Revised: 3.6 Groundwater Resources and Hydrogeology

This section assesses impacts related to water supply and availability for the proposed project. The analysis of groundwater resources and hydrogeology presented in this section is based on a *Project Specific Hydrogeologic Report* prepared for the Monterey County Health Department, Environmental Health Division (now the Environmental Health Bureau) by Todd Engineers in September 2002 and updated July 2003. These reports summarized hydrogeologic and well data available at the time, evaluated the availability of sustainable long-term water supply for the proposed project, estimated the local water balance, and identifiedy the potential effects the proposed project may have on surrounding groundwater resources. These reports are included in **Appendix F**. Since the project specific report was prepared, the *El Toro Groundwater Study* was prepared for MCWRA by Geosyntec in July 2007, and supplemented in June 2010. This report provided additional hydrogeologic information on the region, which has been incorporated herein where appropriate.

3.6.1 ENVIRONMENTAL SETTING

SETTING

The project site has a Mediterranean climate where the summers are typically cool and dry and winters are mild and wet. Rainfall in the area averages approximately 16 inches per year. The project site is in the upper reaches of the El Toro Creek watershed, which flows from the Corral de Tierra Valley into the Salinas River to the east. Monterey County relies almost entirely on groundwater resources to meet water demands. ~~Some of Monterey County's aquifers are experiencing localized over drafting, a condition where more water is pumped out of an aquifer than is recharged on an average yearly basis. This over drafting condition causes a decline in the water level thus requiring deeper wells. Over drafting has caused seawater intrusion in those aquifers in the northern end of Salinas Valley. When this occurs the aquifers must either be deepened, abandoned or water must be treated to dilute the salt concentration. Sufficient water resources exist within the County but the economic problems of storage and distribution make these resources unattainable.~~

~~HYDROGEOLOGY~~GROUNDWATER BASIN

According to the Department of Water Resources (DWR), the project site lies within the boundaries of the Salinas Valley Groundwater Basin (hereinafter referred to as the "basin") as shown in **Figure 3.6-1**. The basin is one of the largest coastal groundwater basins in California and lies within the southern Coast Ranges between the San Joaquin Valley and the Pacific Ocean. The basin consists of sand, gravel, and clay that have been deposited over millions of years. The basin is drained by the Salinas River, which extends approximately 150 miles from the headwaters near San Luis Obispo County to the mouth of the river at Monterey Bay near Moss Landing. The total drainage area of the basin is about 5,000 square miles within the Salinas Valley. The Salinas Valley ranges from 10 miles wide in the north to 30 miles wide in the south and is about 120 miles long.

Over the years, the Salinas Valley Groundwater Basin has experienced overdraft, a condition where more water is pumped out of an aquifer than is recharged on an average yearly basis. This overdraft condition causes a decline in the water level, which allows seawater intrusion to occur or streams and rivers to go dry. When this occurs, the wells in the affected aquifers must either be deepened or abandoned, or water must be treated to dilute the salt concentration. Sufficient water resources exist in the county's reservoirs, aquifers, and watersheds, but the economic problems of storage and distribution prevent these resources from being fully available.

Groundwater Subbasins

Groundwater basins are often broken up into several subbasins ~~subareas~~. The Salinas Valley Groundwater Basin (Basin Identification #3-4) is divisible into eight area subbasins: 180/400-Foot Aquifer (3-4.01); Eastside Aquifer (3-4.02); Forebay Aquifer (3-4.04); Upper Valley Aquifer (3-4.05); Paso Robles Area (3-4.06); Seaside Area (3-4.08); Langley Area (3-4.09); and Corral de Tierra Area (3-4.10), as shown in **Figure 3.6-1** (DWR 2004). According to DWR basin maps, the project site is located in the northeast portion of the Corral de Tierra Area Subbasin (DWR 2010) of the Salinas Valley Groundwater Basin.

~~The majority of the project site is located in the El Toro Groundwater Basin, with a small portion of the project site is located in the Salinas Valley Groundwater Basin. The El Toro Groundwater Basin is a much smaller basin than the three major basins in Monterey County (Salinas Valley, Carmel River, and North County).~~ Groundwater flow within the aquifers is driven by the elevation of water levels with respect to sea level. Faults and dipping beds commonly impede the horizontal flow of groundwater thus creating boundaries of groundwater basins. Groundwater flow in the vicinity of the project site generally follows the topography and exits ~~the *Toro Area Plan* planning area~~ to the northeast. Recent reports prepared for MCWRA by Geosyntec Consultants have identified connectivity between the northeastern portion of the Corral de Tierra Subbasin and the 180/400-Foot Aquifer Subbasins (Geosyntec 2010); therefore, both of these subbasins are described below.~~The Salinas Valley Groundwater Basin primarily flows to the Salinas River.~~

Previous Study Areas

A *Project Specific Hydrogeologic Report - Harper Canyon Realty, LLC Subdivision* was prepared for the Monterey County Health Department, Environmental Health Bureau by Todd Engineers in September 2002 and updated July 2003. This report summarized available hydrogeologic data available at the time, which included *the Hydrogeologic Update - El Toro Area* (MCWRA 1991); and *Additional Hydrogeologic Update - El Toro Area* (MCWRA 1996). Both of these reports have since been superseded by the *El Toro Groundwater Study* prepared for MCWRA by Geosyntec in July 2007, and supplemented in June 2010. The Geosyntec study evaluated groundwater resource capacity in a portion of the Salinas Valley Groundwater Basin in order to make recommendations regarding the extent of the B-8 zoning overlay, which restricts further subdivision of property. All of these

reports were prepared for MCWRA but used a topography/watershed-based methodology to define the limits of the study area and did not take into account MCWRA's Zone 2C boundaries nor the groundwater basins/subbasins recognized by MCWRA and the California Department of Water Resources (DWR). To prevent confusion, the limits of area addressed in this report shall be referenced herein as the "Geosyntec Study Area."

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T:_GIS\MONTEREY_COUNTY\MXDS\HARPERCANYON\FIGURE 3.6-1.MXD - 9/27/2012 @ 11:49:14 AM

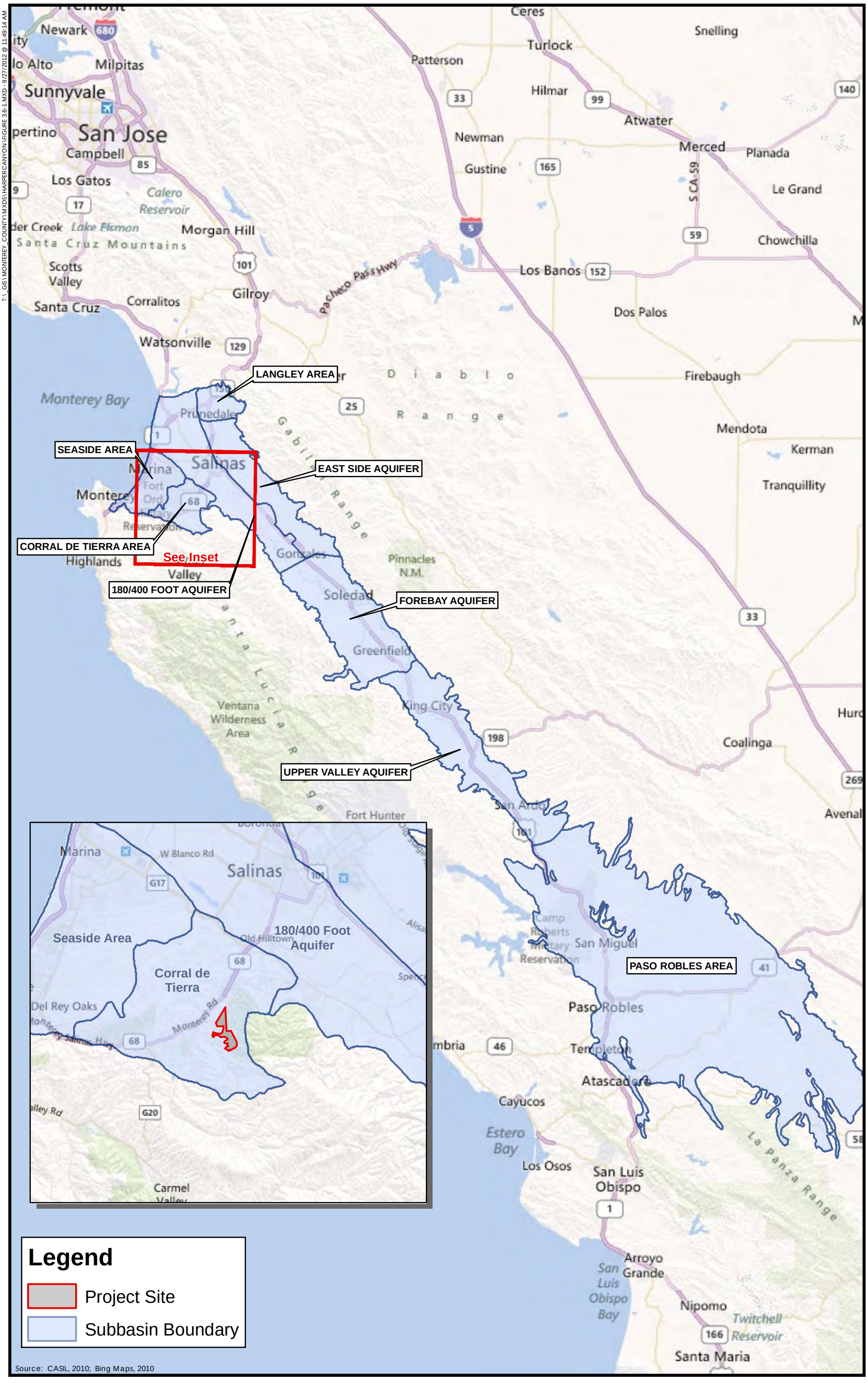

Figure 3.6-1

Groundwater Basin Map

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~~this report~~~~Groundwater basins are often broken up into several subareas. Subareas often have aquifers that are interconnected and laterally continuous within their respective geologic units. Therefore, water levels in subareas can influence nearby well water levels in other subareas. In the vicinity of the project site, groundwater is pumped from three water-bearing geologic units: the Aromas-Paso Robles Formation (also referred to as the Paso Robles Formation), the Santa Margarita Formation, and alluvium in local drainages.~~

The ~~El Toro Groundwater Basin~~Geosyntec Study Area is divided ~~and the Salinas Valley Groundwater Basin are both split~~ into five subareas based on topographic divides that control the movement of surface water and groundwater throughout the basins. As shown in **Figure 3.6-~~1~~2**, **Geosyntec Study Area Subareas and Well Locations,** the project site lies in the El Toro Creek and San Benancio Gulch subareas of the ~~El Toro Groundwater Basin~~Geosyntec Study Area. These subareas ~~partially overlap~~are are located within~~, but also lies within~~ the Corral de Tierra Subbasin ~~and the Pressure subarea~~ of the Salinas Valley Groundwater Basin. Withi~~I~~n ~~the~~ this ~~vicinity of the project site~~subbasin, groundwater is pumped from three water-bearing geologic units: the Aromas-Paso Robles Formation (also referred to as the Paso Robles Formation), the Santa Margarita Formation, and alluvium in local drainages as described in more detail below.

Corral de Tierra Area Subbasin

The project site lies within the Corral de Tierra Subbasin. As defined in *Salinas Valley Groundwater Basin, 180/400-Foot Aquifer Subbasin Bulletin 118* (Bulletin 118), the Corral de Tierra Area Subbasin includes outcrops of Plio-Pleistocene nonmarine units, including the Aromas Sands, the Paso Robles Formation, the Santa Margarita Formation, and the Monterey Formation (DWR 2004). The subbasin is bounded by the Seaside Area Subbasin to the northwest and the 180/400-Foot Aquifer Subbasin to the northeast. The primary water-bearing units of the subbasin are the Miocene/Pliocene Santa Margarita Formation, the Pliocene Paso Robles Formation, and the Pleistocene Aromas Sands. The Santa Margarita Formation is poorly consolidated marine sandstone with a maximum thickness of 225 feet and is an important water-bearing formation. It underlies the Paso Robles Formation, which consists of sand (approximately 200 feet thick), gravel, and clay interbedded with some minor calcareous beds and is the major water-bearing unit (DWR 2004).

~~El Toro Groundwater Basin~~

~~The five subareas of the El Toro Groundwater Basin include the El Toro Creek, San Benancio Gulch, Corral de Tierra, Watson Creek, and Calera Canyon. The El Toro Creek, Corral de Tierra, San Benancio Gulch subareas and the northern portion of Watson Creek subarea are hydraulically contiguous and hydro-geologically bound on three sides. The area is bound by the Laguna Seca Anticline to the north, by the Chupines fault to the south and by the Harper Fault to the east.~~

~~The El Toro Creek subarea of the El Toro Groundwater Basin includes approximately 408 acres with an estimated total recharge of approximately 74 acre-feet per year (AFY). The two water-bearing aquifers in the El Toro Creek subarea are the alluvial deposits flanking the creek and the Paso Robles Aquifer. A majority of the proposed residential units are located within the El Toro Creek subarea. The San Benancio Gulch subarea of the El Toro Groundwater Basin encompasses approximately 2,676 acres has an annual recharge of approximately 486 AFY. The underlying aquifers in the western portion of the San Benancio Gulch subarea are alluvial deposits, the Paso Robles Aquifer, and the Santa Margarita Aquifer. A portion of the 180-acre remainder parcel and both wells are located within the San Benancio Gulch subarea.~~

180/400 Foot Aquifer Subbasin

~~The five subareas of the Salinas Valley Groundwater Basin are the: Forebay, Pressure (180 and 400 Aquifer), East Side, Arroyo Seco, and Upper Valley.~~ The northern portion of the project site and a portion of the 180-acre "Remainder parcel" along the eastern boundary lie within the 180/400 Foot Aquifer ~~–~~(Pressure) ~~subarea~~ Subbasin of the Salinas Valley Groundwater Basin. The 180/400 Foot Aquifer Subbasin ~~Pressure subarea~~ of the Salinas Valley Groundwater Basin is comprised of approximately 114,000 acres between Gonzales and the Monterey Bay. This subarea is composed mostly of confined and semi-confined aquifers separated by clay layers (aquicludes) that limit the amount of vertical recharge. The three primary water-bearing aquifers in the 180/400 Foot Aquifer ~~Pressure subarea~~ are the 180-foot aquifer, the 400-foot aquifer, and the Deep aquifer. The 180/400 Foot Aquifer Subasin has an estimated total storage capacity of approximately 7,240,000 acre feet of groundwater.

~~**Insert Figure 3.6-1 (Groundwater Basins and Subareas with Well locations)**~~

T:_CS\Work\Harper Canyon (Encina Hills)\EIR Figures 25-0143\Figures

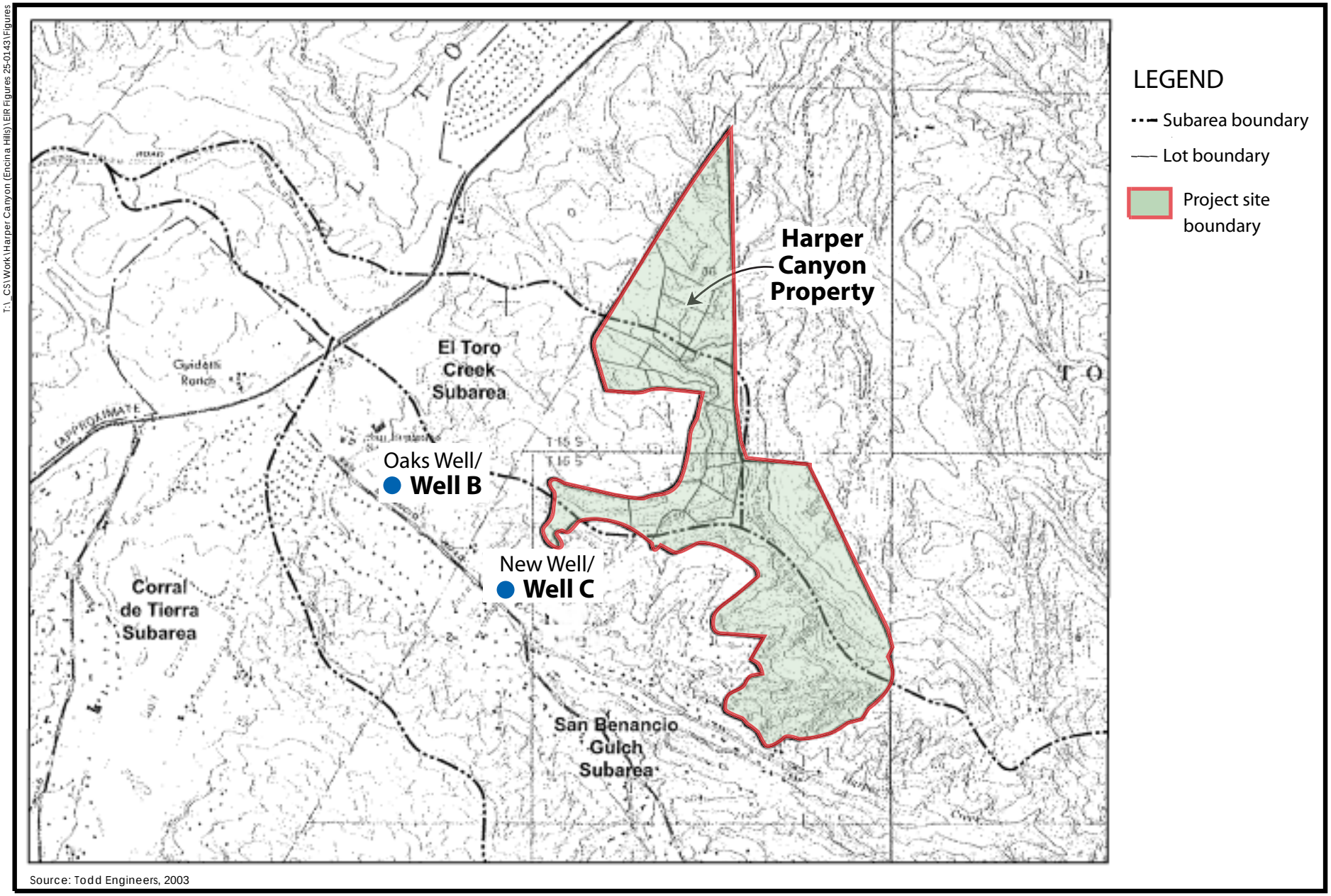

Figure 3.6-2

Geosyntec Study Area Subareas and Well Locations

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Groundwater Resources

Water Quantity

The proposed project would procure water from two existing wells within the San Benancio Gulch subarea of the ~~El Toro Groundwater Basin~~Geosyntec Study Area, as shown in **Figure 3.6-1~~1~~2, ~~Groundwater Basin~~Geosyntec Study Area Subareas and Well Locations**, which are also located within the Corral de Tierra Subbasin of the Salinas Valley Groundwater Basin. The ~~San Benancio Gulch~~ Corral de Tierra Subbasin ~~subarea~~ overlies two principal aquifers, the Paso Robles ~~Aquifer~~ and the Santa Margarita ~~Aquifer~~formations. One of the wells that will serve as the primary well for the proposed project was drilled within the approved Oaks Subdivision along San Benancio Road (hereinafter referred to as the "Oaks Well" or "Well B." ~~)~~A ~~and more recently a~~second well was drilled on the project applicant's land near ~~Harper Canyon~~Meyer Road (Assessor's Parcel Number 416-621-001-000) (hereinafter referred to as the "New Well" or "Well C"). (Well A is located near the Ambler Park Treatment facility, which is owned and operated by California-American Water Company (Cal-Am)).

In the vicinity of the Oaks Well, the Paso Robles Aquifer is approximately 400 feet thick and the Santa Margarita Aquifer is approximately 250 feet thick. Typical well yields and specific capacities for the two principal aquifers of the subarea are listed in **Table 3.6-1, Typical Well Yields for the Paso Robles and Santa Margarita Aquifers**.

TABLE 3.6-1
TYPICAL WELL YIELDS FOR THE PASO ROBLES AND SANTA MARGARITA AQUIFERS

Aquifer	Well Yield (GPM)	Specific Capacity (GPM/FT)
Paso Robles	Up to 200	2
Santa Margarita	Over 500	5

Notes: GPM = gallons per minute, GPM/FT = gallons per minute per foot

Source: Todd Engineers 2003

~~Moratorium~~B-8 Zoning District

On November 24, 1992, the Monterey County Board of Supervisors adopted Ordinance No. 03647 (Monterey County Code 21.42.030.H), which added the "B-8" Overlay Zoning District to a portion of the El Toro Groundwater Basin, which includes portions of the ~~Corral de Tierra subbasin~~Corral de Tierra Subbasin as shown on **Figure 3.6-2~~1~~3, MCWRA ~~Water Zones~~Zone 2C, B-8 Zoning District, and Proposed Project Well Locations** due to water constraints identified and documented in the *Hydrogeologic Update: El Toro Area, Monterey County, California* (MCWRA 1991). The purpose of the B-8 Zoning District ~~was~~ is to "restrict development and/or intensification of land use in areas where due to water supply, water quality, sewage disposal capabilities, traffic impacts or similar measurable

public-facility type constraints, additional development and/or intensification of land use is found to be detrimental to the health, safety, and welfare of the residents of the area, or the County as a whole..."

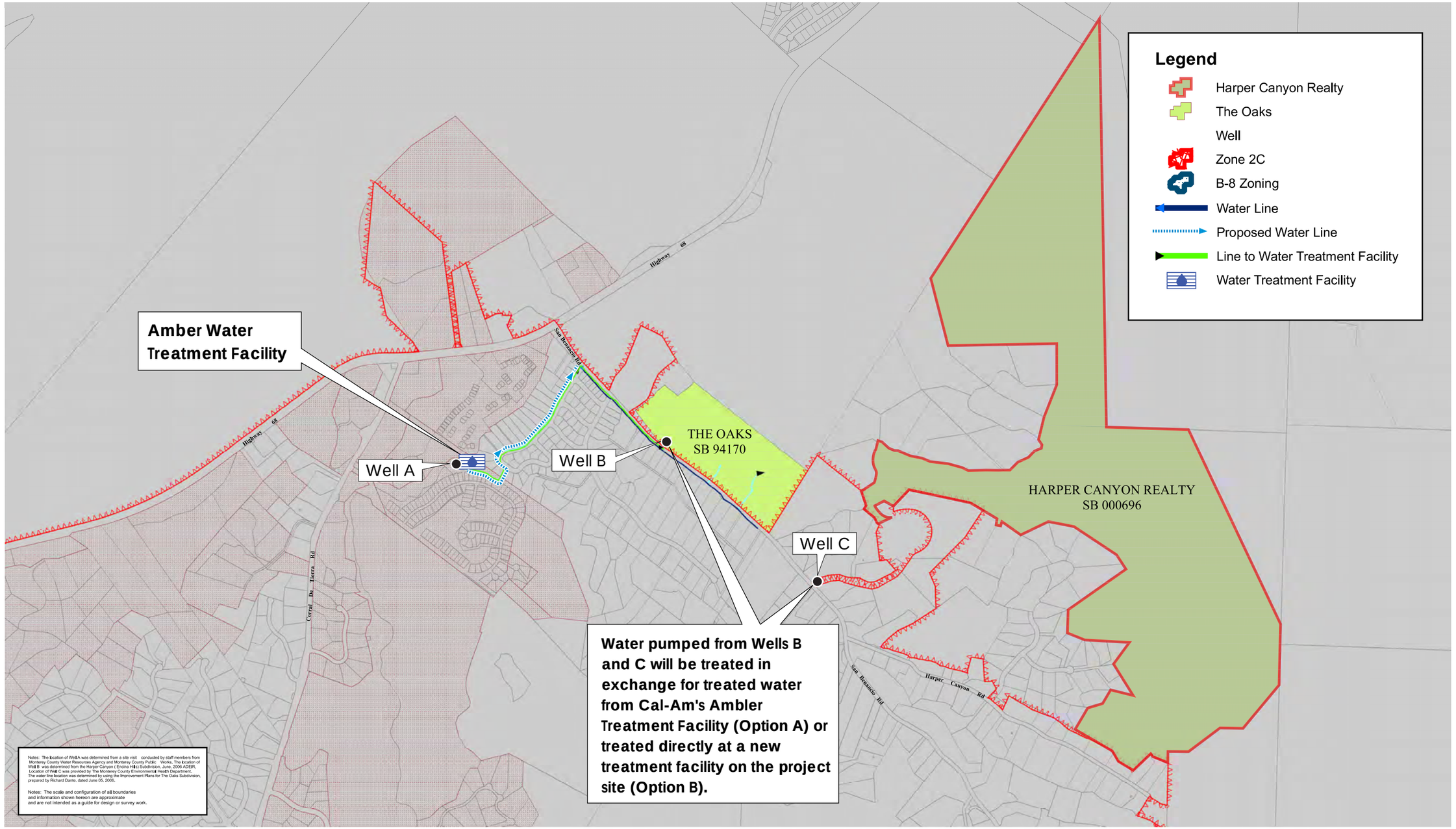
An *Additional Hydrogeologic Update, El Toro Area Monterey County,* California (MCWRA 1996) was prepared, which evaluated the overall water supply in the B-8 zoning district and concluded, among other things, that a "Revision of the subareas would correct the 'paper deficits' that occur in subareas that are hydraulically connected. As a starting point, it is suggested that the subareas north of the trace of the Chupines fault be aggregated into a single unit. This would combine the majority of the subareas of Corral de Tierra, Watson Creek, San Benancio Gulch, and El Toro Creek into a single Hydrogeologic unit...." The County Board of Supervisors accepted the report April 1996 but ~~has~~ did not lift~~ed~~ the B-8 zoning designation from certain portions of the ~~El Toro Groundwater asin~~"El Toro Area".

The Geosyntec Study determined that there is an overdraft condition within the Geosyntec Study area. Although the ~~proposed project would~~Oaks Well and New Well would procure water from within the Geosyntec Study area~~San Benancio Gulch subarea of the El Toro Groundwater Basin~~, neither of the wells ~~for the proposed project~~ nor the project site are located within a B-8 zoning ~~designation~~district. In fact, the project site, Oaks Well and New well are located within a special assessment zone, "Zone 2C," that was established for the Salinas Valley Water Project (SVWP), which is discussed in more detailed below under Seawater Intrusion. The purpose of the SVWP is to provide for the long-term management and protection of groundwater resources in the Salinas Valley Groundwater Basin by meeting the following objectives: stopping seawater intrusion, and providing adequate water supplies and flexibility to meet current and future needs.

~~The El Toro Groundwater Study, prepared by Geosyntec Consultants in July 2007 for the Monterey County Water Resource Agency determined that~~ The water-bearing formations in ~~this~~ the vicinity of the Oaks Well and New Well ~~area~~ dip in a northeasterly direction ~~into~~ towards the Salinas Valley. The geologic maps and cross-sections indicate that there are no barriers restricting groundwater flow from this portion of the ~~El Toro Basin~~ Geosyntec Study area into the Salinas Valley. This means the Geosyntec Study area and the Salinas Valley Groundwater Basin are hydrologically connected.

According to MCWRA, this portion of the ~~El Toro Planning area~~Corral de Tierra Area subbasin, including the project site, Oaks Well site, and N~~n~~ew Well site, indirectly receive benefits of sustained groundwater levels within the Basin attributed to the ~~operation of both the Nacimiento and San Antonio Reservoirs and will receive benefits of the~~ Salinas Valley Water Project~~ upon completion~~. ~~In addition, both the MCWRA and the Monterey County Health Department, Environmental Health Bureau have determined that the proposed project would have negligible effects on the aquifer in this region (MCHD-EHB 2002a) and that there is a long term water supply for the project.~~

T:_CS1\Work\Harper Canyon (Encina Hills)\EIR Figures 25-0143\Figures



Source: Monterey County Water Resources Agency, 2006

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Figure 3.6-3

MCWRA Zone 2C, B-8 Zoning District, and Proposed Project Well Locations

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Groundwater Quality

Groundwater quality in the ~~El Toro Groundwater~~Corral de Tierra Area Subbasin ~~Basin~~ is considered fair to poor. The two principal aquifers, the Paso Robles Aquifer and the Santa Margarita Aquifer, have two different water quality characteristics. The Paso Robles Aquifer is of a calcium-bicarbonate type while the Santa Margarita Aquifer is of a sodium-chloride type.

Drinking Water Standards

The Oaks Well was sampled in 2000 and the New Well was sampled in 2003 to determine water quality. At the time of the *Project Specific Hydrogeology Report – Harper Canyon Realty LLC Subdivision*, water quality tests for both the Oaks Well and New Well met primary drinking water standards but exceeded secondary standards. However, since the wells were tested, the primary maximum contaminate level (MCL) for arsenic has been lowered to 10 parts per billion (ppb) and the MCL for total chromium as of August 2013 ~~was~~has been proposed to be lowered from 50 ppb (California; 100 ppb federal) to 10 ppb. An enforceable MCL for total chromium is anticipated to be established in 2014, but is not currently in effect.

Arsenic

The primary mode of exposure to arsenic is ingestion. Ingestion of inorganic arsenic can result in both cancer and non-cancer health effects. Arsenic interferes with a number of essential physiological activities, including the actions of enzymes, essential cations, and transcriptional events in cells. The U.S. EPA has classified arsenic as a Class A human carcinogen. Chronic exposure has been linked to health complications, including cancer of the skin, kidney, lung, and bladder, as well as other diseases of the skin, neurological, and cardiovascular system. To avoid or eliminate arsenic contamination, water systems may need to take a number of actions, including enacting a source water protection programs ~~to~~ to prevent contamination.

Chromium

The presence of hexavalent chromium found in drinking water sources is due to both natural occurring presence in geological formations and from industrial ~~use~~contamination sources, such as the manufacturing of textile dyes, wood preservation, leather tanning, and anti-corrosion processes. The trivalent form, also commonly known as "chromium 3" or "chromium III," is a required nutrient and has very low toxicity. The hexavalent form, also commonly known as "chromium 6" or "chromium VI," is more toxic and has been known to cause cancer when inhaled. In recent scientific studies in laboratory animals, hexavalent chromium has also been linked to cancer when ingested. In August 2013, the MCL for total chromium (includes both trivalent and hexavalent chromium) was proposed to be lowered from the state MCL of 50 ppb to 10 ppb. The proposed MCL for total chromium specifically aims to regulate the more soluble and toxic hexavalent form of chromium than the less

soluble and required nutrient trivalent form of chromium. An enforceable MCL for chromium is anticipated to be established in 2014.

Memorandum of Understanding Regarding Treatment of Water from the Oaks Well

The Oaks well was originally going to have an on-site water treatment facility, until the maximum contaminant levels for arsenic were reduced (resulting in more stringent standards). Treatment for arsenic, as well as other constituents, is expensive and is most efficiently treated and monitored when treatment can be done at one primary facility as opposed to multiple satellite treatment facilities. Therefore, it was proposed that water pumped from the Oaks well ~~relocate its treatment to~~would be treated at the Cal-Am Ambler Park treatment facility with the understanding that water would be transferred and returned to the subdivision at a 1:1 ratio.

As of writing this Final EIR, the County Board of Supervisors has given preliminary direction to staff to prepare a Memorandum of Understanding (MOU) between Cal-Am and the County of Monterey ~~with regards to treating~~regarding treatment of water pumped at the Oaks Well to meet drinking water standards. ~~Originally, the Oaks Well was going to be treated onsite but due to the need to treat water to meet the new arsenic MCL and that treatment process it was determined that treatment at a nearby treatment plant that also treats water pumped within the B-8 zoning district would be the most efficient option.~~ The MOU will define the terms by which Cal-Am would agree to pump water from the Oaks well in an amount equal to the amount of water Cal-Am could supply to the nine lots of the Oaks subdivision (located adjacent to the project site) from the treatment plant, ~~so as~~ to ensure there is no net transfer of water volume from the B-8 zoning district, ~~while~~and ensuring that water provided to the Oaks subdivision ~~meets~~will meet current drinking water standards.~~, which~~Such standards may include new MCL for chromium in the near future.

Seawater Intrusion

Monterey County relies almost entirely on groundwater resources to meet water demands. Some of the County's aquifers experience localized over drafting, a condition where more water is pumped out of an aquifer than is recharged on an average yearly basis. This over drafting condition also causes a decline in the water level thus requiring deeper wells. Over drafting causes seawater intrusion in those aquifers in the northern end of Salinas Valley. When this occurs the aquifers must either be deepened, abandoned or water must be treated to dilute the salt concentration. Sufficient water resources exist within the County but the economic problems of storage and distribution make these resources unattainable.

Although seawater intrusion is not currently occurring within the ~~El Toro Groundwater~~Corral de Tierra Area Subbasin~~Basin~~, the ~~proposed~~ project site, Oaks Well and New Well are located ~~will procure water from~~ within a special assessment zone "Zone 2C" established for the Salinas Valley Water Project. To help manage and protect

groundwater resources, Monterey County Water Resource Agency (MCWRA) has developed the Salinas Valley Water Project (SVWP). The ~~Salinas Valley Water Project (~~SVWP~~)~~ addresses the water resources management issues within the Salinas Valley. It provides for the long-term management and protection of groundwater resources in the basin by meeting the following objectives: stopping seawater intrusion, and providing adequate water supplies and flexibility to meet current and future (year 2030) needs. A special assessment zone (Zone 2C) has been established to obtain funding for the Salinas Valley Water Project and is shown in **Figure 3.6-~~2~~3, MCWRA Water Zones and Well Locations**. Customers with Zone 2C are levied special assessment fees to fund the SVWP~~in exchange for availability of water~~. Portions of the ~~El Toro Groundwater~~Corral de Tierra Area Subbasin ~~Basin~~ are considered to be in the Salinas Valley Water Project Zone 2C. The ~~proposed project~~ Oaks Well and New Well would procure ~~water from the Oaks Well and New Well, which are both located~~ within Zone 2C as shown in **Figure 3.6-~~2~~3, MCWRA Water Zones and Well Locations**.

The SVWP went into operation in 2009-2010. Between 2009 and 2011, monitoring data indicate that the groundwater levels (relative to sea level) have increased and the rate of seawater intrusion has decreased. Although it is too soon to draw hard conclusions, a scientific study is currently underway ~~will thoroughly~~to evaluate the results of Zone 2C and the SVWP. This study will evaluate seawater intrusion, groundwater levels, total water demand for all existing and future uses designated in the General Plan for the year 2030, and assess and provide conclusions regarding the degree to which the total water demand for all uses are likely to be reached or exceeded. If the study concludes that the total water demand for all uses is likely to be exceeded; groundwater elevations are going to decline by 2030; or that the seawater intrusion boundary will advance inland by 2030, the study will make recommendations on additional measures the County could take to address any or all of those conditions. These measures may include, but are not limited to, conservation measures or another phase of the SVWP. This study is anticipated to be completed no later than March 2018.

3.6.2 REGULATORY SETTING

SAFE DRINKING WATER ACT (SDWA)

The Safe Drinking Water Act (SDWA), originally passed by Congress in 1974 (amended 1986 & 1996), protects public health by regulating the nation's public drinking water supply. The law requires many actions to protect drinking water and its sources: rivers, lakes, reservoirs, springs, and ground water wells. (SDWA does not regulate private wells that serve fewer than 25 individuals.) The US EPA is the governing authority that sets national health-based standards for drinking water in order to protect against both naturally occurring and man-made contaminants. Individual states and water systems work in conjunction with the US EPA to ensure these standards are met.

Originally, SDWA focused on treatment as the primary means of providing safe drinking water at the tap. The 1996 amendments recognized source water protection, operator

training, funding for water system improvements, and public information as important components of safe drinking water. This approach helps ensure the quality of drinking water by protecting it from source to tap. (SDWA)

CALIFORNIA DEPARTMENT OF HEALTH SERVICES (CDHS)

In response to the 1996 federal Safe Drinking Water State Act requirements, Section 116540 of the California Health and Safety Code was enacted. This section states that,

> *"No public water system that was not in existence on January 1, 1998, shall be granted a permit unless the system demonstrates to the department that the water supplier possesses adequate financial, managerial, and technical capability (TMF) to assure the delivery of pure, wholesome and potable drinking water. This section shall also apply to any change of ownership of a public water system that occurs after January 1, 1998"*

Compliance with the element is required at the time of permit application.

STATE WATER RESOURCE CONTROL BOARD (SWRCB)/CENTRAL COAST REGIONAL WATER QUALITY CONTROL BOARD (RWQCB)

State Water Resources Control Board (SWRCB) was created more than 30 years ago (1967) by merging the State Water Quality Control Board and the State Water Rights Board together. This five-member board had the responsibility to protect water quality, balance competing demands on our water resources and resolve water disputes.

> *"The State Board's mission is to preserve, enhance and restore the quality of California's water resources, and ensure their proper allocation and efficient use for the benefit of present and future generations."*

Dickey Water Pollution Act

The Dickey Act acknowledged that California's water pollution problems are primarily regional and depend on precipitation, topography, and population, as well as recreational, agricultural, and industrial development, all of which vary greatly from region to region, thus creating a need for a "State Water Pollution Control Board".

The Dickey Act established nine regional water pollution control boards located in each of the major California watersheds. Their primary responsibility is overseeing and enforcing the state's pollution abatement program. Gubernatorial appointees, representing water supply, irrigated agriculture, industry, and municipal and county government in that region, serve~~d~~ on each Regional Water Board.

Nine Regional Water Quality Control Boards (RWQCB) represent~~ing~~ the major watersheds of the state. These Regional Boards serve as the frontline for state and federal water

pollution control efforts. The Central Coast Region spans from Santa Clara County south to northern Ventura County. The Region has 378 miles of coastline, including Santa Cruz and the Monterey Peninsula, the agricultural Salinas and Santa Maria Valleys, and the Santa Barbara coastal plain (SWRCB).

COUNTY OF MONTEREY

Monterey County Health Department, ~~Division of~~ Environmental Health Bureau (~~MCD~~EHB)

The mission of the ~~MCD~~EHB is to prevent environmental hazards from occurring and to protect the public and resources from environmental hazards when they occur. They are agency responsible for water well permits for construction, destruction and modification as well as inspect placement of sanitary seal. They also conduct inspections, issue permits and monitor chemical and bacteriological water quality for small public water systems with less than 200 connections.

1982 Monterey County General Plan

Policies

5.1.2 Land use and development shall be accomplished in a manner to minimize runoff and maintain groundwater recharge in vital water resource areas.

6.1.1 Increase uses of groundwater shall be carefully managed, especially in areas known to have groundwater overdrafting.

6.1.2 Water conservation measures for all types of land uses shall be encouraged.

53.1.3 The County shall not allow water consuming development in areas which do not have proven adequate water supplies.

53.1.5 Proliferation of wells, serving residential, commercial, and industrial uses, into common water tables shall be discouraged.

Toro Area Plan

Policies

5.1.2.1 Developments shall be designed to maintain groundwater recharge capabilities on the property.

6.1.4 New water supply wells for subdivision shall require seventy-two hour pump tests.

3.6.3 IMPACTS AND MITIGATION MEASURES

STANDARDS OF SIGNIFICANCE

The following thresholds for measuring a project's environmental impacts are based on CEQA Guidelines and standards used by the County of Monterey. For the purposes of this EIR, impacts are considered significant if the following could result from implementation of the proposed project:

1) Violate any water quality standards;
2) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted;
3) Otherwise substantially degrade water quality; and
4) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed.

~~**Insert Figure 3.6-2 MCWRA Water Zones and Well Locations**~~

METHODOLOGY

A *Project Specific Hydrogeologic Report - Harper Canyon Realty, LLC Subdivision* was prepared for the Monterey County Health Department, Environmental ~~Health Division~~Health Bureau by Todd Engineers in September 2002 and updated July 2003, in accordance with Title 19 of the Monterey County Code. These reports summarize available hydrogeologic data, examine the availability of sustainable long-term water supply for the project, identify potential effects the project may have on the quantity and quality of groundwater, and provide well testing data. These reports and letters related to groundwater are included in Appendix F.

The analysis included a review of available information pertaining to groundwater resources and hydrogeology including, but not limited to: *Monterey County General Plan* (Monterey County 1982); and the ~~*Toro Area Plan* (Monterey County 1983); *Hydrogeologic Update – El Toro Area* (MCWRA 1991); and *Additional Hydrogeologic Update – El Toro Area* (MCWRA 1996)~~ *El Toro Groundwater Study* (Geosyntec Study Report 2007, 2010)~~.~~

PROJECT IMPACTS AND MITIGATION MEASURES

Long-Term Impact to Groundwater Resources

Impact 3.6-1 Implementation of the proposed project would result in an increase demand of approximately 12.75 acre feet per year, which would result in a long-term water demand increase on the ~~El Toro Groundwater Basin~~Salinas Valley Groundwater Basin. However, given ~~project's groundwater recharge capability and~~ the fact that water would be procured through wells located within the Salinas Valley Water Project Assessment Zone 2C, this increase in demand would be considered a **less than significant impact**.

According to the *Project Specific Hydrogeology Report – Harper Canyon Realty LLC Subdivision* (~~MCHD~~MCHDEHB 2002, 2003), the proposed project would have a water demand of approximately 12.75 AFY based on a demand value of 0.75 AFY per residence. The proposed project would be served by two existing wells: the Oaks Well and the New Well, as shown in **Figure 3.6-~~1~~3, Groundwater Basins and Subareas with Well Locations**. Both wells procure water from the Paso Robles Aquifer within the ~~San Benancio Gulch subarea of the El Toro Groundwater Basin~~Corral de Tierra Area Subbasin of the Salinas Valley Groundwater Basin.

According to the *Project Specific Hydrogeology Report – Harper Canyon Realty LLC Subdivision,* the wells would procure water from a ~~San Benancio Gulch~~ subarea that is recharged by approximately 486 AFY through stormwater generation and precipitation. With buildout of the subarea (approximately 542 units) ~~within the San Benancio Gulch subarea~~, the water demand ~~is~~ would be less than the annual recharge rate, providing a water surplus of approximately 29.9 AFY. ~~AFY for the San Benancio Gulch subarea~~.

According to the *Project Specific Hydrogeology Report – Harper Canyon Realty LLC Subdivision,* this water surplus would be able to accommodate the proposed project's water demand of approximately 12.75 AFY.

Water Supply

The Oaks Well and New Well would supply water to the proposed project and the previously approved Oaks subdivision, a nine-unit subdivision located along San Benancio Road adjacent to the project site. The Oaks Well and the New Well would be owned by ~~combined into one water system, which shall be operated by~~ California-American Water Company (Cal-Am). ~~–~~The wells are located and ~~will~~ procure water ~~directly~~ from the ~~San Benancio Gulch subarea of the El Toro Groundwater~~ portion of the Corral de Tierra Subbasin that lies with MCWRA's Zone 2C ~~Basin. Both the Oaks Well and New Well are located within the Salinas Valley Water Project Assessment Zone 2C and will not exacerbate the deficient water conditions within the El Toro Groundwater Basin~~. ~~Cal-Am will~~ Water pumped from the wells would be conveyed to a treatment facility to treat water in accordance with current state and federal regulations (i.e. drinking water standards).

Water treatment would occur via one of two treatment facility options: Option A) treatment at the existing Ambler Park Facility; or Option B) a new satellite ~~small~~ water system that would serve the proposed project and the previously approved Oaks subdivision only. These options are discussed in more detail under **Impact 3.6-2**. However, it is important to note that if the proposed project was provided water via the Ambler Treatment facility, ~~that~~a an separate MOU, similar to the one for the Oaks Subdivision, would be necessary to ensure that there is no net transfer of water from the B-8 zoning district.~~, while ensuring that water provided to the proposed project and Oaks subdivision meets current drinking water standards. As an alternative, the project may treat water pumped from the Oaks Well and New Well at a separate treatment plant. operate the proposed project's water system as a satellite system to keep the water procured from wells within Zone 2C separate from water procured by Cal-Am within the B-8 zoning district and under a moratorium. If routed through the Ambler Park treatment plant, t~~The amount of water delivered to the Oaks and Harper Canyon Subdivisions must be equal to the amount pumped from the Oaks Welland New Well. Implementation of mitigation measure **MM 3.6-2b** would require monitoring of the pumping volumes to ensure that the amount of water delivered to the subdivisions is equal to the amount of water pumped. The~~ A new satellite water ~~distribution~~ system ~~would be considered a state small water system and would be under the jurisdiction of Monterey County Health Department, Environmental Health DivisionHealth Bureau but~~ would be owned and operated by Cal-Am. This satellite facility would be located on the project site ~~and/or Oaks subdivision project site~~ within Zone 2C. The project applicant would be required to pay their fair share towards the construction of the new treatment facility.

~~As a condition of approval, the project applicant shall be required to enter into a main extension agreement with California-American Water Company for the New Welland~~

~~subsequently, the existing main extension agreement for the Oaks subdivision well may be subject to revision. The main extension agreement shall identify that the water system shall be operated as a satellite water system.~~

~~Water Balance~~Previous Studies

~~*Todd Engineering*~~*Project Specific Analysis*

~~According to the~~A *Project Specific Hydrogeology Report – Harper Canyon Realty LLC Subdivision,* was prepared by Todd Engineering in 2002, which was updated in 2003 (**Appendix F**). ~~The~~ This analysis identified the project site ~~overlie~~being located~~s~~ in an area that was referenced as the El Toro Creek subarea, San Benancio Gulch subarea, Corral de Tierra subarea, and the northern portion of Watson Creek subarea of the El Toro Groundwater Basin. These areas referenced are pursuant to~~in~~ the *Hydrogeologic Update - El Toro Area* and *Additional Hydrogeologic Update - El Toro Area* prepared by Fugro for MCWRA in 1991 and 1996, respectively (MCWRA 1991, 1996) and are not consistent with the terms used by MCWRA or DWR to describe the groundwater basins. ~~This area is~~are located north of the Chupines fault and are considered to be interconnected.

According to Todd Engineering, ~~tThe predicted water demand for these four subareas upon buildout of the area (1,288 units) is was less than the recharge rate, providing a water surplus of approximately 320.7 AFY in this area of the El Toro Groundwater Basin, as shown in **Table 3.6-2, El Toro Groundwater Basin Water Balance Upon 1995 Estimated Buildout**. It was determined that the~~ The proposed project's water demand of approximately 12.75 AFY would be met by the ~~29.9 AFY~~ water surplus ~~within the San Benancio subarea~~ in the area. However, the assumptions for the water demand were not consistent with those used to estimate~~d~~ water demand/surplus upon buildout of the areas analyzed in the *Hydrogeologic Update - El Toro Area* and *Additional Hydrogeologic Update - El Toro Area*, which assumed high volume of recharge for landscaping and septic systems throughout the area. Since the proposed project will convey wastewater to a public treatment facility and have minimal landscaping, the loss of return flow anticipated in the buildout projects was estimated for the proposed project, which was determined to be approximately 5.88 AFY (12.75 AFY total water demand x 57.60 percent interior usage x 80 percent interior usage return via septic system). The loss of 5.88 AFY of return flow ~~lost~~ due to the proposed project was determined to be greater than the water surplus for the referenced El Toro Creek subarea. According to the *Project Specific Hydrogeology Report – Harper Canyon Realty LLC Subdivision* some areas within the referenced Corral de Tierra subarea would not meet the estimated water demand upon buildout and development should be extremely rationed in the area. It was determined that although the loss of return flow associated with the proposed project may have an adverse impact on some of the individual subareas, the four subareas are interconnected and will maintain an overall water surplus of approximately 314.82 AFY.

~~According to Monterey County Health Department, Environmental Division, there is adequate source capacity for the proposed project and the proposed project should have a~~

negligible effect on the aquifer and nearby existing wells (MCHD 2002a). Therefore, the proposed project would have a long-term water supply and the impact on regional groundwater resources would be considered **less than significant**. No mitigation measures are necessary.

TABLE 3.6-2
EL TORO GROUNDWATER BASIN WATER BALANCE UPON 1995 ESTIMATED BUILD-OUT

Subarea	Recharge (AFY)	1995			Buildout		
		Units	Demand (AFY)	Surplus (AFY)	Units	Demand (AFY)	Surplus (AFY)
San Benancio Gulch	486	413	342.2	143.8	542	456.1	29.9
El Toro Creek	74	1	1.1	72.9	175	69.3	4.7
Corral de Tierra	607	686	582.2	24.8	986	781.4	174.4
Watson Creek	855	188	206.4	648.6	365	394.5	460.5
Totals	**2,022**	**1,288**	**1,131.9**	**890.1**	**2,068**	**1,701.3**	**320.7**

NOTES: AFY = Acre Feet per Year
1995 Demand and Buildout based on projections from Additional Hydrogeologic Update, El Toro Area (Fugro 1996).
Recharge is based on 2.18 inches per year using soil moisture methodology (Feeney, 2000).

Source: Todd Engineers 2003

The water balance findings of the *Project Specific Hydrogeology Report – Harper Canyon Realty LLC Subdivision* are based on many of the same reports and similar topographic divide as the *El Toro Groundwater Study* prepared by Geosyntec in 2007, supplemented in January 2010, also referred to as the "Geosyntec Study."

Geosyntec Study Analysis

Based According to on the Geosyntec Study subareas, the project site lies in the El Toro Creek and San Benancio Gulch subareas (**Figure 3.6-2, Geosyntec Study Area Subareas and Well Locations**), which differs slightly from the *Project Specific Hydrogeology Report – Harper Canyon Realty LLC Subdivision* (Todd Engineering 2002, 2003) and also conflicts with terms used by MCWRA and DWR to describe the groundwater basin. According to the Geosyntec Study, the primary aquifer is in overdraft but current and increased groundwater pumping could be sustained for decades in areas where large saturated thicknesses of the primary aquifer stored large volumes of groundwater. The project site overlies a portion of the primary aquifer that has a large saturated thickness and groundwater production is considered good (Figure 7-1 of the Geosyntec Study). Although, it was identified that with continued overdraft conditions, groundwater production would likely decrease relatively quickly in hydrogeologically contiguous areas of less saturated thickness, it was also determined in the– Geosyntec Study update that the aquifer in the vicinity of the project site is hydrogeologically contiguous with the aquifers located to the

east in the Salinas Valley rather than the less productive areas within the Geosyntec Study area. –Therefore, groundwater pumping in this area would not likely affect the less saturated thickness areas of the primary aquifer with the Geosyntec Study area.

~~Existing Conditions~~Water Balance Analysis

MCWRA requested that the water balance be prepared to analyze the proposed project's demand on existing conditions. Based on the water demand estimated in the *Project Specific Hydrogeology Report – Harper Canyon Realty LLC Subdivision (*Todd Engineering 2002, 2003) and the *Preliminary Drainage Report of Harper Canyon (Encina Hills) Subdivision* (Whitson Engineers, Inc., 2007), the proposed project would result in an increased gross water demand of approximately 12.75 AFY and ~~would result in~~ loss of approximately 0.38 AFY ~~less~~ recharge. When compared to existing conditions, the proposed project would result in a net negative change of approximately -13.1 AFY, as summarized in **Table 3.6-2**.

TABLE 3.6-2
WATER BALANCE

PRE-PROJECT					
WATER USE	**DEMAND PER UNIT (AFY) (1)**	**NUMBER OF UNITS**			**WATER USE AFY**
Existing Residential Unit	0.75	0			0.00
Total Water Use					**0.00**
RECHARGE	**TOTAL AREA ACRES (2)**	**UNDEVELOPED AREA ACRES (2)**	**MEAN ANNUAL PRECIPITATION (3) INCHES/YEAR**	**RECHARGE RATE (4)**	**RECHARGE AFY**
Project Site	344.0	344.0	14.58	0.0065	2.72
Total Recharge					**2.72**
Water Balance = Recharge - Water Use					**2.72**
POST-PROJECT					
WATER USE	**DEMAND PER UNIT (AFY) (1) & (5)**	**NUMBER OF UNITS (5)**	**AREA (6) SQUARE FEET**	**MULTIPLIER (7)**	**DEMAND AFY**
Low Density Residential	**0.75**	**17**			12.75
Total Water Use					**12.75**
POST-PROJECT					
RECHARGE	**TOTAL AREA ACRES (2)**	**UNDEVELOPED AREA (2) ACRES**	**MEAN ANNUAL PRECIPITATION INCHES/YEAR (3)**	**RECHARGE RATE (4)**	**RECHARGE AFY**
Watershed A	20.60	20.60	14.58	0.0065	0.16
Watershed B	27.70	27.70	14.58	0.0065	0.22
Watershed C	5.80	5.80	14.58	0.0065	0.05
Watershed D	33.70	31.78	14.58	0.0065	0.25
Watershed E	7.90	7.67	14.58	0.0065	0.06
Watershed F	94.70	89.00	14.58	0.0065	0.70

Watershed G	75.60	71.04	14.58	0.0065	0.56
Watershed H	0.80	0.80	14.58	0.0065	0.01
Watershed I	7.60	7.15	14.58	0.0065	0.06
Watershed J	3.10	2.96	14.58	0.0065	0.02
Watershed K	37.60	36.98	14.58	0.0065	0.29
Total Recharge					**2.38**
Water Balance = Recharge - Water Use					**-10.37**
Net Change					
Post-Project Water Balance - Pre-Project Water Balance					**-13.1**

Notes:
1. Water Demand per Unit values for residential use based on Project Specific Hydrogeology Report – Harper Canyon Realty LLC Subdivision, prepared by Todd Engineering for MCWRA in September 2002 and updated July 2003.
2. Pre- and post project area (acres) referenced from the Preliminary Drainage Report of Harper Canyon (Encina Hills) Subdivision, prepared by Whitson Engineers, Inc., dated March 22, 2007. Includes adjacent parcels where applicable.
3 Average rainfall was estimated based on the mean annual precipitation rate at the Western Regional Climate Center's Salinas 2E Station between 1958 and 2010 (WRCC 2010).
4 Based on the average recharge rate for SMB zones 2 and 88 for undeveloped land and SMB zone 5 for residential and provided in the Laguna Seca Subarea Phase III Hydrogeologic Study (Yates, Feeney, and Rosenberg 2002).
5 Vesting Tentative Map for Harper Canyon (Encina Hills) Subdivision prepared by Whitson Engineers in 2003.

As discussed previously, the MCWRA constructed the SVWP to provide the surface water supply necessary to attain a hydrologically balanced groundwater basin. Recent data (2011) indicates that since SVWP went online, the groundwater levels within the Salinas Valley Groundwater Basin are increasing and that the rate of seawater intrusion in the Salinas Valley is decreasing, which is encouraging for the groundwater basin as a whole. A study is currently underway to thoroughly evaluate the effects of the SVWP.

The project site, Oaks Well and New Well are located in Zone 2C and the property owner contributes ~~the SVWP.~~ financially to the SVWP and its groundwater management strategies through an assessment on the property. The project's impact on the groundwater basin is therefore mitigated by this contribution, as the SVWP provides a regional mitigation strategy for the groundwater basin and its subbasins. Furthermore, both the MCWRA and the Monterey County Health Department, Environmental Health Bureau ~~have~~has determined that the proposed project would have negligible effects on the aquifer in this region (MCHD-EHB 2002a) and that there is a long term water supply for the project. For these reasons, the proposed project is considered to have a long-term sustainable groundwater supply, and this would be considered a **less than significant impact.** No mitigation measures are necessary.

Drinking Water Quality Below Thresholds

Impact 3.6-2 Implementation of the proposed project would result in the extracting of groundwater that does not meet ~~the~~ current California Department of Health Services Maximum Contaminate Levels (MCLs) for total dissolved solids, electrical conductivity, chloride, manganese, and arsenic. This would be considered a **potentially significant impact**.

~~Water extracted for the proposed project is~~The Oaks Well and New Well procured from the Paso Robles Aquifer, ~~however the~~which has water quality that is consistent with the Santa Margarita Aquifer~~,~~ in that it has sodium-chloride characteristics. ~~According to~~At the time of the *Project Specific Hydrogeology Report – Harper Canyon Realty LLC Subdivision*, water quality tests for both wells met primary drinking water standards but exceed secondary standards. **Table 3.6-~~5~~3, New Well Constituents Exceeding Primary and Secondary Drinking Water Standards** summarizes the water quality test results for the New Well.

TABLE 3.6-~~5~~3
NEW WELL CONSTITUENTS EXCEEDING THE PRIMARY AND SECONDARY DRINKING WATER STANDARDS

Primary Constituents	Current MCL	Constituent Concentration	Effect
Arsenic	10 ppb	28 ppb	Skin damage or problems with circulatory systems, and may have increased risk of getting cancer
Chromium	50 ppb	2 ppb	The hexavalent form, chromium 6, has been known to cause cancer when inhaled and linked to cancer when ingested.
Secondary Constituents	**Current MCL**	**Constituent Concentration**	**Effect**
Chloride	250 ppm	263 ppm	Odor, Taste, Corrosion & Staining
Manganese	50 ppb	169 ppb	Odor, Taste, Color, Corrosion & Staining
Electrical conductance	900 umhos/cm	1120 umhos/cm	
Total Dissolved Solids	500 ppm	689 ppm	Odor, Taste, Color, Corrosion & Staining

NOTES: MCL = Maximum Contaminate Level, ppm = parts per million, Ppb = parts per billion
Umhos/cm = micromhos per centimeter

Source: Todd Engineers 2003

As previously noted~~However~~, since the wells were tested~~,~~ the primary ~~maximum contaminate levels (~~MCL~~s)~~ for arsenic ~~have~~ has been lowered to 10 ~~parts per billion (~~ppb~~)~~ and the MCL for total chromium is currently being considered to be lowered to 10 ppb. Exceeding primary ~~maximum contaminate levels (~~MCLs~~)~~ may pose health risks and are enforceable by law, while secondary standards are guidelines based on such criteria as taste, odor and laundry staining and are not regulated.

~~Water quality data from the Oaks Well was collected in 2000 and determined that the Oaks Well met current primary drinking water standards. However, the *Project Specific Hydrogeology Report – Harper Canyon Realty LLC Subdivision* did not include specific~~

~~water quality data. The New Well was sampled for water quality in 2003. **Table 3.6-35**, **New Well Constituents Exceeding Primary and Secondary Drinking Water Standards** summarizes the water quality test results for the New Well. According to the *Project Specific Hydrogeology Report – Harper Canyon Realty LLC Subdivision*, the New Well met current primary drinking water standards.~~ Based on the water quality data for the New Well, i~~I~~t is likely that both the Oaks Well and New Well will be required to treat for arsenic ~~and based on the water quality data for the New Well, the new primary~~because the drinking standards for arsenic are exceeded at the New Well ~~for arsenic~~ with a concentration of 28 ppb. Based on the water quality data from the New Well, total chromium concentrations are not anticipated to exceed drinking water standards, even if the MCL lowered to 10 ppb.

The primary mode of exposure to arsenic is ingestion. Ingestion of inorganic arsenic can result in both cancer and non-cancer health effects. Arsenic interferes with a number of essential physiological activities, including the actions of enzymes, essential cations, and transcriptional events in cells. The U.S. EPA has classified arsenic as a Class A human carcinogen. Chronic exposure has been linked to health complications, including cancer of the skin, kidney, lung, and bladder, as well as other diseases of the skin, neurological, and cardiovascular system. To avoid or eliminate arsenic contamination, systems may need to take a number of actions, including enacting a source water protection programs to prevent contamination.

Both wells exceed secondary esthetic standards for total dissolved solids (TDS), electrical conductivity, and manganese. The New Well also exceeds the secondary MCL for Chloride and has elevated hardness and sodium although maximum contaminant levels (MCLs) have not been established for these constituents. High concentrations of secondary constituents such as TDS, chloride, electrical conductivity and manganese were found within in the water quality samples from both wells. These concentrations may adversely affect the taste, odor or appearance of drinking water. The Secondary MCLs do not pose any known health risks are only evaluated for their aesthetic affect.

~~As the maximum contaminate levels for arsenic were recently lowered to 10 ppb, T~~the New Well and Oaks well do ~~does~~ not meet primary drinking water standards for arsenic~~. and the Oaks Well would most likely not meet the new standard.~~ The treatment of arsenic requires that groundwater pumped to from the Oaks Well and New Well be conveyed to a treatment facility in order to treat water to meet current federal and state drinking water standards prior to conveyance to residential lots. Water treatment would occur via one of two treatment facility options: Option A) the existing Cal Am Ambler Park Facility; or Option B) a new satellite ~~small~~ water system that would serve the proposed project and previously approved Oaks subdivision only.

Treatment Facility Option A: Ambler Facility

As previously noted, at the time this Final EIR was written staff was ~~preparing~~negotiating a Memorandum of Understanding (MOU) between Cal-Am and the County of Monterey with

regards to treating water pumped at the Oaks Well to meet drinking water standards for the previously approved Oaks subdivision. Originally, the Oaks Well was going to be treated onsite but due to the need to treat water to meet the new arsenic MCL it was determined that it would be best to treat water pumped at the Oaks Well at the existing Ambler Treatment Facility that is owned and operated by Cal-Am. The Ambler Treatment Facility is located and also treats water pumped within the B-8 zoning district. The MOU being prepared by Monterey County staff defines the terms by which Cal-Am would agree to pump water from the Oaks well in an amount exactly equal to the amount of water Cal-Am could supply to the Oaks subdivision from the treatment plant, so as to ensure there is no net transfer of groundwater resources from the B-8 zoning district, while ensuring that water provided to the oaks subdivision meets current drinking water standards.

~~Under Treatment Option A, the proposed project would also have water treated at the Ambler Treatment facility. If the proposed project did not take the same precautions as the Oak Subdivision, this could result in a transfer of groundwater resources from the B-8 zoning district to the project, which would be inconsistent with Section 21.42.030.H of the Monterey County Code). This would be considered a **potentially significant impact**. Implementation of the following mitigation measure would ensure that impacts associated with Treatment Facility Option A are reduced to a less than significant level.~~

Mitigation Measure

MM 3.6-2a Prior to recording the first final subdivision map with Treatment Facility Option A, the County of Monterey shall draft a written agreement (i.e. Memorandum of Understanding) between the County of Monterey, project applicant and the water purveyor that requires the following:

a) The project applicant shall convey to the water purveyor the New Well, complete with water distribution ~~and treatment~~ infrastructure ~~and fire flow water supply~~ to the water purveyor (currently Cal-Am~~;~~).

b) ~~the~~ The water purveyor shall own and operate the New Well and infrastructure.

c) The water purveyor shall meter water pumped from the Oaks Well and New Well to ensure that the amount pumped from the wells is equivalent to the amount of water supplied to the proposed project and Oaks subdivision ~~from the Ambler Park Treatment Facility~~, ~~so as~~ to ensure there is no net transfer of groundwater resources from the B-8 zoning district. The water system operator shall have a qualified engineer prepare a water audit report, which shall be subject to review by the Monterey County Health Department, Environmental Health Bureau and Monterey County Water Resources Agency. The water audit report shall provide the water pumping volume, water loss volume due to treatment and water quality, if the actual water pumping volume exceeds the estimated 12.75 AFY for

the proposed project plus the 4.66 AFY for the Oaks Subdivision, the Monterey County Health Department, Environmental Health Bureau and Monterey County Water Resources Agency shall be notified immediately in writing. At that time, an evaluation of the water system may be required to determine if there is a maintenance issue or if further conservation restrictions are required.

d) Water treated at the Ambler Park Treatment Facility shall meet current *Title 22, California Code of Regulations* and California Public Utility Commission standards.

The total cost of water distribution infrastructure is to be born by the project applicant and not the water purveyor or its customers.

Treatment Facility Option B: ~~Small State~~Satellite Water System

Under Treatment Facility Option B, water pumped from the Oaks Well and New Well would be treated at a new ~~small state~~ satellite water system in lieu of the existing Ambler Treatment Facility. The construction of the new Treatment Facility would be under the jurisdiction of Monterey County Health Department, Environmental Health Bureau, and transferred to Cal-Am to own and operate. This satellite facility would be located within Zone 2C. ~~This would be considered a **potentially significant impact.**~~ The following mitigation measures have been provided to ensure that the ~~water system improvements meet the standards of Monterey County~~impacts associated with Treatment Facility Option B are minimized to a less than significant level.

Mitigation Measures

MM 3.6-~~2a~~2b Prior to recording the first Final Subdivision Map with Treatment Facility Option B, Monterey County Health Department, Environmental ~~Health Division~~Health Bureau shall require that the project applicant contract with a qualified engineer to design and install water system improvements to meet the standards as found in Chapter 15.04 and 15.08 of the Monterey County Code, Titles 17 and 22 of the California Code of Regulations, the Residential Subdivision Water Supply Standards and California Public Utility Commission Standards. ~~Such improvements shall be made at the California American Water Company Amber Park facility or at a separate facility designed to serve the project.~~ Water system improvement plans shall identify the water treatment facilities and how the water treatment facilities will remove all constituents that exceed current California Primary and Secondary MCLs (e.g. arsenic, coliform, TDS, iron, etc.) from drinking water. These plans shall be subject to review by the Monterey County Health Department, ~~and~~ Environmental ~~Health Division~~Health Bureau, and California-American Water Company. The treatment facility shall be located on the project site in a disturbed

area void of environmentally sensitive resources, inside ~~a structure~~an enclosure. The enclosure~~structure~~ shall be designed to ~~complete~~compliment the surrounding visual character (i.e. rural residential) and shall be subject to the Design Control Zoning District regulations provided in Chapter 21.44 of the County Code. The treatment facility shall be designed and sized to treat water pumped from both the Oaks Well and New Well and accommodate the proposed project and Oaks subdivision only. The project applicant shall be required to pay their fair share towards treatment facility improvements. Facility maintenance and removal of accumulated constituents shall be the responsibility of the facility owner and accomplished in accordance with local, state and federal regulations based on the treatment method chosen.

~~**MM 3.6-2b** Prior to recording the final subdivision map, the project applicant shall provide to Monterey County written agreement between the project applicant, the owner of the Oaks Subdivision, and the water purveyor requiring: a) the project applicant to convey to the water purveyor the newly constructed well, complete with water distribution and treatment infrastructure and fire flow water supply; b) the water purveyor shall operate the system as a satellite or stand alone system providing domestic and fire flow water supply to the subdivision in accordance with *Title 22, California Code of Regulations* and California Public Utility Commission standards. The total cost of water distribution infrastructure is to be born by the project applicant and not the water purveyor or its customers. This satellite water system is prohibited to be consolidatedintertie with any other Cal-Am water system. pumping of water solely outside of Monterey County Water Resources Agency Zone 2C.~~

MM 3.6-2c Within one month of completing of the water system improvements, the Monterey County Health Department, Environmental ~~Health Division~~Health Bureau shall require that the project applicant transfer the operation and monitoring of the water system to the water purveyor (currently California-American Water Company). The water system operator shall monitor the water pumping volume and water quality of the Oaks Well and New Well in accordance with Chapters 15.04 and 15.08 of the *Monterey County Municipal Code* and Section 64480 of *Title 22, California Code of Regulations*. ~~The amount of water delivered to the Oaks Subdivisions and Harper Canyon Subdivisions must be equal to the amount of water pumped from the Oaks Well and New Well. The water system operator shall have a qualified engineer prepare a water audit report, which shall be subject to review by the Monterey County Health Department, Environmental Health Division and Monterey County Water Resources Agency. The water audit report shall provide~~

~~the water pumping volume and water quality, if the actual water pumping volume exceeds the estimated 12.75 AFY for the proposed project plus the 4.66 AFY for the Oaks Subdivision, the Monterey County Health Department, Environmental Health Division and Monterey County Water Resources Agency shall be notified immediately in writing. At that time, an evaluation of the water system may be required to determine if there is a maintenance issue or if further conservation restrictions are required. The County and Cal-Am shall execute a Memorandum of Understanding confirming the terms of the monitoring effort.~~

~~As an alternative to treating project water through the Ambler Park treatment system, the County may require the applicant to provide a stand-alone treatment system designed and sized to deliver water only to the Harper Canyon and Oaks subdivisions. Such a facility, if required, must be located at the existing Oaks Well location and must be ultimately owned and operated by Cal-Am.~~

Implementation of the above mitigation measures~~s~~ **MM 3.6-2a** or mitigation measures **MM 3.6-2b** ~~through~~ and **MM 3.6-2c** would ensure that potable water for the proposed project meets the safe drinking water standards. Therefore, the water quality impact would be reduced to a **less than significant** level. Although it is technically feasible for the project to be served water as treated through the Ambler Park system, the County of Monterey may ultimately require a stand-alone treatment system as provided by the mitigation measure. The treatment facility shall be required to be in an enclosed structure that has design control restrictions; therefore, impacts to aesthetics would be minimized. ~~The existing Oaks Well site is heavily disturbed and large enough to accommodate a small treatment system in this location with no environmental consequences from its physical construction~~Construction impacts associated with the treatment facility would be similar to development of other necessary infrastructure systems, ~~the residential lots,~~ and mitigation measures related to construction provided herein would minimize those impact impacts to a less than significant level. ~~Design Control regulations and mitigation measures provided herein.~~Treating the project's water source in this manner from the same existing wells will cause no significant project-specific or cumulative impact, as the system would service only the Harper Canyon and Oaks subdivisions. ~~-~~The treatment facility will be required to comply with all local, state and federal requirements regarding the operation and maintenance of a water system, including proper disposal of accumulated constituents from the treatment process.

Adversely Affect Nearby Wells

Impact 3.6-3 Implementation of the proposed project would result in long-term groundwater pumping. However, pumping groundwater from the Oaks Well at rate of 4 GPM and from the New Well at a rate of 12 GPM for 20 years would result in a drawdown of less than two feet within 1,000 feet from neighboring wells, which is considered negligible according to

Monterey County Health Department, Environmental ~~Health Division~~Health Bureau. Therefore, this would be considered a **less than significant impact**.

Seven wells are located in the vicinity of the Oaks Well and the New Well. The ~~San Benancio School~~ well located at the San Benancio School site is approximately 1,000 feet north of the Oaks Well, however the school is currently served by Cal-Am; the Ambler Park well (Well A) is located approximately 1,500 feet west of the Oaks Well; and there are an additional five wells within 2,000 feet of the New Well. It is unknown what volume of water, if any, is pumped from the five wells within 2,000 feet of the New Well, but they are likely domestic wells with small pumping volumes. If pumping of groundwater associated with the proposed project creates drawdown in nearby wells to a point were the existing or permitted land uses can no longer be sustained, the proposed project may adversely affect nearby wells.

In accordance with Policy 6.1.4 in the *Toro Area Plan*, 72-hour pumping tests were conducted on the Oaks Well and the New Well to determine pumping rates and potential affect on other wells. The proposed project would result in a total water demand of 12.75 AFY or 8 GPM (~~MCHD~~MCHD-EHB 2002, 2003). According to the *Project Specific Hydrogeology Report – Harper Canyon Realty LLC Subdivision*, pumping groundwater from the Oaks Well at rate of 4 GPM and from the New Well at a rate of 12 GPM for 20 years would result in a drawdown of less than two feet within 1,000 feet from the wells. Pumping groundwater from the Oaks Well at a higher rate to accommodate the proposed project would not affect neighboring wells because the cone of depression around the Oaks Well would go deeper rather than wider in radius. According to Monterey County Health Department, Environmental ~~Health Division~~Health Bureau the proposed project is expected to have negligible effects on the nearby existing wells (~~MCHD~~MCHD-EHB 2002b). Therefore, the impact on nearby wells would be considered a **less than significant impact.**

Cumulative Impacts and Mitigation Measures

Cumulative Adverse Affect on the ~~Surrounding Subareas~~Groundwater Basin

Impact 3.6-4 Implementation of the proposed project, when combined with other development in the vicinity, will increase the demand on groundwater resources within the Corral de Tierra Subbasin of the Salinas Valley Groundwater Basin. Groundwater pumping has the potential to cumulatively influence groundwater supplies within in the adjacent subbasins and the basin as a whole. However, the potable water for the project would be procured within Monterey County Water Resources Agency's Zone 2C, which funds the Salinas Valley Water Project. Therefore ~~(without septic tank systems and minimal landscaping) would reduce the amount of return flow to the El Toro Groundwater Basin by approximately 5.88 AFY. However, the four individual subareas that an~~

~~reduction and return flow to the of the Basin are considered interconnected, and combined would have net surplus of approximately 314.82 AFY. Therefore, the loss of 5.88 AFY would be considered minimal and according to Monterey County Health Department, Environmental Health Division, the proposed project would have negligible effects on the aquifer in this region. ~~, t~~This would be considered a **less than significant cumulative impact.**

The project specific analysis prepared by Todd Engineering included an analysis of how the proposed project would affect groundwater supply upon "buildout" of lots located the El Toro Groundwater Basin. That report made certain assumptions regarding buildout, water usage and demand, landscaping, use of septic systems, and other inputs, building on previous groundwater reports prepared by Fugro. Specifically, the report estimated changes in groundwater conditions assuming that the Harper Canyon subdivision would connect to a sanitary sewer system, and thus would not contribute "return flows" – recharge – from septic systems. The Todd Engineering report concluded that although the proposed project may contribute to an adverse cumulative impact on some of the individual subareas that are currently stressed, the four subareas are ultimately interconnected and will maintain an overall water surplus where recharge exceeds extraction. The project's contribution would be considered minimal. This conclusion was similar to the conclusions of the subsequent *El Toro Groundwater Study* prepared by Geosyntec.

According to the Geosyntec Study, the primary aquifer is currently (2007) in overdraft but groundwater production is considered good and pumping could be sustained for decades in the vicinity of the project site (as well as other areas) because it was located in an area with a large saturated thicknesses of the primary aquifer. In addition, the Geosyntec Study update (2010) determined that the aquifer in the immediate vicinity of the project site is hydrogeologically contiguous with the aquifers to the east in the Salinas Valley, rather than the less productive and stressed areas within the Geosyntec Study area.

~~The proposed project will include minimal landscaping and will dispose of wastewater at a wastewater treatment plant and will not include septic tanks at the project site. According to Todd Engineers, this is not consistent with the assumptions made for the predicted water demand upon buildout of the El Toro Groundwater. The water demand upon buildout of the El Toro Groundwater Basin assumed that approximately 57.6 percent of the total residential demand would be for interior water uses and 42.4 percent for exterior water use. Approximately 80 percent of the interior water demand was assumed to return to the groundwater basin through septic tank systems and 20 percent of the exterior water demand was assumed to be return to the groundwater basin through percolation. Since wastewater disposal for the proposed project will be conveyed to a wastewater treatment plant and the proposed project would have minimal landscaping, the loss of return flow to the El Toro Groundwater Basin is estimated to be approximately 5.88 AFY (12.75 AFY total water demand x 57.60 percent interior usage x 80 percent interior usage return via septic system). This reduction in water, which would recharge the groundwater basin, may affect~~

cumulative development within some of the four interconnected subareas located north of the Chupines fault within the El Toro Groundwater Basin.

As shown in **Table 3.6-4, El Toro Groundwater Basin Water Surplus Upon Buildout Minus Loss of Return Flow,** the loss 5.88 AFY of return flow lost due to the proposed project is greater than the 4.7 AFY water surplus for the El Toro Creek subarea. According to the *Project Specific Hydrogeology Report – Harper Canyon Realty LLC Subdivision* the water balance for the El Toro Creek subarea should be recalculated if future developments are proposed within that subarea. Upon buildout of the El Toro Groundwater Basin, the Corral de Tierra subarea would not meet the estimated water demands by approximately 174.4 AFY, with or without the proposed project. According to the *Project Specific Hydrogeology Report – Harper Canyon Realty LLC Subdivision* development should be extremely rationed in the Corral de Tierra subarea.

Table 3.6-4
El Toro Groundwater Basin

Water Surplus Upon Buildout Minus Loss of Return Flow

Subarea	Buildout Surplus (AFY)	Loss of Return Flow (AFY)	Remaining Surplus (AFY)
San Benancio Gulch	29.9	**-5.88**	24.02
El Toro Creek	4.7	-5.88	**-1.18**
Corral de Tierra	-174.4	-5.88	**-180.26**
Watson Creek	460.5	-5.88	**454.62**

NOTES: AFY = Acre Feet per Year

1995 Demand and Buildout based on projections from Additional Hydrogeologic Update, El Toro Area (Fugro, 1996).

Recharge is based on 2.18 inches per year using soil moisture methodology (Fugro, 1996).

Source: Todd Engineers 2003

Although the loss of return flow associated with the proposed project may have an adverse impact on some of the individual subareas, the four subareas are considered to be interconnected and will maintain an overall water surplus of approximately 314.82 AFY. Since four interconnected areas would have net surplus of approximately 314.82 AFY, the loss of 5.88 AFY would be considered minimal. According to Monterey County Health

~~Department, Environmental Health Division, the proposed project would have negligible effects on the aquifer in this region (MCDH 2002a). Therefore, this would be considered a **less than significant cumulative impact.**~~

As discussed in this section, the proposed project is located within Monterey County Water Resources Agency's Zone 2C, which benefits from additional water resources from the Nacimiento and San Antonio Reservoirs via the Salinas River and the Salinas Valley Water Project (SVWP). The project applicant contributes financially to the SVWP and its groundwater management strategies through an assessment on the property. The project's impact on the groundwater basin is therefore mitigated by this contribution, as the SVWP provides a regional mitigation strategy for the groundwater basin and its subbasins.

According to DWR basin maps, the project site and wells the would procure water for the proposed project are located in the northeastern portion of the Corral de Tierra Subbasin (DWR 2010) of the Salinas Valley Groundwater Basin. Since the SVWP went into operation in ~~2010~~2009, the entire basin appears to be becoming more hydrologically balanced, as a noticeable ~~change~~ decrease in the rate of seawater intrusion has occurred as well as an increase in ~~depth to~~ groundwater levels has been observed in most subbasins.

Although the SVWP will not deliver potable water to the project site, it was developed to meet projected water demands based on development and population forecasts. The proposed project has been deemed consistent with AMBAG's 2008 population forecasts, which was used for forecasting demands for the SVWP. For all of these reasons, the cumulative effect of the project on water demand is considered **less than significant.**

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