

The California Department of Water Resources (DWR) is responsible for the overall management of California's water resources. The regulations overseen by DWR regarding water service availability include Senate Bills (SB) 221 and 610 and the California UWMP Act.

Senate Bills 221 and 610

SB 221 and SB 610 amended State law in January 2002, and are intended to improve the link between information on water supply availability and certain land use decisions made by cities and counties. SB 221 and SB 610 are companion measures, which seek to promote more collaborative planning between local water suppliers, cities, and counties. SB 221 applies to the Subdivision Map Act, requiring an applicant's tentative map to verify that the public water supplier has "sufficient water supply" available to serve it. SB 610 applies to the Water Code, augmenting the CEQA process to definitively establish water availability.

SB 221

SB 221 applies to any "subdivision," defined as:

- A proposed residential development of more than 500 dwelling units, if the public water supplier has more than 5,000 service connections; or
- Any proposed development that increases connections by 10 percent or more, if the public water supplier has fewer than 5,000 connections.

SB 221 does not apply to any residential project proposed for a site that is within an urbanized area and has been previously developed for urban uses, or to housing projects that are exclusively for very low and low-income households. The proposed project would not be subject to this bill because it contains fewer than 500 residential units.

SB 610

SB 610 requires water supply assessments (WSAs) to evaluate whether total projected water supplies will meet the projected water demand for certain development projects that are otherwise subject to CEQA review. Section 10912(a) of the California Water Code defines seven types of projects, which are subject to the mandates of SB 610, such as: (1) a residential development of more than 500 dwelling units; (2) a shopping center or business employing more than 1,000 persons or having more than 500,000 square feet of floor space; (3) a commercial office building employing more than 1,000 persons or having more than 250,000 square feet; (4) a hotel or motel with more than 500 rooms; (5) an industrial or manufacturing establishment housing more than 1,000 persons or having more than 650,000 square feet or 40 acres; (6) a mixed use project containing any of the foregoing; or (7) any other project that would have a water demand at least equal to a 500 dwelling unit project. The proposed project would not be subject to the provisions of this bill because it does not meet any of the above-listed criteria.

Urban Water Management Plan

In accordance with the California Water Code Division 6, Part 2.6, Sections 10610 through 10656, also known as the UWMP Act, all urban water suppliers who directly serve 3,000 or more customers or who

provide 3,000 or more AFY are required to prepare a UWMP. UWMPs are comprehensive reports identifying service area, sources of supply, reliability of supply, past, current and projected water use by type of use, conservation programs, public information and school education programs, capital projects. The purpose of the UWMP Act is to ensure that water suppliers plan for the long-term conservation and efficient use of the State's limited urban water supplies. The UWMP must be updated every five years and filed with the DWR and any city or county in the service area of the water provider. The 2005 UWMP for the CCWD was adopted by the CCWD Board of Directors on December 13, 2005 and was submitted to DWR within 30 days of approval. The 2005 UWMP covers the period from 2005-2010.

California Department of Public Health (CDPH)

The California Department of Public Health (CDPH) Drinking Water Program (DWP)²³ is within the Division of Drinking Water and Environmental Management. The DWP regulates public water systems; certifies drinking water treatment and distribution operators; supports and promotes water system security; provides support for small water systems and for improving technical, managerial, and financial (TMF) capacity; and provides funding opportunities for water system improvements. DWP consists of three branches: (1) the Northern California Field Operations Branch, (2) the Southern California Field Operations Branch, and (3) the Technical Programs Branch. The Field Operations Branch (FOB) are responsible for the enforcement of the federal and California SDWAs and the regulatory oversight of approximately 7,500 public water systems to assure the delivery of safe drinking water to all Californians. In this capacity, FOB staff perform field inspections, issue operating permits, review plans and specifications for new facilities, take enforcement actions for non-compliance with laws and regulations, review water quality monitoring results, and support and promote water system security.

FOB staff work with the U.S. Environmental Protection Agency (USEPA), the SWRCB, RWQCBs, and a wide variety of other parties interested in the protection of drinking water supplies. On the local level, FOB staff work with county health departments, planning departments, and boards of supervisors. Primacy has been delegated by CDPH to certain county health departments for regulatory oversight of small water systems, and FOB staff provide oversight, technical assistance, and training for the local primacy agency personnel.

Prior to construction of a new water system, the identified water supply and the design of all proposed treatment, storage and distribution facilities are subject to review and approval by CDPH. In addition, to ensure the water system will be able to deliver a high quality water service throughout the life of the improvements within its service area, the applicant must prepare a detailed plan for the long term operation, financing and management of the entire system. Once the system begins operation, monthly and quarterly water quality reports must be filed with CDPH to document the system's continued compliance with all applicable water quality regulations.

²³ *California Department of Public Health (CDPH), Drinking Water Program, 2009, Obtained by CAJA Staff, <http://www.cdph.ca.gov/programs/Pages/DWP.aspx>, May 27.*

The CDPH, under the provisions of Section 116330 of the California Health and Safety Code (CHSC), delegates the permitting and regulation of certain water systems of under 200 connections to local agencies; in San Mateo County, the Department of Environmental Health Services has been delegated this water system permitting and regulatory authority by the CDPH. The proposed project includes less than 200 water supply connections and will therefore be regulated by the Department of Environmental Health Services.

Drinking Water Quality

Drinking water quality is governed by the provisions of Title 22 of the California Code of Regulations (CCR), which specify the allowable maximum contaminant levels (MCL) for a wide range of primary and secondary water quality constituents. Of particular note is the change in the MCL of arsenic, which dropped from the current value of 50 parts per billion (ppb) to 10 ppb in January 2006.

California Safe Drinking Water Act

The California Safe Drinking Water Act was passed to build on and strengthen the federal Safe Drinking Water Act. The California Safe Drinking Water Act authorizes the CDPH to protect the public from contaminants in drinking water by establishing MCLs that are at least as stringent as those developed by the USEPA, as required by the federal Safe Drinking Water Act.

Groundwater Management Act (California Water Code 10750)

There are no statewide statutory regulations of groundwater in California except for groundwater flowing in subterranean streams through known and defined channels. Landowners overlying groundwater have the right to share the groundwater under their property with other overlying landowners without obtaining a permit from any state agency. Groundwater may also be used on adjacent lands, but this right is subordinate to the prior use of any overlying landowners. Surface water can be diverted or pumped into aquifers for later extraction, with SWRCB approval.

The California Ground Water Management Act, commonly referred to as Assembly Bill (AB) 3030, promotes development of voluntary groundwater management plans to guide ongoing management procedures for groundwater basins and ensure stable groundwater supplies in the future. The legislation is designed to provide local public agencies with increased management authority over groundwater resources in addition to those existing groundwater management capabilities. Several California counties have adopted groundwater regulation programs. Litigation has also resulted in court decrees regulating groundwater use in some cases.

Regional and Local

San Mateo County Department of Environmental Health Services

San Mateo County's Small Drinking Water Systems Program

The onsite water system proposed for the project would be classified as a Small Community Water System, and would be regulated under San Mateo County's Small Drinking Water Systems Program. Community water systems are defined under the California Safe Drinking Water Act as those that serve drinking water to at least 15 service connections used by yearlong residents or that regularly serve at least 25 yearlong residents. As stated previously, the CDPH regulates large water systems, having more than 200 connections. Those with less than 200 connections are considered Small Community Water Systems and are normally regulated by the local authority, in this case San Mateo County Department of Environmental Health Services. Through their local program, the County is responsible for enforcing the requirements of the California Safe Drinking Water Act, which cover such things as water quality standards, monitoring and reporting, operator qualifications, system design and maintenance, and system management.

In addition to meeting specific water system facility requirements, notable requirements for small community water systems include the following:

Water Quality Monitoring. Standard water quality monitoring requirements include:

- Bacteriological Monthly
- Chemical Once every 3 years
- Nitrates Annually
- Radiological Once every 3 years

Consumer Confidence Reports. All community water systems are required to prepare a Consumer Confidence Report (CCR), which is an annual water quality report for distribution to their customers. The CCR includes information on the source water, the levels of any detected contaminants, any associated health effects, and compliance with drinking water regulations.

Technical, Managerial Financial Capacity Assessment. TMF capacity is ability of a small community water system to provide a safe and reliable drinking water supply to their customers. TMF capacity assessment is required for all new community water systems.

Source Water Assessment Program. The Source Water Assessment Program (SWAP) is a study and report of each water system that provides basic information about the drinking water source and identifies any possible contaminating activities in the area.

County of San Mateo General Plan

Following are a listing of applicable goals and policies from the San Mateo County General Plan pertaining to the planning and development water supplies, including water conservation, reuse and efficiencies.

10.1 Coordinate Planning

- Coordinate water supply planning with land use and wastewater management planning to assure that the supply and quality of water is commensurate with the level of development planned for an area.

10.3 Water Conservation

- Promote the conservation and efficient use of water supplies.

10.4 Development of Water Supplies

- Promote the development of water supplies to serve: (1) agricultural uses, as the highest priority; (2) domestic uses; and (3) recreational uses.

10.10 Water Suppliers in Urban Areas

- Consider water systems as the preferred method of water supply in urban areas. Discourage use of wells to serve urban uses.

10.12 Coordination of Water Suppliers

- Encourage water providers to coordinate the planned capacity of their facilities commensurate with the level of development permitted by adopted land use plans and wastewater management plans.

10.13 Water Systems in Unincorporated Areas

- Support efforts to improve water distribution and storage systems in unincorporated neighborhoods and communities.

10.25 Efficient Water Use

- Encourage the efficient use of water supplies through effective conservation methods.
- Require the use of water conservation devices in new structural development.
- Encourage exterior water conservation.

10.26 Wastewater Reuse

- Encourage the reuse and recycling of water whenever feasible.
- Encourage the use of treated wastewater that meets applicable County and State health agency criteria.

15.30 Standards for Water Supply and Fire Flow for New Development

- Require connection to a public water system or private water company or provision of an onsite water supply as a condition of approval for any new development proposal.
- Determine the quantity of onsite water supply, fire flow requirements and spacing and installation of hydrants in accordance with the standards of the agency responsible for fire protection for the site proposed for development.

County of San Mateo Green Building Ordinance

On February 26th 2008, the San Mateo County Board of Supervisors approved a Green Building Ordinance that will apply to building projects within the unincorporated areas of San Mateo County. On October 7, 2008 the Board of Supervisors adopted an ordinance amending the regulations clarifying standards and requirements to improve the effectiveness of the Green Building Program. The purpose of the Green Building Program is to enhance public health and welfare by encouraging green building measures in the design, building and maintenance of buildings. Green Building Practices are intended to: (a) encourage the conservation of natural resources; (b) reduce waste in landfills generated by construction projects; (c) increase energy efficiency and lower energy usage; (d) reduce operating and maintenance costs for buildings; and (e) promote a healthier indoor environment.

San Mateo County Local Agency Formation Commission

The project site is not within the district boundaries of a domestic water supplier, which would require annexation via Local Agency Formation Commission (LAFCO) if the project was to receive back-up services. The project applicant proposes to connect to the CCWD for emergency water supply and fire flow. This proposed annexation to CCWD would require review and approval by LAFCO and approval of amendments to the Coastal Development Permits for the El Granada Pipeline replacement project. Any temporary or permanent extension of water services outside of the service boundary as defined on January 1, 2003 would require amendments to Coastal Development Permits A-1-HMB-99-20 and A-2-SMC-99-63 as well as amendment(s) to the County of San Mateo and Half Moon Bay Local Coastal Plans. LAFCO annexation would require:

- Application by property owner to the San Mateo LAFCO, including a map and legal description and LAFCO and State Board of Equalization Fees;

- Adoption of a property tax exchange resolution by the Board regarding amount of property tax to be transferred between the County General Property Tax and County governed districts;
- Approval by LAFCO and recordation of certificate of completion; and
- Approval of community onsite water by the California Department of Public Health (CDPH) and wastewater systems by the Regional Water Quality Control Board (RWQCB).

ENVIRONMENTAL IMPACTS

Thresholds of Significance

Based on Appendix G to the CEQA Guidelines, the proposed project would have a significant environmental impact in regards to water supply if it would:

- Require or result in the construction of new water facilities or expansion of existing facilities, the construction of which could cause significant environmental effects; or
- Not have sufficient water supplies available to serve the project from existing entitlements and resources, or if new or expanded entitlements are needed.

Proposed Project

Water Sources and Facilities

The project proposes to meet project water demands from three sources:

Onsite Well Water

The primary source of domestic water supply would be the existing onsite agricultural well. It would be converted to provide potable water for the project, and would also continue to be used to supply a portion of the irrigation needs for wetland restoration, native plant nursery, and start-up ornamental nursery. The water used for the domestic supply would be treated with membrane micro-filtration (two 10,000 gallons per day (gpd) AMPAC Reverse Osmosis (RO) systems), followed by ultra-violet (UV) light disinfection (Trojan). One treatment unit would be located in the Storage Mechanical room on the first floor of the Wellness Center (Building 1), and the other would be located in the Communications Building at the Office Park property. For redundancy the two systems would be interconnected with a 4-inch pipe. The RO system would be fully automatic with continuous turbidity readings and alarmed shutdown. The water treatment system would remove salt, minerals, organic pollutants and pathogens. The applicant proposes water treatment to assure the quality of domestic water supply in the event that future testing reveals contaminants in the well water.

Recycled Wastewater

The proposed project would recycle all wastewater for toilet flushing and irrigation. For toilet flushing the recycled water would be supplied in a separate system of water pipes (dual plumbing) in accordance with State requirements for water recycling (refer to Sewer sub-discussion). All areas receiving recycled water for irrigation would also require a piping system separate from any domestic water supply system or raw well water piping. Recycled water is expected to fulfill the bulk of irrigation needs, but could be supplemented with well water. Excess recycled water not used for toilet flushing or irrigation would be percolated into the ground via three drain fields (leach fields) on the site for groundwater recharge.

Annexation to CCWD

The project proposes to annex to the CCWD for provision of water to meet fire flow requirements and as emergency back-up supply for domestic needs. The project is not presently within the CCWD service area, and would require annexation approval by San Mateo County LAFCO. The nearest CCWD main is located at Stanford Avenue and Airport Street. The proposed Wellness Center indoor swimming pool would provide supplemental, back-up storage for fire service water.

Facilities

An onsite water distribution system would also be provided under the project (refer to Figures III-24 and III-25). The potable water supply would include a 6-inch waterline distribution system. This system would distribute water from the CCWD or treated groundwater for potable use. Recycled water would be distributed in a separate 6-inch waterline for irrigation and/or toilet flushing. Reduced pressure back flow preventers would be provided for all potable and CCWD connections. The potable water system for each building in the Office Park and Wellness Center would be fed by 5/8-inch diameter metered waterlines to six 1,000-gallon hydro-pneumatic tanks. The hydro-pneumatic tanks would minimize potable flow requirements to reduce the meter sizes or reduce the size of the water treatment facilities.

As mentioned previously, CCWD would provide fire service water, with the proposed Wellness Center indoor swimming pool storage serving as back-up fire service water. The fire water suppression system would be designed by a licensed Fire Suppression Engineer. The onsite fire distribution system would most likely be an 8-inch to 12-inch main at 150 pounds per square inch (psi), capable of delivering 2,000 gallons per minute (gpm) at a minimum pressure of 30 psi for 30 minutes. Booster pumps in a pump well located in the parking lot and directly powered from an emergency generator would be designed to provide supplemental fire flow. This system would provide either primary or secondary fire flow.

Estimated Water Demands

Domestic Water Demand

The estimated domestic water demand for the proposed project is 26,000 gpd for average conditions. Table IV.N-2 presents the assumptions and calculations from which this estimate is derived; based on information supplied by the applicant. As indicated, the project will serve an up to an estimated 850

people. Although there will be multiple buildings, there will be only two official connections – the Office Park and the Wellness Center. During drought periods the project proposes to ration water to reduce the average domestic water demand by about 20 percent, to approximately 21,000 gpd.

Table IV.N-2
Estimated Domestic Water Demand Average Conditions

Building/Activity	Units	Unit Flow (gpd)	Number of Units	Estimated Water Demand (gpd)
Office Park				
Restrooms/Sinks	Employee	16	780	12,480
Other Miscellaneous ¹				7,500
Subtotal				19,980
Rounded Subtotal				20,000
Wellness Center				
Residents	Person	70	70	4,900
Dog Grooming		–	–	500
Catering and Cleaning		–	–	400
Swimming Pool Evaporation		–	–	100
Subtotal				5,900
Rounded Subtotal				6,000
Overall Total				26,000
<i>Notes:</i> gpd = gallons per day ¹ Includes shower use at Wellness Center fitness center, light manufacturing, microfiltration reject water, etc. Source: Facilities Plan Draft #2 (January 1, 2009) and Draft #3 (undated), and email correspondence from Scott Holmes, dated May 15, 2009.				

Agricultural Irrigation Water Demand

According to the water budget flow chart prepared by the applicant, the estimated agricultural irrigation water demand for the proposed project is 10,000 gpd. This is to supply water for approximately 9 acres of restored wetlands, and 12 acres of high yield farming. The 12-acre farming area is an adjacent/nearby parcel, not part of the project site. During drought years, the project proposes to ration water and reduce agricultural irrigation use by 80 percent, to 2,000 gpd. This is the minimum amount of irrigation needed for the project's Catering/Food Services food production.

Landscape Irrigation Water Demand

The proposed project documents (Facilities Plan²⁴) discuss plans for irrigated landscaping; however, no estimate is provided regarding the amount of landscaping and the associated irrigation water demand. The EIR analysis assumes that landscaping would be matched to the amount of available recycled water.

²⁴ Big Wave Project, 2009, Facilities Plan: Draft #2, January 2009, provided by applicant.

Wastewater Recycling

As described in the Sewer subsection, the plan for wastewater treatment proposed by the project includes the reclamation and recycling of tertiary treated wastewater for toilet flushing and onsite landscape and crop irrigation. The wastewater flows are estimated to be approximately 26,000 gpd, based on the applicant's assumption that all domestic water use would be collected and leave the building as wastewater flow. The applicant estimates that approximately 16,000 gpd (out of the 26,000 gpd total) would be recycled for toilet flushing in the Office Park and the Wellness Center buildings. This is based on the assumption that the amount of water use for toilet flushing would be 70 percent in the Office Park (14,000 gpd) and 30 percent in the Wellness Center (approximately 2,000 gpd). The remaining flow of approximately 10,000 gpd of recycled water would be available for landscape and crop irrigation, or for percolation via the three drain field (leach field) systems.

Net Potable Water Demand

According to the applicant's analysis,²⁵ after subtracting the volume of water recycled for toilet flushing (16,000 gpd), the net potable water demand for the Office Park and Wellness Center would be approximately 10,000 gpd.

Net Demand for Onsite Water Well Production

According to the applicant's analysis, the net demand for water well pumping would be 10,000 gpd, which is the estimated amount required to meet the net potable water demand.

Fire Flow

The quantity of water necessary for fire protection varies with the type of development, occupancy, and the degree of fire hazard. The adequacy of fire flow for a given area is based on required fire flow, response distance from the existing fire station, and the Fire Marshal's judgment of needs in the area. Required fire flow is directly related to land use. The preliminary estimate of fire flow requirements for the project is 2,000 gpm, at a minimum pressure of 30 psi for 30 minutes (60,000 gallons or more). The CCWD main located at Stanford Avenue and Airport Street is capable of delivering this flow.²⁶ Onsite facilities to distribute the water for fire protection are estimated to include an 8-inch diameter main. If the onsite swimming pool will be used as a source of fire flow water, and will accommodate a storage capacity of 60,000 to 90,000 gallons and require a booster pump with capacity to deliver the above mentioned flow of 2,000 gpm through the distribution system.

²⁵ *Big Wave Project, 2009, Facilities Plan: Draft #2 (January 2009) and Draft #3 (undated), provided by applicant.*

²⁶ *Big Wave Project, 2009, Facilities Plan: Draft #2, January 2009, provided by applicant.*

Water System Operations and Management

The proposed water system would serve multiple properties and customers and would be classified as a Small Community Water System under provisions of the California Safe Drinking Water Act. As such, the water system would be regulated by the San Mateo County Environmental Health Services. The applicant would be required to submit a permit application to the County and to comply with all pertinent requirements. Among these requirements is the completion of a TMF capacity assessment to verify the ability of the water system to provide a safe and reliable drinking water for their customers. Information from the applicant²⁷ indicates that the proposed project would seek annexation into the CCWD service area and would work with CCWD on some aspects of water supply. A second obligation for the community water system would be to complete a SWAP, which is a study to identify and evaluate possible contaminating activities in the area that could affect the well water supply and corrective or preventative measures, as appropriate.

Project Impacts and Mitigation Measures***Impact UTIL-7 New Water Facilities or Expansion of Existing Facilities***

As part of the building permit process, the project will be required to have a fire safety engineer calculate the fire flow requirements for the project. If the tested flow is determined to be inadequate, the project would be required to increase the building fire proof rating and/or provide storage and booster pumps. The project proposes to obtain its main supply of water via an existing onsite well and annexation and connection to the CCWD as a back-up emergency domestic supply and for fire flow water service. The San Mateo County General Plan anticipates that the CCWD could serve a population of roughly double the current customer base, which would allow sufficient supply for the proposed development without requiring the CCWD to expand existing facilities or construct new facilities. The existing CCWD water main near the project site (Stanford Avenue and Airport Street) is estimated to have the capacity to deliver the necessary fire flow to the project, based on preliminary estimates of fire flow needs.²⁸ While the project has yet to apply for and gain LAFCO approval for annexation to CCWD, if annexation is approved, the impacts on existing water treatment facilities by the proposed project would be a ***less-than-significant*** impact; therefore, no mitigation measures are required.

Impact UTIL-8 Estimation of Potable Water Demands

According to the estimates and analysis of project water demands by the applicant,²⁹ the proposed project would require a total supply of approximately 26,000 gpd, which would include only 10,000 gpd of potable water. Recycled water for toilet flushing (16,000 gpd) would make up the balance of the 26,000 gpd domestic water use. The 10,000 gpd of potable water is intended to be supplied by the existing on-

²⁷ *Big Wave Project, 2009, Facilities Plan: Draft #2 (January 2009) and Draft #3 (undated), provided by applicant.*

²⁸ *Big Wave Project, 2009, Facilities Plan: Draft#2, January 2009, provided by applicant.*

²⁹ *Big Wave Project, 2009, Facilities Plan: Draft #2, January 2009 and Draft #3 (undated), provided by applicant.*

site well, pumping at roughly the same annual production rate as for recent agricultural irrigation uses at the site. Questa Engineering Corporation's review indicates inconsistencies in applicant's assumptions that significantly affect the calculated net potable water demand for the project:

1. The applicant estimates that 70 percent of the 20,000 gpd water use at the Office Park (i.e., 14,000 gpd) would be for toilet flushing, which can be supplied by recycled water. However, the water demand estimates only indicate that a total flow of approximately 12,500 gpd would be for restroom use (780 employees at 16 gpd per employee). The balance of the water use assigned to the Office Park is for Miscellaneous (showers, light manufacturing uses, water treatment reject). It is possible that up to 70 percent of the restroom use may be for toilet flushing; giving a potential recycled water use rate of 8,750 gpd for the Office Park, rather than 14,000 gpd.
2. The applicant estimates that 30 percent of the 6,000 gpd water use at the Wellness Center (approximately 2,000 gpd) would be for toilet flushing that can be supplied by recycled water. However, there is insufficient information provided by the applicant to evaluate how this was determined, and whether or not it is realistic. The Wellness Center would have far fewer employees and restrooms than the Office Park. Also, it is not clear from the project documents whether or not recycled water is proposed to be supplied for toilet flushing in the residence quarters, and has been counted as part of the water recycling budget.
3. The project plans provide for the operation of a limited commercial laundry at the Wellness Center that would be available for use by residents of the Wellness Center and employees of the Office Park. The water demand estimates do not include any information indicating how or if the laundry use is accounted for in the projected flows.³⁰

Taking into account these inconsistencies and unknowns, we estimate that the net potable water demand for the project is likely to be significantly higher than the 10,000 gpd proposed by the applicant, possibly as much as 16,000 to 17,000 gpd. A pumping test in June 2009 showed the existing well to be capable of delivering a sustained flow of approximately 33 gpm with a drawdown of about 18.3 feet (from 8.2' static to 26.5'). A continuous pumping rate of 33 gpm would equate to a daily water production of approximately 47,500 gpd, which is more than ample to meet the water demands of the project. With pump operation limited to 12 hours per day, which is customary, the well would still produce about 24,000 gpd, which is more than double the applicant's estimated potable water demand of 10,000 gpd. The existing well capacity would also be sufficient to meet an anticipated higher net water demand. This represents a *less-than-significant* impact.

Impact UTIL-9 Adequacy of Onsite Water Well

The applicant proposes to extend the existing 20-foot well seal to 50 feet to meet requirements for a community water well, which will alter the hydraulic characteristics of the well. Specifically, half of the

³⁰ Big Wave Project, 2009, Facilities Plan: Draft #2 (January 2009), Draft #3 (undated), and email correspondence from Scott Holmes, dated May 15, 2009.

existing well screen (from 20 to 50 feet) will be sealed off, leaving the screened sections only between 50 to 60 feet, and from 80 to 100 feet. This will materially alter the production capacity of the well, such that the results of the recently completed pumping test are no longer valid. The production capacity of the existing onsite well would be expected to decline. Consequently, the EIR assumes that a repeat pumping test will be required by the County for the modified well to document its adequacy to meet project water demands. It is not possible to determine whether or not the modified well will have sufficient production capacity to meet project demands. However, if the modified well is found to be insufficient, the capacity could be supplemented with an additional well to meet the project demands. Review of the well log indicates suitable aquifer conditions to support the water demands for the project. The water quality for the existing onsite well is satisfactory and would not be expected to change with the proposed modification of the well seal. Provision of potable water from the onsite well represents a ***less-than-significant*** impact.

Impact UTIL-10 Water Treatment System

The project proposes to employ a RO treatment system and UV disinfection to treat well water for the potable water supply. The treatment system has been proposed in order to assure high quality water for the project facilities, residents, employees and guests. Based on the June 2009 testing of the existing well water, the water quality is suitable for domestic-community water supply, without the need for RO treatment. The observed high levels of color, iron and manganese could be addressed with conventional water treatment methods. The proposed RO system exceeds the treatment needs for the project. Therefore, water treatment is a ***less-than-significant*** impact and no mitigation measures are needed.

CUMULATIVE IMPACTS

The proposed project would obtain its domestic water supply entirely from an onsite well rather than from the CCWD public water supply. The project proposes to connect to the CCWD solely for the purposes of providing fire protection, which would not amount to a significant annual water demand. Therefore, the project would not have a cumulative effect that would diminish the availability of water supply for other projects in CCWD service area. Cumulative water supply impacts would be ***less than significant***.

LEVEL OF SIGNIFICANCE AFTER MITIGATION

Impacts to water supply created by the proposed project would be ***less than significant*** after mitigation.

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IV. ENVIRONMENTAL IMPACT ANALYSIS
N. UTILITIES & SERVICE SYSTEMS
3. SOLID WASTE

METHODOLOGY

Potential impacts of the proposed project on solid waste services were evaluated based on the adequacy of existing and planned solid waste disposal capacity of the landfill that would serve the proposed project. Solid waste disposal associated with the operation of the proposed project was estimated using waste generation rates from studies prepared by the California Integrated Waste Management Board (CIWMB) and information provided by the San Mateo County Ordinance 04099, and Ox Mountain Sanitary Landfill. Responses from utilities and service system agencies are included in Appendix C to this DEIR. In addition, various utilities and service system policies and guidelines as defined by San Mateo County were also reviewed and considered during the project impact analysis.

ENVIRONMENTAL SETTING

The project site is located in an unincorporated area of San Mateo County. Solid waste generated in the project area is collected by the Seacoast Disposal Company which provides waste collection and disposal, as well as greenwaste and recycling services. Hazardous wastes may also be collected with an appointment. Seacoast Disposal is located at 2305 Palmetto Avenue, Pacifica, California 94044. Solid waste from the project area is hauled approximately five miles southeast to Ox Mountain Sanitary Landfill (Ox Mountain), located at 12310 Highway 92, Half Moon Bay, California 94019. Ox Mountain (Permit No. 41-AA-0002) is owned and operated by Allied Waste Industries, Inc. (formerly Browning-Ferris Industries or BFI) and has been operational since 1976.

Acceptable waste materials at Ox Mountain include asbestos, construction/demolition, mixed municipal, sludge (biosolids), tires and other designated materials. Ox Mountain accepts loads that consist of one of the following recyclable materials for recycling: asphalt, bricks, concrete, dirt, fines, rock, sand, soil, stone, metal, porcelain, cardboard, or untreated wood and yard waste. Since Ox Mountain does not sort material, a load with all of the above mixed together will not be recycled. However, a load with mixed aggregates only (asphalt, brick, concrete, dirt, fines, rock, sand, soil and stone) or mixed green waste only (untreated wood and yard trimmings) will be accepted for recycling. In addition to waste disposal, Ox Mountain also offers chipping and grinding facilities.

As of 2000, permitted capacity at Ox Mountain was 37.9 million cubic yards (mcy), and the permitted maximum disposal was 3,598 tons per day (TPD).³¹ According to CIWMB, the closure date for Ox Mountain is planned for 2018. While Ox Mountain is currently in excess by approximately 6.7 mcy (17.8 percent) of its total permitted capacity, it continues to accept waste as the landfill gradually settles and

³¹ California Integrated Waste Management Board, *Facility/Site Summary Details: Ox Mountain Sanitary Landfill (41-AA-0002)*. Available: <http://www.ciwmb.ca.gov/SWIS/41-AA-0002/Detail/>. Accessed by CAJA Staff on June 9, 2009.

new space becomes available. In 2007, the landfill averaged less than 1,906 TPD.³² The limitation is 178 round trips, made by transfer trucks, per day.

Residential and Non-Residential Solid Waste Generation

Solid waste is generated by industrial, commercial, institutional, residential, and other types of land uses. In the unincorporated portions of San Mateo County in 2007, the residential waste stream accounted for 23 percent of the total waste stream with the remaining 77 percent generated by nonresidential sources.³³

REGULATORY SETTING

Federal and State

Integrated Waste Management Act of 1989

Two pieces of legislation (AB 939 and SB 1322) signed into law as the Integrated Waste Management Act of 1989 created and shaped the authority and responsibility of the CIWMB. The Act was enacted to reduce, recycle, and reuse solid waste generated in the State, the centerpiece of which mandated goals of 25 percent diversion of each city's and county's waste from disposal by 1995, and 50 percent diversion in 2000, along with a process to ensure environmentally safe disposal of waste that could not be diverted. AB 939 requires counties to prepare a Countywide Integrated Waste Management Plan (CIWMP). An adequate CIWMP contains a summary plan that includes: goals and objectives; a summary of waste management issues and problems identified in the incorporated and unincorporated areas of the county; a summary of waste management programs and infrastructure; information about existing and proposed solid waste facilities; and an overview of specific steps that will be taken to achieve the goals outlined in the components of the CIWMP. All jurisdictions within the State were required to reach a 50 percent diversion rate by the year 2000 or be subject to a \$10,000/day fine. The diversion rate of the waste stream from landfill in 2006 for unincorporated areas in the County was 64 percent.

³² California Integrated Waste Management Board, 2007 Landfill Summary Tonnage Report. Available: <http://www.ciwmb.ca.gov/Landfills/Tonnage>. Accessed by CAJA Staff on June 15, 2009. Ox Mountain Sanitary Landfill reported 695,680 tons collected for 2007. Tonnage per day was calculated by dividing 695,680 tons by 365 days a year, resulting in approximately 1,906 tons per day.

³³ California Integrated Waste Management Board, Jurisdictional Profile for Unincorporated San Mateo County. Available: <http://www.ciwmb.ca.gov/Profiles/Juris/JurProfile1.asp?RG=U&JURID=455&JUR=San+Mateo-Unincorporated>. Accessed by CAJA Staff on June 5, 2009.

Local***County of San Mateo 1986 General Plan***

The General Plan contains the following policies related to solid waste that are applicable to the proposed project:

*Solid Waste (Chapter 13)***13.1 Management of Solid Waste Disposal**

Provide management of solid waste in the most efficient and economical manner which will provide adequate services, protect the public health, prevent the creation of nuisances, reduce waste generation and provide for maximum resource recovery.

13.4 Maximize Energy Conservation

Manage solid waste in such a way as to maximize energy conservation.

13.5 Minimize Dependence on Landfills

Reduce to a minimum the dependence on landfills by promoting recycling, resource recovery and reduction of residential and commercial wastes.

13.10 Long-Term Landfill Disposal Capability

Provide long-term landfill disposal capability for non-renewable wastes and residues from resource recovery operations.

13.23 Promoting Curbside Recycling

Promote the establishment of curbside recycling programs as a means to increase recycling.

13.25 Locating Rubbish Collection Points

Consider permitting the placement of receptacles for recyclables within appropriate residential and commercial areas.

County of San Mateo Green Building Ordinance

On February 26, 2008, the San Mateo County Board of Supervisors approved a Green Building Ordinance that will apply to building projects within the unincorporated areas of San Mateo County. On October 7, 2008 the Board of Supervisors adopted an ordinance amending the regulations, clarifying standards and requirements to improve the effectiveness of the Green Building Program. The purpose of the Green Building Program is to enhance public health and welfare by encouraging green building

measures in the design, building and maintenance of buildings. Green Building Practices are intended to achieve the following goals:

- Encourage the conservation of natural resources.
- Reduce waste in landfills generated by construction projects.
- Increase energy efficiency and lower energy usage.
- Reduce operating and maintenance costs for buildings.
- Promote a healthier indoor environment.

County of San Mateo Ordinance No. 04099

On February 26, 2002, the San Mateo County Board of Supervisors adopted Ordinance No. 04099 that will apply to construction and demolition projects within the unincorporated areas of San Mateo County.³⁴ The purpose of this ordinance is to promote the reduction of solid waste and reduce the stream of solid waste going to landfills. A Waste Management Plan (WMP) is necessary to demonstrate compliance with County Ordinance 04099 that requires covered projects to salvage, reuse or recycle 100 percent of inert solids (asphalt, brick, concrete, dirt, fines, rock, sand, soil, and stone) and at least 50 percent of the remaining construction and demolition debris generated by the project.³⁵ A WMP is required if your project consists of one or more of the following:

1. Demolition work only, where the cost of the work exceeds \$5,000 as determined by the Building Official.
2. The renovation, remodel or addition to an existing structure or the construction of a new structure where the cost of the work exceeds \$250,000 as determined by the Building Official.
3. Any new structure that is equal to or greater than 2,000 square feet.

ENVIRONMENTAL IMPACTS

Thresholds of Significance

Based on Appendix G to the CEQA Guidelines and the Regulatory Setting requirements, the proposed project would have a significant environmental impact if it would:

- be served by a landfill (i.e., Ox Mountain Landfill) with insufficient permitted capacity to accommodate the project's solid waste disposal needs; or

³⁴ *San Mateo County RecycleWorks, County of San Mateo Ordinance No. 04099. Available: http://www.recycleworks.org/con_dem/or_04099.html. Accessed by CAJA Staff on June 5, 2009.*

³⁵ *San Mateo County RecycleWorks. How to Prepare a Waste Management Plan (WMP). Available: http://www.recycleworks.org/con_dem/ordinance_condem.html. Accessed by CAJA Staff June 8, 2009.*

- not comply with federal, state, and/or local statutes and regulations related to solid waste.

Proposed Project

The project proposes to design an environmentally sustainable community; all buildings and development would be designed with numerous components that meet Platinum-level Leadership in Energy and Environmental Design (LEED) certified construction. The LEED Green Building Rating System is a third party certification program and the nationally accepted (approved by the United States Green Building Council) benchmark for the design, construction and operation of high performance green buildings. Sustainable building reduces the impact on natural resources, conserves energy and water, offers better indoor environments, improves air quality, and decreases waste disposal. Refer to Section III (Project Description) of this DEIR for a list of development standards the project proposes to implement for qualification with LEED certification. As part of LEED certification, the project proposes to recycle over 50 percent of the construction waste, with an ultimate goal of 75 percent. In addition, the project proposes to use recycled materials to construct buildings (i.e., use at least 1 percent with a goal of 20 percent, and use approximately 20 percent of crushed recycled concrete for base rock).

To meet the provisions of AB 939, the project, once operational, proposes to purchase recyclable materials and supplies, and to recycle a minimum of 50 percent of its solid waste, with a goal to recycle 95 percent of its solid waste. The proposed project would provide onsite recycling services; both the Office Park and the Wellness Center would have sorting/recycling centers for plastic, paper, glass, cans and metal, which could be collected by Seacoast Disposal. The project would also develop a composting program for all food, shredded paper and yard waste; the compost would be applied as a soil amendment in the farming and/or landscaping operations. Additionally, the proposed wastewater treatment plant would generate approximately 10 pounds of dry solids per day (50 pounds of wet solids, or about 450 gallons of liquid sludge, 12 percent solids); these biosolids would be composted and recycled agriculturally or hauled to Ox Mountain.

Federal, state, and local regulations concerning management and disposal of hazardous substances are analyzed in Section IV.G (Hazards and Hazardous Materials) of this DEIR.

Project Impacts and Mitigation Measures

Implementation of the proposed project would result in an increase in solid waste generation during both the short-term construction phase and long-term operational phase; however, the maximum amount of materials would be diverted in all phases per San Mateo's Ordinance No. 04099 and the Green Building Ordinance.

Impact UTIL-11 Be Served by a Landfill with Insufficient Permitted Capacity to Accommodate the Project's Solid Waste Disposal Needs

Construction Phase

The construction phase of the proposed project would generate debris in the form of wood, scrap metal, asphalt/concrete, dry wall, plastics, roofing, green waste, and other miscellaneous and composite materials. Much of the solid waste generated during the construction phase would be recycled and salvaged to the maximum extent feasible. County Ordinance Code 04099 requires all major construction projects to submit a Waste Management Plan to the County. This plan requires identifying that 100 percent of inert solids (e.g., asphalt, brick, concrete, dirt, fines, rock, sand, soil and stone) must be recycled or salvaged, and 50 percent of non-inert debris (e.g., wood, metal, roofing, etc.) must be recycled or salvaged. Materials can either be separated onsite and hauled as clean loads to appropriate recycling facilities or combined and taken to an approved recycling facility.³⁶ The plan must also describe how the debris would be transported from the site. County Ordinance No. 04099 makes approval and acceptance of the Waste Management Plan a requirement for issuance of a building permit.

Construction materials not recycled would be disposed of at local landfills. Provided the project conforms to County Ordinance No. 04099, impacts to landfill and solid waste services associated with the short-term generation of solid waste during project construction would be ***less than significant***.

Operational Phase

The site is currently in agricultural use and produces a negligible amount solid waste. Implementation of the proposed project would result in an on-going generation of solid waste throughout the lifespan of the project. The project consists of two components, a Wellness Center and an Office Park. As illustrated below in Table IV.N-3 (Proposed Project Operational Solid Waste Generation), upon completion and full occupancy of the proposed project, the mixed uses (residential, commercial, light industrial, recreation, and wastewater treatment) are expected to generate approximately 1,811 pounds of solid waste per day, or approximately 0.905 tons per day (TPD).

According to the CIWMB's 2006 Diversion Rate Report for Unincorporated San Mateo County, solid waste generation amounts to 123,841 tons per year. For the region's solid waste generation, residential uses account for approximately 23 percent (28,483 tons/year) and non-residential uses account for the remaining 77 percent (95,358 tons/year). The proposed project is anticipated to generate approximately 2.4 pounds of solid waste per resident per day.

As mentioned above, the project area is served by Ox Mountain and solid waste generated by the project is anticipated to be hauled to Ox Mountain. In 2007, Ox Mountain took in approximately 1,906 TPD and has capacity to take in 3,598 TPD. This translates into a remaining capacity of 1,692 TPD that can be potentially taken in by the Ox Mountain Landfill.

³⁶ A searchable database of where to recycle certain items is provided by RecycleWorks, a program of San Mateo County. Available at: <http://www.recycleworks.org/cgi-bin/bin/user/searchdatabases.pl>.

**Table IV.N-3
Proposed Project Operational Solid Waste Generation**

Land Use	Size (units or square feet)	Generation Rate ¹	Solid Waste Generation (pounds/day)
Wellness Center			
Residential Development	70 units ²	2.4 pounds/unit/day	168
Offices and Meeting Rooms	8,504.4 sf	6 pounds/1,000 sf/day	51
Common areas (dining room, theatre, and living room) ³	9,548.8 sf	5 pounds/1,000 sf/day	48
Community Center (pool, men and women's locker rooms, and fitness rooms) ³	5,326.0 sf	5 pounds/1,000 sf/day	27
Services (kitchen, dog grooming, laundry, maintenance/janitorial, and pool equipment room) ³	4,467.2 sf	5 pounds/1,000 sf/day	22
Non Solid Waste Generation (lobby, hallways, and elevators/stairs)	9,257.0 sf	N/A	N/A
Storage Building ⁴	20,000 sf	5 pounds/1,000 sf/day	100
Total Wellness Center Generation			421
Office Park			
General Offices	90,000 sf	6 pounds/1,000 sf/day	540
Research and Development ⁵	56,250 sf	7 pounds/1,000 sf/day	394
Storage ⁴	33,750 sf	5 pounds/1,000 sf/day	169
Light Manufacturing ⁶	45,000 sf	6 pounds/1,000 sf/day	270
Communications Building ⁷	2,000 sf	6 pounds/1,000 sf/day	12
Total Office Park Generation			1,385
Wastewater Treatment Facility	Sludge (biosolids)	10 pounds/day	10
Total Project Solid Waste Generation			1,811
<p>Notes:</p> <p>sf: square feet</p> <p>N/A: not applicable</p> <p>(1) All Generation Rates, except for the Residential Development, are estimated by using the City of Los Angeles Bureau of Sanitation's Solid Waste Generation Rates. The Generation Rate for the project's Residential Development (70 units for 70 individuals) is calculated by translating Unincorporated San Mateo County's residential generated solid waste tonnage (23% of total 2006 tonnage) to pounds/person/day. This is carried out as follows: 28,483 tons/year converts to 56,966,000 pounds/year, divided by 365 days converts to 156,071 pounds/day, divided by 64,955 persons (2006 population), equaling 2.4 pounds/person/day.</p> <p>(2) The residential unit configurations may vary; however for the DEIR impact analysis, a worst case scenario of a maximum of 70 residential units with 70 residents/staff is used.</p> <p>(3) Calculation assumes retail/commercial rate.</p> <p>(4) Calculation assumes warehouse rate.</p> <p>(5) Calculation assumes medical/dental office rate.</p> <p>(6) Calculation assumes industrial rate.</p> <p>(7) Calculation assumes office rate.</p> <p>Source (generation rates): City of Los Angeles Bureau of Sanitation Solid Waste Generation Rates (1981). Source (table): Christopher A. Joseph & Associates, June 2009.</p>			

With an anticipated average daily solid waste generation of approximately 0.905 TPD, the proposed project would represent approximately 0.06 percent³⁷ of the remaining capacity that can be taken in daily by Ox Mountain. As stated above, while the Ox Mountain landfill is currently in excess of its total permitted capacity, it continues to accept waste as the landfill gradually settles and new space becomes available. Ox Mountain has sufficient capacity to meet the solid waste service demands of the proposed project. The proposed project would comply with all applicable County policies and ordinances (e.g., Green Building Ordinance). Implementation of the proposed project would result in a negligible increase in solid waste on a regional scale, and thus would not significantly impact available landfill capacity. The proposed project would not result in the need for additional waste collection routes or recycling or disposal facilities. Therefore, impacts associated with solid waste service during operation of the project would be *less than significant*.

Although impacts were found to be less than significant, the following recommended mitigation measure would further reduce any adverse solid waste impacts.

Mitigation Measure UTIL-11 Be Served by a Landfill with Insufficient Permitted Capacity to Accommodate the Project's Solid Waste Disposal Needs

- To facilitate onsite separation and recycling of construction-related wastes, the contractor(s) shall provide temporary waste separation bins onsite during construction. These bins shall be emptied and recycled accordingly as a part of the project's regular solid waste disposal program.
- The applicant shall prepare and submit a facility recycling program for the collection and loading of recyclable materials prepared in response to the California Solid Waste Reuse and Recycling Access Act of 1991 as described by the CIWMB, Model Ordinance, Relating to Areas for Collecting and Loading Recyclable Materials in Development Projects, March 31, 1993. Adequate space or enclosures for recycling bins shall be provided at appropriate locations to promote recycling of paper, metal, glass, and other recyclable material.

Impact UTIL-12 Comply with Federal, State, and Local Statutes and Regulations Related to Solid Waste

The California Integrated Waste Management Act of 1989 was enacted to reduce, recycle, and reuse solid waste generated in the State to the maximum extent feasible and requires city and county jurisdictions to identify an implementation schedule to divert 50 percent of the total waste stream from landfill disposal by the year 2000. As discussed above, unincorporated areas in the County are currently diverting 64 percent of the waste stream from landfill. The proposed project would comply with the California Integrated Waste Management Act, as well as the other regulations described in the Regulatory Setting section. Therefore, impacts associated compliance with statutes and regulations related to solid waste would be *less than significant* and no mitigation measures are required.

³⁷ Percentage calculated using the proposed project's daily generation rate (0.905) divided by Ox Mountain Landfill capacity (1,692 TPD).

CUMULATIVE IMPACTS

Implementation of the project in combination with the 37 related projects (see Table III-1, Related Projects) would further increase the generation of solid waste. Seven of the 37 related projects are located in unincorporated San Mateo County and would therefore be subject to the provisions of County Ordinance Code 04099, requiring creation and implementation of a Waste Management Plan as a condition for issuance of a building permit. As shown in Table IV.N-4 below, the proposed project and related projects would generate approximately 13,022 pounds of solid waste per day, or approximately 6.5 TPD.

**Table IV.N-4
Estimated Average Daily Cumulative Solid Waste Generation
for Proposed Project and Related Projects**

Related Project No.	Land Use	Size (units or square feet)	Average Daily Generation Rate	Total Average (pounds/day)
1	Commercial	3,450 sf	5 pounds/1,000 sf/day	17
2	Commercial	3,425 sf	5 pounds/1,000 sf/day	16
3	Industrial	3,155 sf	6 pounds/1,000 sf/day	19
4	Commercial	17,147 sf	5 pounds/1,000 sf/day	86
5	Mixed-use	1,622 sf	N/A	N/A
6	Mixed-use	2,374 sf	N/A	N/A
7	Commercial/ Industrial	1,982 sf	6 pounds/1,000 sf/day	12
8	Mixed-use	5 units ¹ 8,609 sf	10 pounds/unit/day N/A	50 N/A
9	Mixed-use	23 units ¹ 40+ acres 10,000 sf	10 pounds/unit/day N/A N/A	230 N/A N/A
10	Commercial	33,594 sf	5 pounds/1,000 sf/day	168
11	Commercial	13,870 sf	5 pounds/1,000 sf/day	69
12	Mixed-use	63 condos 22,670 sf	4 pounds/unit/day N/A	252 N/A
13	Mixed-use	2 retail 3 residential ¹ 6,000 sf	N/A 10 pounds/unit/day N/A	N/A 30 N/A
14	Residential	43 units ¹ 4.2 acres	10 pounds/unit/day N/A	430 N/A
15	Residential	5 single family homes	10 pounds/unit/day	50
16	Residential	11 single family homes 10,061-22,760 sf	10 pounds/unit/day N/A	110 N/A
17	Residential	8 town homes 1 acre	4 pounds/unit/day N/A	32 N/A
18	Residential	7 lots ¹ 12,806-36,677 sf	10 pounds/unit/day N/A	70 N/A
19	Residential	9 units 30,698 sf	10 pounds/unit/day N/A	90 N/A
20	Residential	95 units 10.45 acres	10 pounds/unit/day N/A	950 N/A
21	Residential	7 units 53,418 sf	10 pounds/unit/day N/A	70 N/A
22	Residential	29 units 11 acres	10 pounds/unit/day N/A	290 N/A

**Table IV.N-4
Estimated Average Daily Cumulative Solid Waste Generation
for Proposed Project and Related Projects**

Related Project No.	Land Use	Size (units or square feet)	Average Daily Generation Rate	Total Average (pounds/day)
23	Residential	13 lots ¹ 65+ acres	10 pounds/unit/day N/A	130 N/A
24	Residential	8 lots ¹ 13.9 acres	10 pounds/unit/day N/A	80 N/A
25	Residential	510 apartment units	4 pounds/unit/day	2,040
26	Mixed-use	24 single family homes 3 acres	10 pounds/unit/day N/A	240 N/A
27	Residential	16 town homes	4 pounds/unit/day	64
28	Residential	350 residential units	10 pounds/unit/day	3,500
29	Residential	70 single family homes	10 pounds/unit/day	700
30	Mixed-use	48 condominium units 14,650 sf retail	4 pounds/unit/day 5 pounds/1,000 sf/day	192 73
31	Commercial	12,250 sf retail building	5 pounds/1,000 sf/day	61
32	Residential	14 single family homes	10 pounds/unit/day	140
33	Residential	63 single family homes	10 pounds/unit/day	630
34	Park Use	24 acres	N/A	N/A
35	Residential	32 single family homes 7.95 acres	10 pounds/unit/day N/A	320 N/A
36	Residential	50 acres	N/A	N/A
37	Residential	20 acres	N/A	N/A
Related Projects Total				11,211
Net Project Total				1,811
Cumulative Net Total (Related Projects Total + Net Project Total)				13,022
<i>Notes: sf: square feet N/A: not available (1) Calculation assumes single-family residential.</i>				
<i>Source (generation rates): City of Los Angeles Bureau of Sanitation Solid Waste Generation Rates (1981). Source (table): Christopher A. Joseph & Associates, June 2009.</i>				

As noted above, a remaining capacity of 1,692 TPD can be taken in by the Ox Mountain Landfill. The proposed project and related projects are anticipated to generate approximately 6.5 TPD of solid waste, which would represent approximately 0.38 percent³⁸ of the remaining capacity that can be taken in daily by the Ox Mountain Landfill.

Future development projects within the County would be subject to the provisions of County Ordinance Code 04099. County-wide recycling and diversion efforts would also be expected to partially offset the incremental cumulative solid waste generation as much as is feasible. Cumulative increases in solid waste would be within the excess capacity currently available and projected to be available at Ox Mountain Landfill. Therefore, cumulative impacts associated with solid waste would be *less than significant*.

³⁸ Percentage calculated using the cumulative net total's daily generation rate (6.5 TPD) divided by Ox Mountain Landfill capacity (1,692 TPD).

LEVEL OF SIGNIFICANCE AFTER MITIGATION

Impacts to solid waste services created by the proposed project would be *less than significant*.

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IV. ENVIRONMENTAL IMPACT ANALYSIS
N. UTILITIES & SERVICE SYSTEMS
4. ENERGY

METHODOLOGY

The environmental impacts of the proposed project with respect to natural gas and electricity are determined based on the proposed increase in demand and the capacity of existing and proposed distribution infrastructure. The existing natural gas and electricity demand is compared to the proposed project's demand and infrastructure capacity, including improvements and energy efficiency standards associated with the proposed project. Natural gas and electricity consumption is estimated based on consumption rates provided by the South Coast Air Quality Management District (SCAQMD) CEQA Air Quality Handbook, Tables A9-12-A and A9-11-A, 1993, respectively. Potential project impacts related to energy were evaluated based on the adequacy of existing and planned energy production facilities that would serve the proposed project.

ENVIRONMENTAL SETTING

The Pacific Gas and Electric Company (PG&E) provides natural gas and electricity to unincorporated San Mateo County through existing infrastructure. Natural gas is provided in accordance with PG&E's policies and extension rules on file with the California Public Utilities Commission (CPUC) at the time contractual agreements are made. In 2007, the State of California produced approximately 12.9 percent of the natural gas it uses. The remaining natural gas is obtained from sources outside the State, including the Southwest, Canada, and the Rocky Mountain area. The largest user of natural gas is electricity generation, using about half of all natural gas in the State. The predicted availability of natural gas is based upon present conditions of gas supply and regulatory policies. As a public utility, PG&E is under the jurisdiction of the CPUC, but can also be affected by actions of federal regulatory agencies. Should these agencies take any action that affects gas supply or the conditions under which the service is available, gas service would be provided in accordance with those revised conditions. Additionally, PG&E obtains electricity from various generating sources that utilize coal, nuclear, natural gas, hydroelectric, and renewable resources to generate power. In 2007, the State of California produced approximately 69.5 percent of the electricity it uses. The remaining electricity is obtained from sources outside the State, including the Southwest and the Pacific Northwest.

PG&E currently provides natural gas and electricity to the project area. The proposed project would have access to existing infrastructure; electrical power is fed through a 12 kilovolt (kV) line that passes through the project site, and natural gas lines run along Airport Street. The project site is currently undeveloped; energy consumption associated with the site's existing agricultural use is minimal.

REGULATORY SETTING

Federal

Federal Energy Regulatory Commission

The Federal Energy Regulatory Commission (FERC)³⁹ is an independent agency that regulates the interstate transmission of natural gas, oil, and electricity. FERC also reviews proposals to build liquefied natural gas (LNG) terminals and interstate natural gas pipelines. Additionally, FERC is responsible for licensing hydropower projects. In regards to natural gas and electricity, FERC:

- regulates the transmission and sale of natural gas for resale in interstate commerce.
- regulates the transmission and wholesale sales of electricity in interstate commerce.
- licenses and inspects private, municipal, and state hydroelectric projects.
- approves the siting and abandonment of interstate natural gas pipelines and storage facilities, and ensures the safe operation and reliability of proposed and operating LNG terminals.
- ensures the reliability of high voltage interstate transmission system.
- monitors and investigates energy markets.
- uses civil penalties and other means against energy organizations and individuals who violate FERC rules in the energy markets.
- oversees environmental matters related to natural gas and major electricity policy initiatives.
- administers accounting and financial reporting regulations and conduct of regulated companies.

Areas outside of FERC's responsibility are dealt with by California Public Utilities Commission (CPUC). In regards to natural gas and electricity, FERC is not responsible for:

- regulation of retail electricity and natural gas sales to consumers.
- approval for the physical construction of electric generation, transmission, or distribution facilities; except for hydropower and certain electric transmission facilities located in National interest electric transmission corridors.
- regulation of activities of the municipal power systems, federal power marketing agencies, and most rural electric cooperatives.

³⁹ *Federal Energy Regulatory Commission, About FERC - What FERC Does [web application]. Available: <http://www.ferc.gov/about/ferc-does.asp>. Accessed by CAJA Staff on June 16, 2009.*

- regulation of nuclear power plants by the Nuclear Regulatory Commission.
- regulation of local distribution pipelines of natural gas.
- development and operation of natural gas vehicles.

Additionally, FERC is required by the Government Performance and Results Act (GPRA) of 1993 to develop and maintain strategic goals, to link work and resources to performance, and to monitor and report on the results to Congress and the public at large. Congress passed GPRA to increase the effectiveness and accountability of government operations and administration and to improve Congressional decision-making.

State

California Public Utilities Commission

The California Public Utilities Commission (CPUC) regulates privately owned telecommunications, electric, natural gas, water, railroad, rail transit, and passenger transportation companies, in addition to authorizing video franchises. CPUCs staff ensure that consumers have safe, reliable utility service at reasonable rates; protect against fraud; and promote the health of California's economy. The CPUC plays a key role in making California a national and international leader on a number of clean energy related initiatives and policies designed to benefit consumers, the environment, and the economy.⁴⁰

The CPUC regulates natural gas utility service for approximately 10.7 million customers that receive natural gas from Pacific Gas and Electric (PG&E), Southern California Gas (SoCal Gas), San Diego Gas & Electric (SDG&E), Southwest Gas, and several smaller liquefied natural gas (LNG) utilities. The CPUC regulates the California utilities' LNG rates and LNG services, including in-State transportation over the utilities' transmission and distribution pipeline systems, storage, procurement, metering and billing. The CPUC has regulatory jurisdiction over 100,000 miles of utility-owned natural gas pipelines, which transported 78 percent of the total amount of natural gas delivered to California's gas consumers in 2005. LNG from out-of-state production basins is delivered into California via the interstate natural gas pipeline system. The five major interstate pipelines that deliver out-of-state natural gas to California consumers are the Gas Transmission Northwest Pipeline, Kern River Pipeline, Transwestern Pipeline, El Paso Pipeline, and Mojave Pipeline. While the FERC regulates the transportation of LNG on the interstate pipelines, the CPUC often participates in FERC regulatory proceedings to represent the interests of California natural gas consumers.⁴¹

California Public Utilities Commission (CPUC) Decision 95-08-038 contains the rules for the planning and construction of new transmission facilities, distribution facilities, and substations. The decision

⁴⁰ *California Public Utilities Commission, About Us. Available: <http://www.cpuc.ca.gov/PUC/> [web application]. Accessed by CAJA Staff on June 16, 2009.*

⁴¹ *California Public Utilities Commission, Natural Gas and California [web application]. Available: <http://www.cpuc.ca.gov/PUC/energy/Gas/natgasandCA.htm>. Accessed by CAJA Staff on June 16, 2009.*

requires permits for the construction of certain power line facilities or substations if the voltages would exceed 50 kilovolts (kV) or if the substation would require the acquisition of land or an increase in voltage rating above 50 kV. Distribution lines and substations with voltages less than 50 kV do not need to comply with this decision; however, the utility must obtain any nondiscretionary local permits required for the construction and operation of these projects. CEQA compliance is required for construction of facilities constructed in accordance with the decision.

California Energy Commission

Title 24 of the California Administrative Code

Title 24 of the California Administrative Code establishes the Energy Efficiency Standards for Residential and Nonresidential Buildings. These standards were established in 1978 in response to a legislative mandate to reduce California's energy consumption. The standards are updated periodically by the California Energy Commission to allow consideration and possible incorporation of new energy efficiency technologies and methods. Revised Title 24 standards became effective October 1, 2005. The updated 2008 standards were adopted on April 23, 2008 and will be effective as of August 1, 2009 (dependent on when an application for a building permit is submitted).⁴²

The energy efficiency standards regulate building energy consumption for heating, cooling, ventilation, water heating, and lighting. Title 24 may be met in one of two ways: by meeting performance criteria (measured in British thermal units (BTU) per square foot per year) or by installing a prescriptive list of energy conservation measures. Title 24 is enforced through the local building permit process.

*Existing Renewables Facilities Program*⁴³

In order to help attain the California Renewable Portfolio Standard's (RPS) goal of 20 percent of retail electricity generated from renewables by 2010, the California Energy Commission has developed and currently administers renewable energy incentive programs. The goal of these programs is to establish a competitive, self-sustaining renewable energy supply for California while increasing the near-term quantity of renewable energy generated in-State. The Existing Renewable Facilities Program (ERFP) is one of several program elements within the Energy Commission's Renewable Energy Program.

The purpose of the ERFP is to allocate state funds to increase the competitiveness of existing (operational on or prior to September 26, 1996) in-state renewable generating facilities. For the purpose of the ERFP, self-sustainability refers to the ability of these facilities to continue operation without public funding by no later than December 31, 2011. The ERFP aims also to secure the environmental, economic and

⁴² *The California Energy Commission, California's Energy Efficiency Standards for Residential and Nonresidential Buildings, Title 24, Part 6, of the California Code of Regulations [web application]. Available: <http://www.energy.ca.gov/title24/>. Accessed by CAJA Staff on June 17, 2009.*

⁴³ *The California Energy Commission, Existing Renewables Facilities Program [web application]. Available: http://www.energy.ca.gov/renewables/existing_renewables/index.html. Accessed by CAJA Staff on June 17, 2009.*

reliability benefits these facilities provide. ERFPP eligible technologies include solid-fuel biomass, solar thermal electric, and wind power.

The Electric Utility Industry Restructuring Act

The Electric Utility Industry Restructuring Act (also known as AB 1890) requires California utilities to fund Public Benefit Programs through 2011. Under the program, publicly-owned utilities are required to spend 2.85 percent of utility revenues on Public Benefit Programs. While there is wide flexibility regarding the planning and implementation of such programs, expenditures must fall under one or more of four categories: (1) cost-effective demand-side management services to promote energy-efficiency and energy conservation; (2) new investments in renewable energy technology; (3) research, development and demonstration; and (4) services provided for low-income electricity customers. The amount publicly-owned utilities must collect is tied to the lowest percentage of expenditures of the State's three investor-owned utilities. The expenditure of those funds is entirely the discretion of locally-elected governing bodies so long as the expenditures fit within one or more of the four categories

Regional and Local

Local Coastal Program 1998 Update

The Local Coastal Program contains the following policy related to energy that is applicable to the project vicinity:

Energy Component (Chapter 4)

Performance Standards for Protecting Adjacent Land Uses

Alternative Energy

4.42 Alternative Energy Sources

Encourage the development of non-polluting alternative energy resources including but not limited to co-generation, biomass, wind, and solar.

County of San Mateo 1986 General Plan

The General Plan does not contain any objectives, policies, or programs pertinent to the provision of natural gas and electricity service within the County.

County of San Mateo Green Building Ordinance

On February 26th 2008, the San Mateo County Board of Supervisors approved a Green Building Ordinance that will apply to building projects within the unincorporated areas of San Mateo County. On October 7, 2008 the Board of Supervisors adopted an ordinance amending the regulations clarifying standards and requirements to improve the effectiveness of the Green Building Program. The purpose of

the Green Building Program is to enhance public health and welfare by encouraging green building measures in the design, building and maintenance of buildings. Green Building Practices are intended to achieve the following goals:

- To encourage the conservation of natural resources;
- To reduce waste in landfills generated by construction projects;
- To increase energy efficiency and lower energy usage;
- To reduce operating and maintenance costs for buildings; and
- To promote a healthier indoor environment.

ENVIRONMENTAL IMPACTS

Thresholds of Significance

Appendix F of the State CEQA Guidelines

In accordance with Appendix F of the CEQA Guidelines, CEQA “requires that EIRs include a discussion of the potential energy impacts of proposed projects, with particular emphasis on avoiding or reducing inefficient, wasteful and unnecessary consumption of energy.” For the purposes of analysis in this DEIR, the proposed project would the proposed project could have a significant environmental impact if it would:

- (a) Create wasteful, inefficient and unnecessary consumption of energy.

Proposed Project

As described in detail in Section III (Project Description), the proposed project would supply a majority of energy for heating, cooling and electrical demand with renewable energy, through a combination of offsite and onsite power generation. The potential onsite power systems include solar heat, photovoltaic panels, wind generation, back up and cogeneration with a natural gas generator for peak shaving⁴⁴ and geothermal cooling. Passive heating and cooling would also focus on the proposed development architectural design. Buildings would be heated by either natural gas or solar power. Additionally, the electrical equipment cooling process would be a source of building heating. Natural gas fuel cells would be utilized for the backup of communications power. All buildings and development would be designed to meet Platinum-level Leadership in Energy and Environmental Design (LEED) certified construction.

⁴⁴ *The practice of peak shaving is defined as follows: Power (natural gas or electricity) is purchased from a utility, and when consumption goes over a particular threshold (commonly peak-hour or peak-season demand), the peak price of service is highest. Prior to the reaching the high cost threshold, a generator is turned on and runs at full power for best performance. When the load is less than the peak price threshold (or peak demand), the generator turns off and use of the utility’s power is resumed.*

The proposed project would include up to 600 kilowatts (kW) of solar voltaic, one to three million British thermal units (BTU) per hour of solar heating, one million BTU per hour of geothermal/evaporative cooling, and up to 100 kW of wind power. The project would also own and operate up to a 600 kW natural gas engine generator designed for peak shaving and 5 kW of natural gas fuel cells for backup communications.

Project Impacts and Mitigation Measures

Impact UTIL-13 The project would not create wasteful, inefficient and unnecessary consumption of energy

As shown in Table IV.N-5, the proposed project would consume approximately 969,637 cubic feet of natural gas per month (cfm). Also, the proposed project would be anticipated to consume approximately 12,701.1 kWh of electricity per day, as shown in Table IV.N-6. This would result in an increase of onsite energy consumption over the project site's existing minimal use associated with agriculture. These calculations do not account for many of the energy conservation measures that would be included in the project and thus represent a conservative analysis (worse case scenario). As described in detail in Section III (Project Description), the proposed project would exceed Title 24 Building Code requirements. Additional project design features that would be incorporated into the project to minimize energy use include:

- Obtain Platinum LEED certification;
- Create permeable pavement with high reflectivity and porous, open grid design;
- Install solar panels on all roofs. Solar panels absorb heat energy and convert it to electricity and building heat, reducing the building and roof temperatures;
- Install wind power system;
- Install minimal outdoor lighting and paths laminated with three-foot-tall bollards;
- Provide tenant guidelines for energy efficiency and environmental protection;
- Reduce water consumption by 30 percent with recycled water used for toilets. Certify energy systems through LEED. The project goals may be as high as producing all of the buildings' energy onsite;
- Cool building geothermally and without refrigerants;
- Recycle over 50 percent of the construction waste, ultimate goal is 75 percent;
- Air condition buildings with controlled outdoor air;
- Exceed ventilation standards by 30 percent;

- Design and incorporate thermal comfort by way of opening windows and individual thermostats;
- Incorporate a minimum of 2 percent glazing on windows and light buildings with 75 percent natural daylight;
- Employ LEED accredited professionals, focusing on a certified innovative design process.

**Table IV.N-5
Proposed Project Estimated Natural Gas Demand**

Land Use	Size	Generation Rate (cubic feet/unit or square feet/month)	Total (cubic feet/month)
Wellness Center			
Residential Development	70 units ¹	4,012	280,840
Offices and Meeting Rooms	8,504.4 sf	2	17,008
Common Areas (dining room, theatre, and living room) ²	9,548.8 sf	3	28,646
Community Center (pool, men and women's locker rooms, and fitness rooms) ²	5,326.0 sf	3	15,978
Services (kitchen, dog grooming, laundry, maintenance/janitorial, and pool equipment room) ²	4,467.2 sf	3	13,401
Common Areas (lobby, hallways, and elevators/stairs) ³	9,257.0 sf	2	18,514
Storage Building ³	20,000 sf	2	40,000
Total Wellness Center Generation			414,387
Office Park			
General Offices	90,000 sf	2	180,000
Research and Development ²	56,250 sf	3	168,750
Storage ³	33,750 sf	2	67,500
Light Manufacturing ²	45,000 sf	3	135,000
Communications Building ³	2,000 sf	2	4,000
Total Office Park Generation			555,250
Proposed Project Total			969,637
<p>Notes: <i>sf: square feet</i> <i>N/A: not applicable</i> (1) The residential unit configurations may vary; however for the DEIR impact analysis, a worst case scenario of a maximum of 70 residential units with 70 residents/staff is used. Calculation assumes multi-family residential rate. (2) Calculation assumes retail rate. (3) Calculation assumes office rate.</p> <p>Source (generation rates): SCAQMD, CEQA Air Quality Handbook, Table A9-12-A, 1993. Source (table): Christopher A. Joseph & Associates, June 2009.</p>			

**Table IV.N-6
Proposed Project Estimated Electricity Demand**

Land Use	Size	Generation Rate (kilowatt-hours/unit or square feet/year)	Total (kilowatt-hours/day)
Wellness Center			
Residential Development	70 units ¹	5626.50	1,079.1
Offices and Meeting Rooms	8,504.4 sf	12.95	301.7
Common Areas (dining room, theatre, and living room) ²	9,548.8 sf	47.45	1,241.4
Community Center (pool, men and women's locker rooms, and fitness rooms) ³	5,326.0 sf	13.55	197.7
Services (kitchen, dog grooming, laundry, maintenance/janitorial, and pool equipment room) ³	4,467.2 sf	13.55	165.8
Common Areas (lobby, hallways, and elevators/stairs) ⁴	9,257.0 sf	10.50	266.3
Storage Building ⁴	20,000 sf	10.50	575.3
Total Wellness Center Generation			3,827.3
Office Park			
General Offices	90,000 sf	12.95	3,193.2
Research and Development ⁵	56,250 sf	21.70	3,344.2
Storage ⁴	33,750 sf	10.50	970.9
Light Manufacturing ⁴	45,000 sf	10.50	1,294.5
Communications Building ⁶	2,000 sf	12.95	71.0
Total Office Park Generation			8,873.8
Proposed Project Total			12,701.1
Notes:			
sf: square feet			
(1) The residential unit configurations may vary; however for the DEIR impact analysis, a worst case scenario of a maximum of 70 residential units with 70 residents/staff is used. Calculation assumes residential rate.			
(2) Calculation assumes restaurant rate.			
(3) Calculation assumes retail rate.			
(4) Calculation assumes miscellaneous rate.			
(5) Calculation assumes hospital rate.			
(6) Calculation assumes office rate.			
Source (generation rates): SCAQMD, CEQA Air Quality Handbook, Table A9-11-A, 1993.			
Source (table): Christopher A. Joseph & Associates, June 2009.			

Implementation of the proposed project would not require new (offsite) natural gas or electrical supply facilities and distribution infrastructure or capacity enhancing alterations to existing facilities. Therefore, the proposed project would not result in wasteful, inefficient use or unnecessary consumption of energy and impacts would be **less than significant** and no mitigation measures are required.

CUMULATIVE IMPACTS

Natural Gas

Implementation of the proposed project in combination with the 37 related projects and other future cumulative growth in unincorporated San Mateo County would increase the consumption of natural gas.

As shown in Table IV.N-7 the projected cumulative increase in natural gas consumption would be approximately 78,891,34 cubic feet per month (cfm), or 78.89 million cfm.

**Table IV.N-7
Estimated Average Monthly Cumulative Natural Gas Demand
for Proposed Project and Related Projects**

Related Project No.	Land Use	Size (units or square feet)	Average Monthly Generation Rate	Total Average (cubic feet/month)
1	Commercial ¹	3,450 sf	3	10,350
2	Commercial	3,425 sf	3	10,275
3	Industrial ²	3,155 sf	5	15,775
4	Commercial	17,147 sf	3	51,441
5	Mixed-use	1,622 sf	N/A	N/A
6	Mixed-use	2,374 sf	N/A	N/A
7	Commercial/Industrial	1,982 sf	N/A	N/A
8	Mixed-use	5 units ³	4,012	20,060
		8,609 sf ¹	3	25,827
9	Mixed-use	23 units ³	4,012	92,276
		40+ acres	N/A	N/A
		10,000 sf ¹	3	30,000
10	Commercial	33,594 sf	3	100,782
11	Commercial	13,870 sf	3	41,610
12	Mixed-use	63 condos ³	4,012	252,756
		22,670 sf ¹	3	68,010
13	Mixed-use	2 retail	N/A	N/A
		3 residential	N/A	N/A
		6,000 sf	N/A	N/A
14	Residential	43 units ³	4,012	172,516
		4.2 acres	N/A	N/A
15	Residential	5 single family homes ⁴	6,665	33,325
16	Residential	11 single family homes ⁴	6,665	73,315
		10,061-22,760 sf	N/A	N/A
17	Residential	8 town homes ³	4,012	32,096
		1 acre	N/A	N/A
18	Residential	7 lots ⁴	6,665	46,655
		12,806-36,677 sf	N/A	N/A
19	Residential	9 units ³	4,012	36,108
		30,698 sf	N/A	N/A
20	Residential	95 units ³	4,012	381,140
		10.45 acres	N/A	N/A
21	Residential	7 units ³	4,012	28,084
		53,418 sf	N/A	N/A
22	Residential	29 units ³	4,012	116,348
		11 acres	N/A	N/A
23	Residential	13 lots ⁴	6,665	86,645
		65+ acres	N/A	N/A
24	Residential	8 lots ⁴	6,665	53,320
		13.9 acres	N/A	N/A
25	Residential	510 apartment units ³	4,012	2,046,120
26	Mixed-use	24 single family homes ⁴	6,665	159,960
		3 acres	N/A	N/A
27	Residential	16 town homes ³	4,012	64,192
28	Residential	350 residential units ³	4,012	1,404,200

**Table IV.N-7
Estimated Average Monthly Cumulative Natural Gas Demand
for Proposed Project and Related Projects**

Related Project No.	Land Use	Size (units or square feet)	Average Monthly Generation Rate	Total Average (cubic feet/month)
29	Residential	70 single family homes ⁴	6,665	466,550
30	Mixed-use	48 condominium units ³ 14,650 sf retail ¹	4,012 3	192,576 43,950
31	Commercial	12,250 sf retail building	3	36,750
32	Residential	14 single family homes ⁴	6,665	93,310
33	Residential	63 single family homes ⁴	6,665	419,895
34	Park Use	24 acres	N/A	N/A
35	Residential	32 single family homes ⁴ 7.95 acres	6,665 N/A	213,280 N/A
36	Residential	50 acres	N/A	N/A
37	Residential	20 acres	N/A	N/A
Related Projects Total				6,919,497
Net Project Total				969,637
Cumulative Net Total (Related Projects Total + Net Project Total)				7,889,134
<i>Notes: sf: square feet N/A: Not Available</i> (1) Calculation assumes retail rate. (2) Calculation assumes hotel rate. (3) Calculation assumes multi-family residential rate. (4) Calculation assumes single-family residential rate. <i>Source: (generation rates): SCAQMD, CEQA Air Quality Handbook, Table A9-12-A, 1993. Source (table): Christopher A. Joseph & Associates, June 2009.</i>				

Electricity

Implementation of the proposed project in combination with the 37 related projects and other future cumulative growth in unincorporated San Mateo County would increase the demand for electricity. This projected cumulative increase in electricity demand would be approximately 40,370.2 kWh per day, as shown in Table IV.N-8.

**Table IV.N-8
Estimated Average Daily Cumulative Electricity Demand
for Proposed Project and Related Projects**

Related Project No.	Land Use	Size (units or square feet)	Average Yearly Generation Rate (kilowatt-hours/unit or square feet/year)	Total Daily Average (kilowatt-hours/day)
1	Commercial ¹	3,450 sf	13.55	128.1
2	Commercial	3,425 sf	13.55	127.1
3	Industrial ²	3,155 sf	9.95	86.0
4	Commercial	17,147 sf	13.55	636.6
5	Mixed-use	1,622 sf	N/A	N/A
6	Mixed-use	2,374 sf	N/A	N/A
7	Commercial/Industrial	1,982 sf	N/A	N/A
8	Mixed-use	5 units ³ 8,609 sf ¹	5,626.50 13.55	77.1 319.6
9	Mixed-use	23 units ³ 40+ acres 10,000 sf ¹	5,626.50 N/A 13.55	354.5 N/A 371.2
10	Commercial	33,594 sf	13.55	1,247.1
11	Commercial	13,870 sf	13.55	514.9
12	Mixed-use	63 condos ³ 22,670 sf ¹	5,626.50 13.55	971.1 841.6
13	Mixed-use	2 retail 3 residential 6,000 sf	N/A N/A N/A	N/A N/A N/A
14	Residential	43 units ³ 4.2 acres	5,626.50 N/A	662.8 N/A
15	Residential	5 single family homes	5,626.50	77.1
16	Residential	11 single family homes 10,061-22,760 sf	5,626.50 N/A	169.6 N/A
17	Residential	8 town homes ³ 1 acre	5,626.50 N/A	123.3 N/A
18	Residential	7 lots ³ 12,806-36,677 sf	5,626.50 N/A	107.9 N/A
19	Residential	9 units ³ 30,698 sf	5,626.50 N/A	138.7 N/A
20	Residential	95 units ³ 10.45 acres	5,626.50 N/A	1,464.4 N/A
21	Residential	7 units ³ 53,418 sf	5,626.50 N/A	107.9 N/A
22	Residential	29 units ³ 11 acres	5,626.50 N/A	447.0 N/A
23	Residential	13 lots ³ 65+ acres	5,626.50 N/A	200.4 N/A
24	Residential	8 lots ³ 13.9 acres	5,626.50 N/A	123.3 N/A
25	Residential	510 apartment units	5,626.50	7,861.7
26	Mixed-use	24 single family homes ³ 3 acres	5,626.50 N/A	370.0 N/A
27	Residential	16 town homes	5,626.50	246.6
28	Residential	350 residential units	5,626.50	5,395.3
29	Residential	70 single family homes	5,626.50	1,079.1
30	Mixed-use	48 condominium units ³	5,626.50	739.9

**Table IV.N-8
Estimated Average Daily Cumulative Electricity Demand
for Proposed Project and Related Projects**

Related Project No.	Land Use	Size (units or square feet)	Average Yearly Generation Rate (kilowatt-hours/unit or square feet/year)	Total Daily Average (kilowatt-hours/day)
		14,650 sf retail ¹	13.55	543.9
31	Commercial ¹	12,250 sf retail building	13.55	454.8
32	Residential	14 single family homes	5,626.50	215.8
33	Residential	63 single family homes	5,626.50	971.1
34	Park Use	24 acres	N/A	N/A
35	Residential	32 single family homes ³ 7.95 acres	5,626.50 N/A	493.3 N/A
36	Residential	50 acres	N/A	N/A
37	Residential	20 acres	N/A	N/A
Related Projects Total				27,669.1
Net Project Total				12,701.1
Cumulative Net Total (Related Projects Total + Net Project Total)				40,370.2
<p>Notes: sf: square feet N/A: Not Available</p> <p>(1) Calculation assumes retail rate. (2) Calculation assumes hotel rate. (3) Calculation assumes residential rate.</p> <p>Source: Overland Traffic Consultants, Inc., May 2008; SCAQMD, CEQA Air Quality Handbook, Table A9-11-A, 1993. Source (table): Christopher A. Joseph & Associates, June 2009.</p>				

Future development projects within the service area of PG&E would be subject to the locally mandated energy conservation programs. Additionally, related projects would be required to implement energy conservation measures meeting or exceeding Title 24 standards. Additionally, if any of the related projects are proposed for redevelopment, energy conservation standards have become stricter and it is likely that any increase in electricity demand would be counter-balanced by the conservation standards required of new construction. As such, the proposed project would not contribute to a cumulatively considerable effect on energy and cumulative impacts would be *less than significant*.

LEVEL OF SIGNIFICANCE AFTER MITIGATION

Energy impacts created by the proposed project would be *less than significant*.

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