This section assesses impacts related to water supply and availability of water to the proposed project. The analysis of groundwater resources and hydrogeology presented in this section is based on consultation with Monterey County Water Resources Agency staff, the *Preliminary Geologic, Geotechnical, Hydrogeologic, Erosion, Drainage and Environmental Phase I Assessment and Hydrogeologic Update Memorandum* prepared by Kleinfelder in July 2008 and June 2012, respectively, and the *Preliminary Drainage Report for Ferrini Ranch Subdivision* prepared by Whitson Engineering in February 2010. The report and memorandum by Kleinfelder summarizes previous hydrogeologic studies and assesses the groundwater source and aquifer stratigraphy, well data and groundwater trends, area rainfall, wastewater discharge, project water demand, and groundwater quality. The report by Whitson provides estimated runoff to be detained on-site, which relates to groundwater recharge. Both of these reports are included in **Appendix E**. Surface water and water quality are addressed in **Section 3.7, Surface Water Hydrology and Water Quality**, of this Draft EIR.

3.6.1 ENVIRONMENTAL SETTING

Water is vital to support agriculture and the population of Monterey County, and to maintain a thriving economy. The importance of water makes hydrogeology and groundwater resources primary issues in the county. The topography and geology of the area create a complex, interrelated system of groundwater resources that are heavily dependent on the climate, the health of local watersheds, and water management. There are three existing wells onsite that currently procure water from groundwater resources, which are described below.

GROUNDWATER BASIN

According to the Department of Water Resources (DWR), the project site lies within 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 Subbasin

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. However, potable water for the proposed project would be provided by wells in California Water Service Company's Salinas District, which procures water from the 180/400-Foot Aquifer Subbasin of the basin. Both of these subbasins are described below.

Corral de Tierra Area 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).

Geosyntec Report

Under contract with the Monterey County Water Resources Agency (MCWRA), Geosyntec Consultants prepared the *El Toro Groundwater Study* in July 2007, which was supplemented in June 2010. The primary objective of the study was to evaluate groundwater resource capacity in a portion of the Salinas Valley Groundwater Basin and to make recommendations regarding the extent of the B-8 zoning overlay, which restricts further subdivision of property. This report used a topography/watershed-based methodology to define its limits of study and did not take into account MCWRA's Zone 2C boundaries, which are discussed in more detail under Groundwater Quality later in this section. The study area was not consistent with the Corral de Tierra Subbasin boundary, but contained a portion of this subbasin. In order to prevent confusion between the Geosyntec study and physical subbasin boundaries recognized by the MCWRA, this Draft EIR refers to the area studied as the "Geosyntec Study Area," which is shown in relationship to the project in **Figure 3.6-2a.** The Geosyntec Study Area is subdivided into five subareas as shown in **Figure 3.6-2b**. The westernmost portion of the project site is located in the El Toro Creek and San Benancio Gulch subareas of the Geosyntec Study Area.

T:_GIS\ MONTEREY_COUNTY\ MXDS\ SALINAS VALLEY GROUNDWATER.MXD - 8/4/2011 @ 10:04:05 AM

LANGLEY AREA

SEASIDE AREA

EASTSIDE AQUIFER

CORRAL DE TIERRA AREA

See Inset

180/400 FOOT AQUIFER

FOREBAY AQUIFER

UPPER VALLEY AQUIFER

PASO ROBLES AREA

180/400 Foot Aquifer

Seaside Area

Corral de Tierra

Legend

- Project Site
- Subbasin Boundary

Source: CASIL, 2010; Bing Maps, 2010

5 0 5

MILES

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FIGURE 3.6-1

GROUNDWATER BASIN MAP

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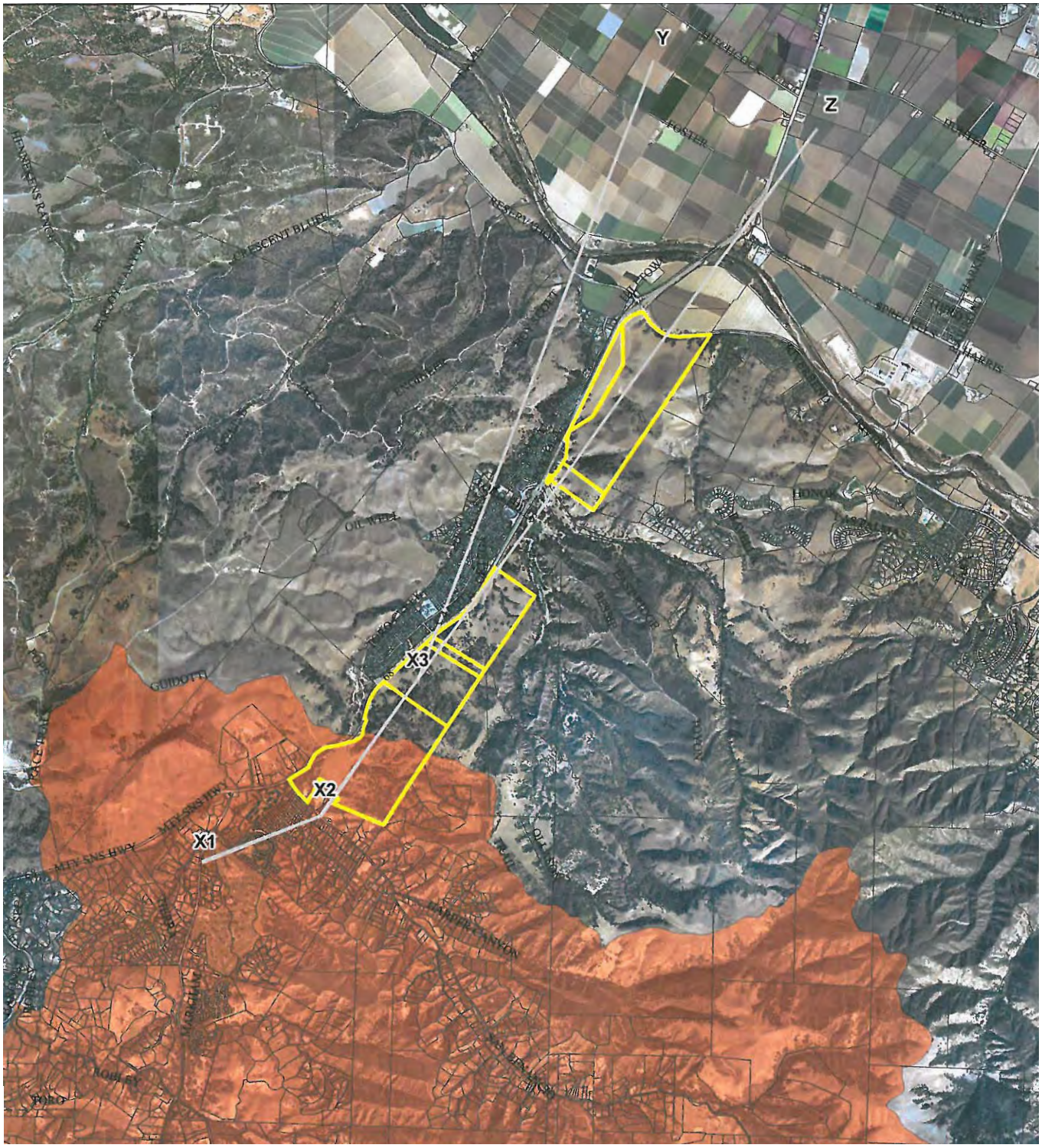

Source: MCWRA 2011

0 2,500 5,000
Scale in Feet

N

T:_CS\Work\Monterey, County of\Ferrini Ranch\Figures\Section 3-6\Figure 3.6-2a Historic Seawater Intrusion - 180ft.ai, April 2007

Figure 3.6-2a
Geosyntec Study Area in Relationship to the Project Site

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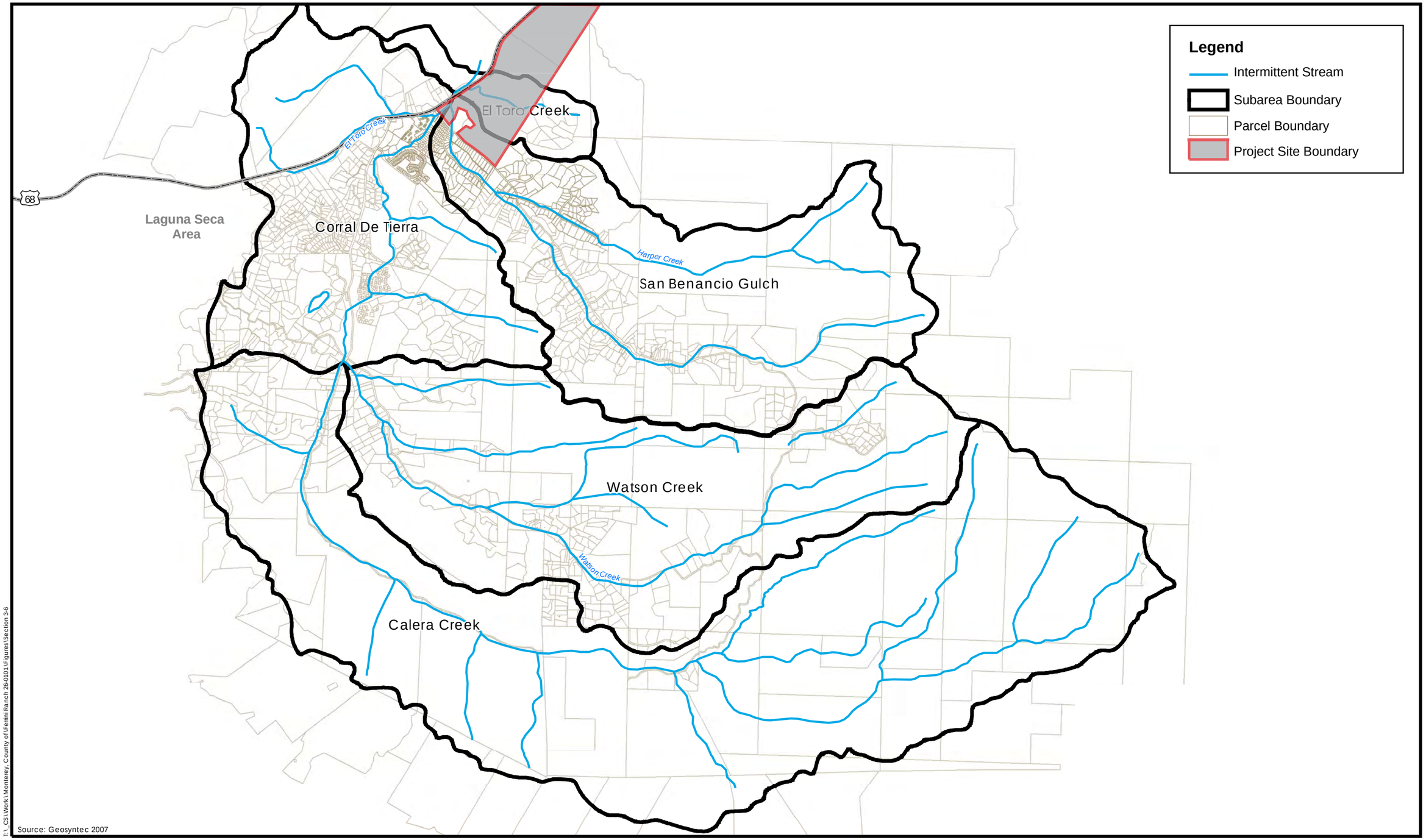

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FIGURE 3.6-2B
SUBAREAS OF THE GEOSYNTEC STUDY AREA

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According to the Geosyntec study, water-bearing formations in the northeastern portion of the subbasin dip in a northeasterly direction toward the Salinas Valley as shown in **Figure 3.6-3**. According to the supplemental geologic map and cross sections (MCWRA 2010), the Plio-Pleistocene Continental Deposits (QTc) (Paso Robles Formation) of the study area show that the hydraulic gradient under the El Toro Creek Valley/State Route 68 corridor is generally northeastward and contiguous with the Salinas Valley Groundwater Basin as shown in **Figure 3.6-4**. (Also refer to **Figure 3.6-2** for the project site relationship to the cross sections). In addition, the northern portion of the Geosyntec Study Area was identified to have a deep saturated thickness, which was determined to have a large volume of groundwater storage and could sustain current and increased rates of pumping for decades (MCWRA 2007, 2010).

The Geosyntec study is relevant as it provides continuing information and research about local groundwater dynamics. The study area overlaps with a portion of the project site and demonstrates hydraulic connectivity between the larger Salinas Valley Groundwater Basin and the Corral de Tierra Area Subbasin.

180/400-Foot Aquifer Subbasin

The 180/400-Foot Aquifer Subbasin includes the lower reaches and mouth of the Salinas River. The subbasin is bounded by the Sierra de Salinas to the southwest; the Corral de Tierra Area Subbasin to the west; the Seaside Area Subbasin and Monterey Bay to the northwest; the Pajaro Valley Groundwater Basin and Eastside Aquifer and Langley Area Subbasins to the northeast; and the Lower Forebay Subbasin, near the City of Gonzalez, to the southeast.

The 180/400-Foot Aquifer Subbasin has an estimated total storage capacity of approximately 7,240,000 acre-feet of groundwater, with the two main water-bearing units being the 180-Foot Aquifer and the 400-Foot Aquifer (named for the average depth at which they occur) (DWR 2004). A near-surface water-bearing zone also exists, but it is a relatively minor source of water due to poor water quality. The 180-Foot Aquifer consists of a complex zone of interconnected sands, gravels, and clay lenses with thicknesses that vary from 50 to 150 feet, averaging 100 feet (DWR 2004). The 180-Foot Aquifer is separated from the 400-Foot Aquifer by a zone of discontinuous aquifers and aquitards ranging in thickness from 10 to 70 feet. The 400-Foot Aquifer consists of sands, gravels, and clay lenses with an average thickness of 200 feet (DWR 2004). An additional, deeper aquifer (also referred to as the 900-Foot Aquifer or the Deep Aquifer) is present in the lower Salinas Valley. A blue marine clay aquitard also separates this aquifer from the overlying 400-Foot Aquifer. This deeper aquifer consists of alternating layers of sand-gravel mixtures and clays (up to 900 feet thick), rather than a distinct aquifer and aquitard (DWR 2004). The Deep Aquifer has experienced little development except near the coast where it is used to replace groundwater from the 180-Foot and 400-Foot Aquifers rendered unusable by seawater intrusion.

GROUNDWATER QUANTITY

The proposed project would be provided water service by California Water Service Company (CWSC). According to the tentative map and discussions with the CWSC, water for the project would be procured from a variety of wells located in the Spreckels area, along River Road in CWSC's Salinas Hills System, which pump groundwater from the 180/400-Foot Aquifer Subbasin of the Salinas Valley Groundwater Basin, not the Corral de Tierra Area Subbasin. Water procured from these wells is conveyed to users via large transmission lines. The proposed project would likely tap into existing water transmission lines located within Torero Drive north of State Route 68 and along River Road.

According to the CWSC, the Salinas Hills System currently has 2,216 service connections, and the existing demand is approximately 1,464.72 acre-feet per year (AFY) (or 907.41 gallons per minute (GPM) (He 2007). The MCWRA monitors wells in this area, and since the construction of the Salinas Valley Water Project, there has been a noticeable change in well levels. According to the MCWRA's fourth quarter report for water year 2009–2010, the average depth to groundwater in the 180/400-Foot Aquifer has been reduced, which indicates higher well levels. According to monitoring data, the depth to groundwater for the 180-Foot Aquifer was 52 feet, which was up 1 foot from the previous month, up 7 feet from the previous year, and down 1 foot from 1985 levels. Monitoring data for the 400-Foot Aquifer showed the depth to groundwater was 46 feet, which was up 1 foot from the previous month, up 6 feet from previous year, and up 10 feet from 1985 levels.

Groundwater Recharge

Water enters coastal basin aquifers in several ways. Precipitation runoff from the surrounding mountains during the winter months infiltrates the permeable sediments of the valley floor. Precipitation that falls on the valley floor and irrigation of crops provide some direct recharge, but in the coastal basins, most of this precipitation and irrigation evaporate or are directly transpired by plants. Water can also enter an aquifer system as lateral subsurface flow from an adjacent basin if hydraulically connected. Of these methods of recharge, runoff from the mountains and percolation through streambeds provide the largest quantities of recharge to the basin's aquifer system. Groundwater discharge in the coastal basins is primarily through withdrawal by wells.

The rate of recharge from irrigation and rainfall can be estimated using a soil moisture budget (SMB). SMB zones are determined based on the existing land use (vegetation), soil characteristics, and average annual rainfall. According to the *Laguna Seca Subarea Phase III Hydrogeologic Update* prepared by Yates, Feeney, and Rosenberg in November 2002 for the Monterey Peninsula Water Management District (MPWMD), each SMB zone equates to an average rate of recharge. Areas that are covered in native grasses, trees, and shrubs may have a slightly higher recharge rate, whereas those areas with urban development may have a slightly lower recharge rate due to the presence of impermeable surfaces. Understanding the rate of recharge is useful in determining a project's overall "water balance," particularly if groundwater is the primary water source.

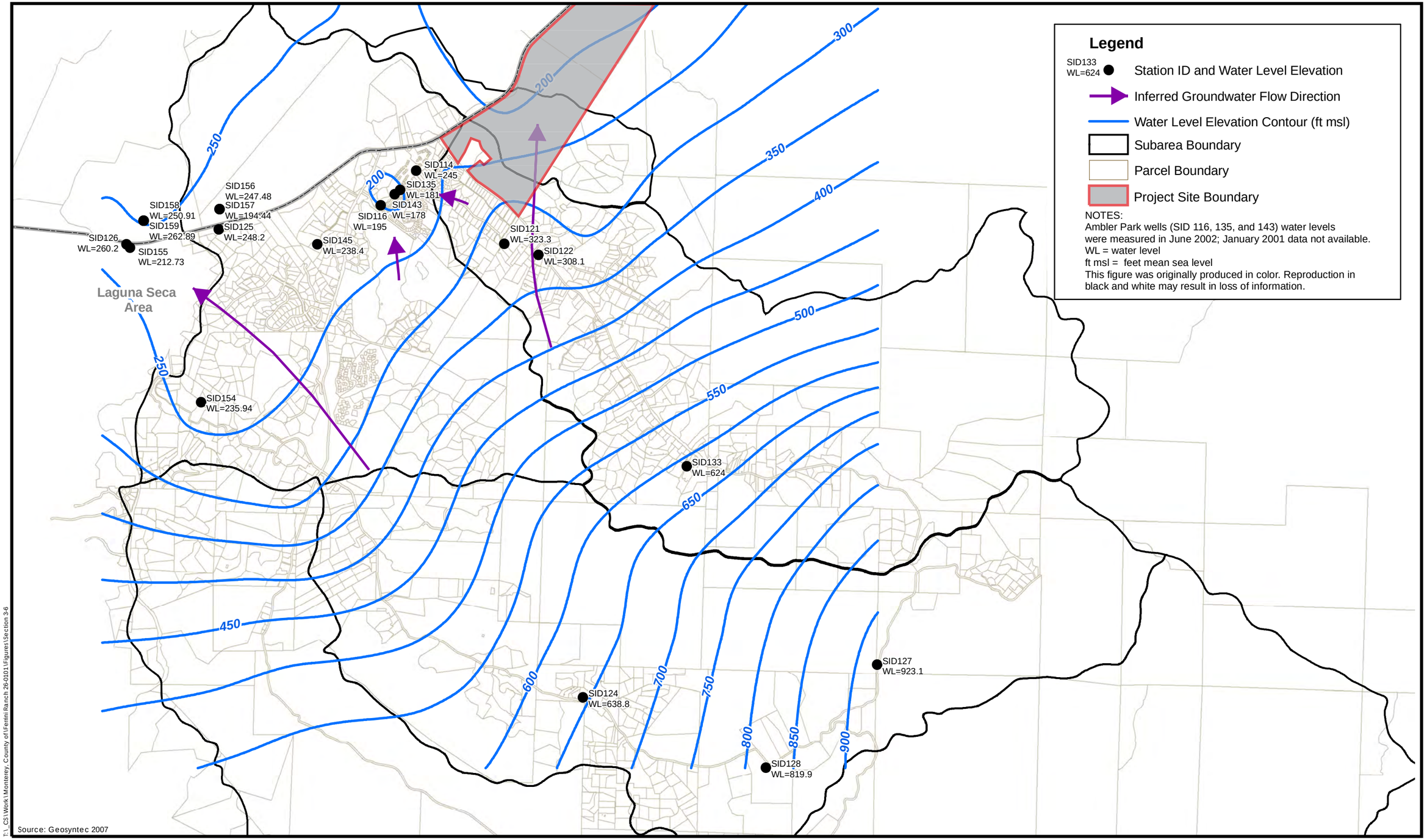

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FIGURE 3.6-3
GEOSYNTEC STUDY AREA GROUNDWATER FLOW

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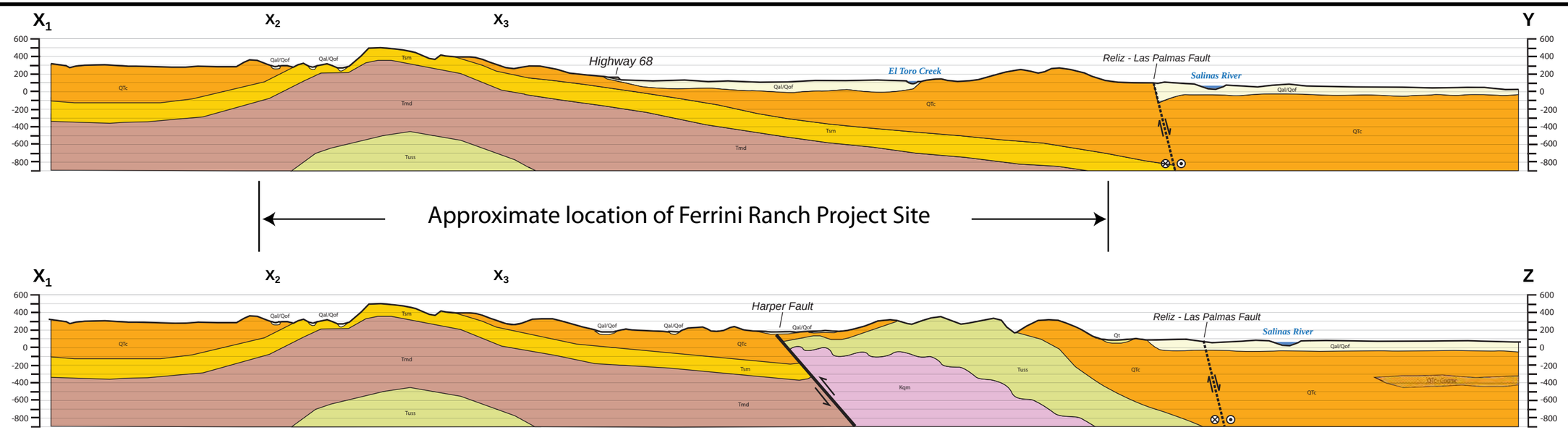

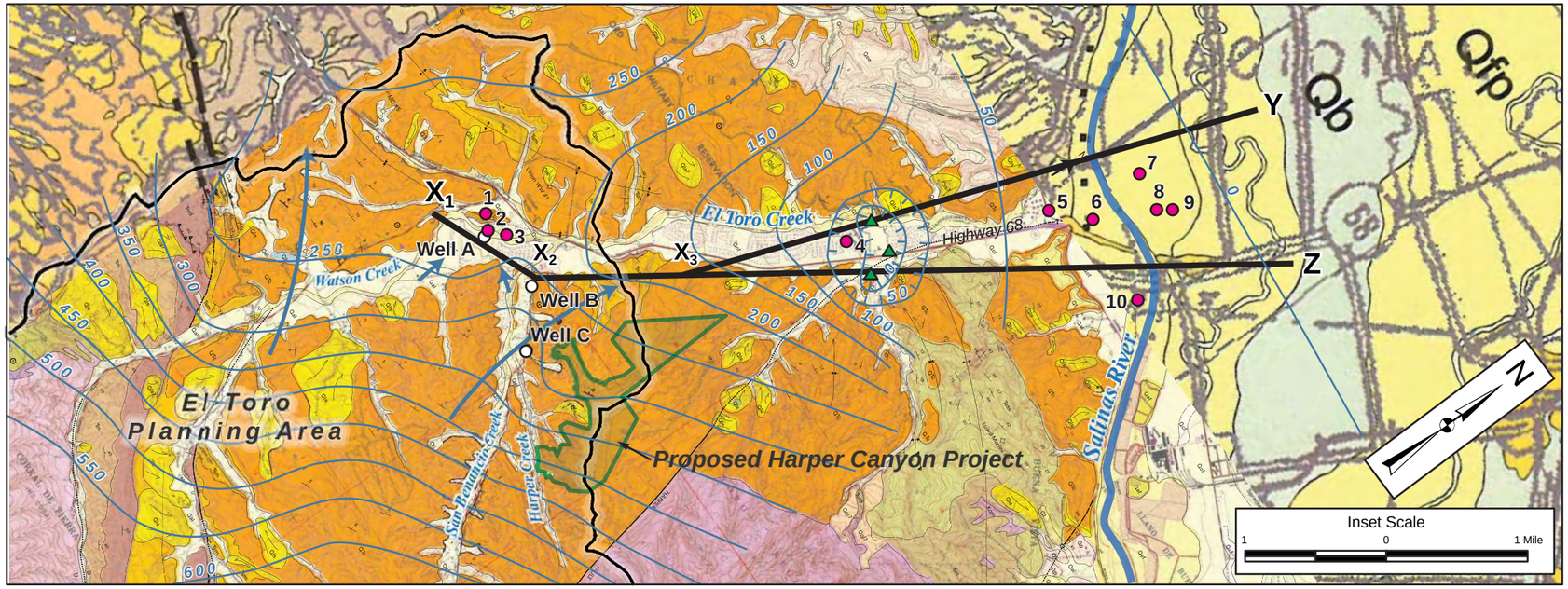

Source: Geosyntec Consultants, June 2010

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LEGEND

- Well from MCWRA database (see Table 1 for well ID)
- Well from Yates et al 2005
- 50 Estimated Groundwater Elevation Contour Based on Jan 2001 data and contour map (Geosyntec, 2007), MCWRA database, and Yates et. al (2005).

Well IDs for Supplemental Wells

1) 16S/02E-03A01	6) 15S/03E-18F01
2) 16S/02E-02D05	7) 15S/03E-18C02
3) 16S/02E-02D01	8) 15S/03E-18B01
4) 15S/02E-25C01	9) 15S/03E-08T50
5) 15S/03E-18M02	10) 15S/03E-17M01

NOTES:
Geology adapted from Clark et al. 2000, Rosenberg, L.I. 2001, Yates et al. 2005, Kennedy Jenks, 2004
Well locations are approximate.

Cross-Sections Have 2X Vertical Exaggeration

2,500 0 2,500 Feet

Geologic Map and Cross-Sections from El Toro to Salinas Valley

El Toro Groundwater Study
Monterey County, CA

Geosyntec consultants

June 2010

FIGURE 3.6-4
GEOSYNTEC STUDY AREA GEOLOGIC CROSS SECTIONS

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GROUNDWATER QUALITY

Groundwater in Monterey County is generally considered to be excellent to good. The two principal aquifers serving the project are the 180-Foot Aquifer and the 400-Foot Aquifer of the Salinas Valley Groundwater Basin. According to the DWR, groundwater procured from these aquifers is characterized by calcium sulfate to calcium sodium bicarbonate sulfate; however, where seawater intrusion has occurred, the groundwater is typically characterized by sodium chloride to calcium chloride (DWR 2004). In addition to seawater intrusion closer to the ocean, a primary impairment to water quality in the basin is nitrates from historic and ongoing agricultural practices. Of 194 wells sampled during 1995 for nitrates in both the 180-Foot and 400-Foot Aquifers, 21 exceeded the drinking water standard.

Seawater Intrusion

Over the years, many wells have gone out of production or have had to be redrilled deeper due to seawater intrusion. Seawater intrusion is the migration of ocean water inland into the freshwater aquifers. This condition is induced by pumping groundwater from the basin faster than the aquifers can be recharged. Seawater intrusion has been accelerated in the Salinas Valley Groundwater Basin due to decreased groundwater recharge and increased groundwater pumping. Seawater intrusion can have effects related to loss of agricultural jobs, curtailment of growth, reduction in land values, and an increase in the cost of water.

Heavy pumping of the 180-Foot and 400-Foot Aquifers has caused significant seawater intrusion into both aquifers, which was first documented in 1930s (DWR 2004). In the northernmost portion of the subbasin, typical groundwater flow to the ocean has been reversed and seawater has intruded inland. By 1995, seawater had intruded over 5 miles inland through the 180-Foot Aquifer, including the area beneath the towns of Castroville and Marina as shown in **Figure 3.6-5a**. Seawater had also intruded over 2 miles into the 400-Foot Aquifer by 1995 as shown in **Figure 3.6-5b**. The Salinas Valley Water Project was developed to help stop seawater intrusion.

Virtually all water used in the Salinas Valley Groundwater Basin is pumped from groundwater aquifers. These water supplies are dependent on recharge from surface drainages, primarily from the watersheds in the region. Intensified land use activities over the years have gradually increased the amount of groundwater pumped from the aquifers, while the ability of watersheds to recharge underlying aquifers has decreased. Seawater has contaminated both the 180-Foot and 400-Foot Aquifers of the 180/400-Foot Aquifer Subbasin. **Figures 3.6-5a** and **3.6-5b** provide historical seawater intrusion maps for the 180-Foot and 400-Foot Aquifers of the subbasin. It is estimated that seawater has intruded an average of 10,000 AFY since 1949. By 1999, an estimated 24,109 acres of land were underlain by seawater intrusion in the 180-Foot Aquifer and 10,504 acres were underlain by seawater intrusion in the 400-Foot Aquifer (MCWRA 2001). Seawater intrusion is not just an agricultural problem since the seawater is close to threatening the domestic water supply for the City of Salinas. Aquifers intruded with seawater are largely unusable for

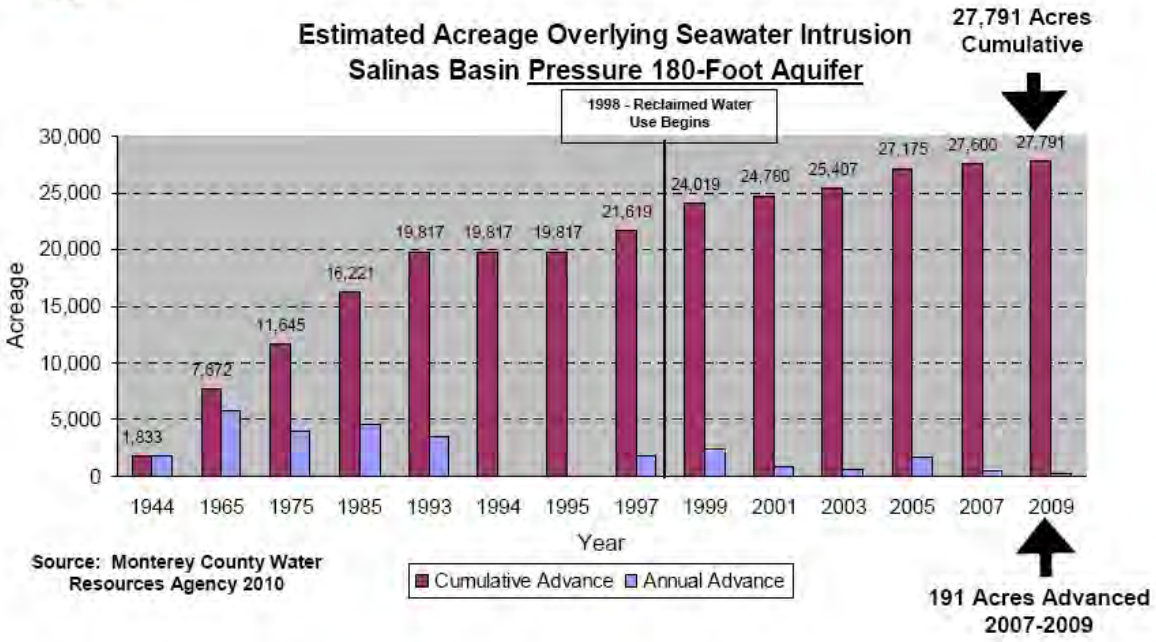
agricultural or municipal purposes. In an attempt to address the seriousness of the effect seawater intrusion has on the community, three goals have been established for the region: (1) reduce the amount of groundwater consumed; (2) increase the amount of water replenished into the aquifer; and (3) find other sources of water besides groundwater. To help manage and protect groundwater resources, the MCWRA developed and constructed the Salinas Valley Water Project.

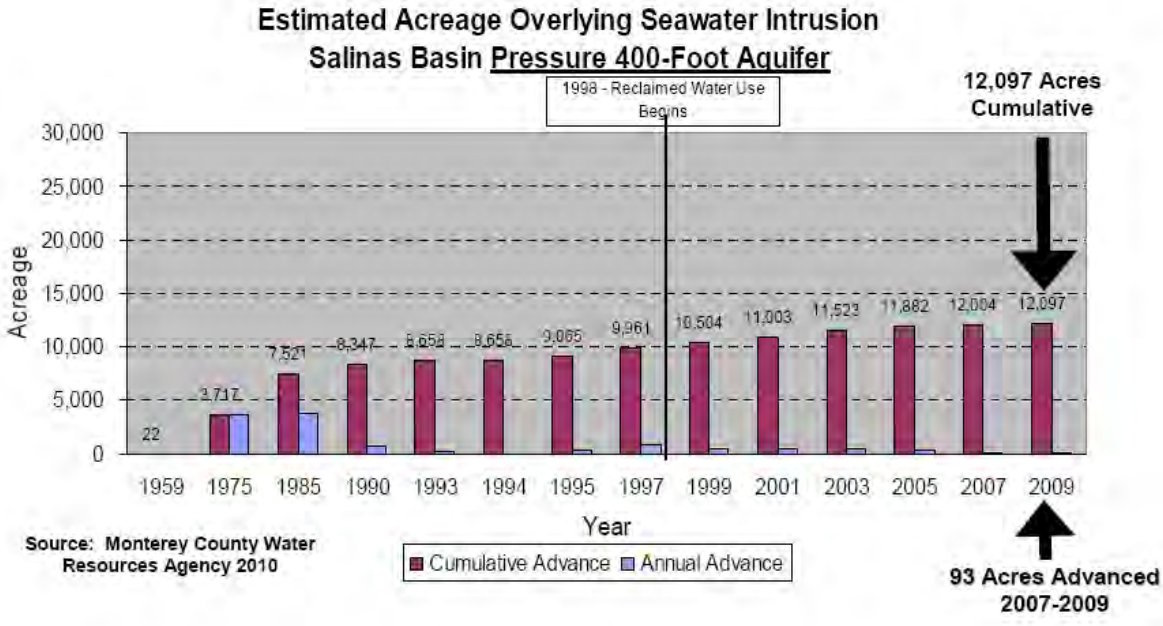
Salinas Valley Water Project/Zone 2C

The Salinas Valley Water Project (SVWP) 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. Through the construction of a variety of improvement projects at the San Antonio and Nacimiento Reservoirs and along the Salinas River, the SVWP provides the surface water supply necessary to attain a hydrologically balanced groundwater basin in the Salinas Valley. These improvements allow diversion of surface water from the Salinas River during the irrigation season to reduce the groundwater pumping demand for agricultural use. The Monterey County Water Recycling Project (MCWRP), created by MCWRA and the Monterey Regional Water Pollution Control Agency (MRWPCA), reclaims and recycles wastewater to supplement irrigation demand, making more groundwater resources available for urban/domestic uses.

The SVWP was designed to provide adequate water supplies to meet current and future water demands. The Salinas Valley Integrated Ground and Surface Water Model (SVIGSM), a planning tool, was used to evaluate hydrologic effects of operations under Alternatives A and B of the SVWP (MCWRA 2002). The analysis relied on assumptions about future population growth and water demand in the Salinas Valley, hydrology (patterns of wet and dry years), and regional economic trends, which were based on historical records and predictive tools used by the Association of Monterey Bay Area Governments (AMBAG) and local planning departments.

The SVWP was designed to enhance recharge, provide direct deliveries of surface water, reduce pumping in areas prone to seawater intrusion, and provide for projected agricultural water needs now and through the planning horizon (year 2030). The ability to reduce seawater advancement is visually demonstrated in the graphs below. The graphs demonstrate that the cumulative rate of seawater advancement is slowing and stabilizing, while the annual advance is beginning to decrease.





In order to fund the improvements provided by the SVWP, the MCWRA established a special assessment zone, Zone 2C (formerly Zones 2a and 2b) as shown in **Figure 3.6-6**. Zone 2C benefits are deemed special benefits received by only those parcels that fund the SVWP. Zone 2C was defined based on geologic conditions and hydrological factors that define and limit the area of benefits derived from operation of the Nacimiento and San Antonio Reservoirs and construction of the SVWP. The proposed Ferrini Ranch project is located in Monterey County Water Resources Agency Zone 2C as shown in **Figure 3.6-6**.

Recycled Water Projects

Recycled water is being used for irrigation to conserve the limited groundwater supply throughout California. The MRWPCA operates one of the largest recycled water treatment plants in the nation just north of the City of Marina. This water treatment plant produces 19,500 acre-feet a year of recycled water for irrigation in the Castroville area to aid in the fight against seawater intrusion as part of the Castroville Seawater Intrusion Program (CSIP). Agricultural operations in this area are able to use recycled water to irrigate their crops, thus reducing the amount of water pumped directly from the aquifer in order to try to reverse the groundwater levels and reverse the directional flow of seawater.

3.6.2 REGULATORY SETTING

FEDERAL AND STATE AGENCIES AND REGULATIONS

Safe Drinking Water Act

The Safe Drinking Water Act (SDWA), originally passed by Congress in 1974 (amended 1986 and 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 groundwater wells. (The SDWA does not regulate private wells that serve fewer than 25 individuals.) The U.S. Environmental Protection Agency (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 EPA to ensure these standards are met.

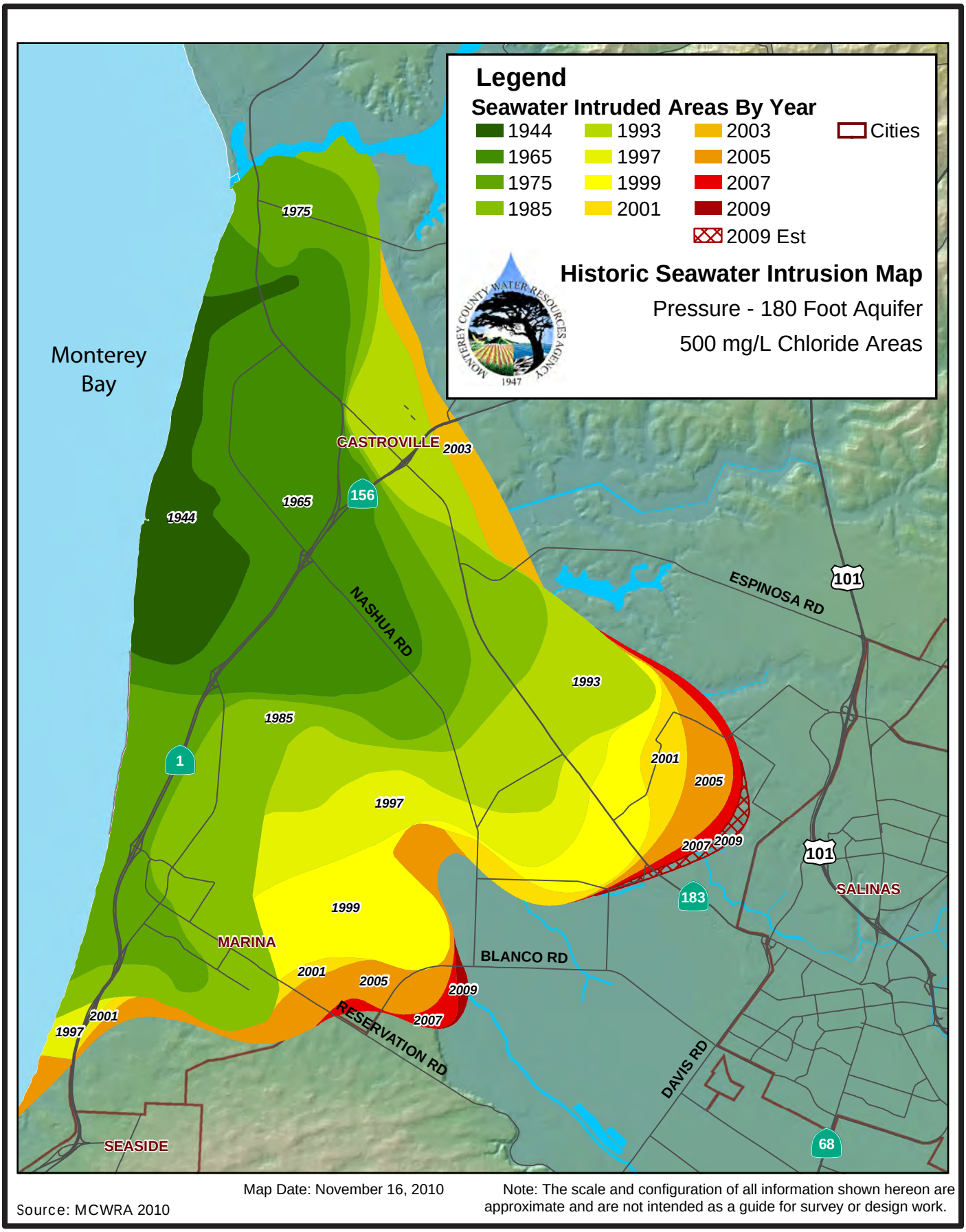
Originally, SDWA focused on treatment as the primary means of providing safe drinking water at the tap. The 1996 amendments recognized source water protection, operator training, funding for water system improvements, and public information as important components of safe drinking water. This approach helps ensure the quality of drinking water by protecting it from source to tap.

California Department of Health Services

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

> 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 is required at the time of permit application.



T:_CS\Work\Monterey, County of\Ferrini Ranch\Figures\Section 3-6\Figure 3.6-2a Historic Seawater Intrusion - 180ft.ai, April 2007

Source: MCWRA 2010

Map Date: November 16, 2010

Note: The scale and configuration of all information shown hereon are approximate and are not intended as a guide for survey or design work.

0 0.5 1 1.5 2 Miles

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FIGURE 3.6-5A

HISTORIC SEAWATER INTRUSION MAP - 180-FOOT AQUIFER

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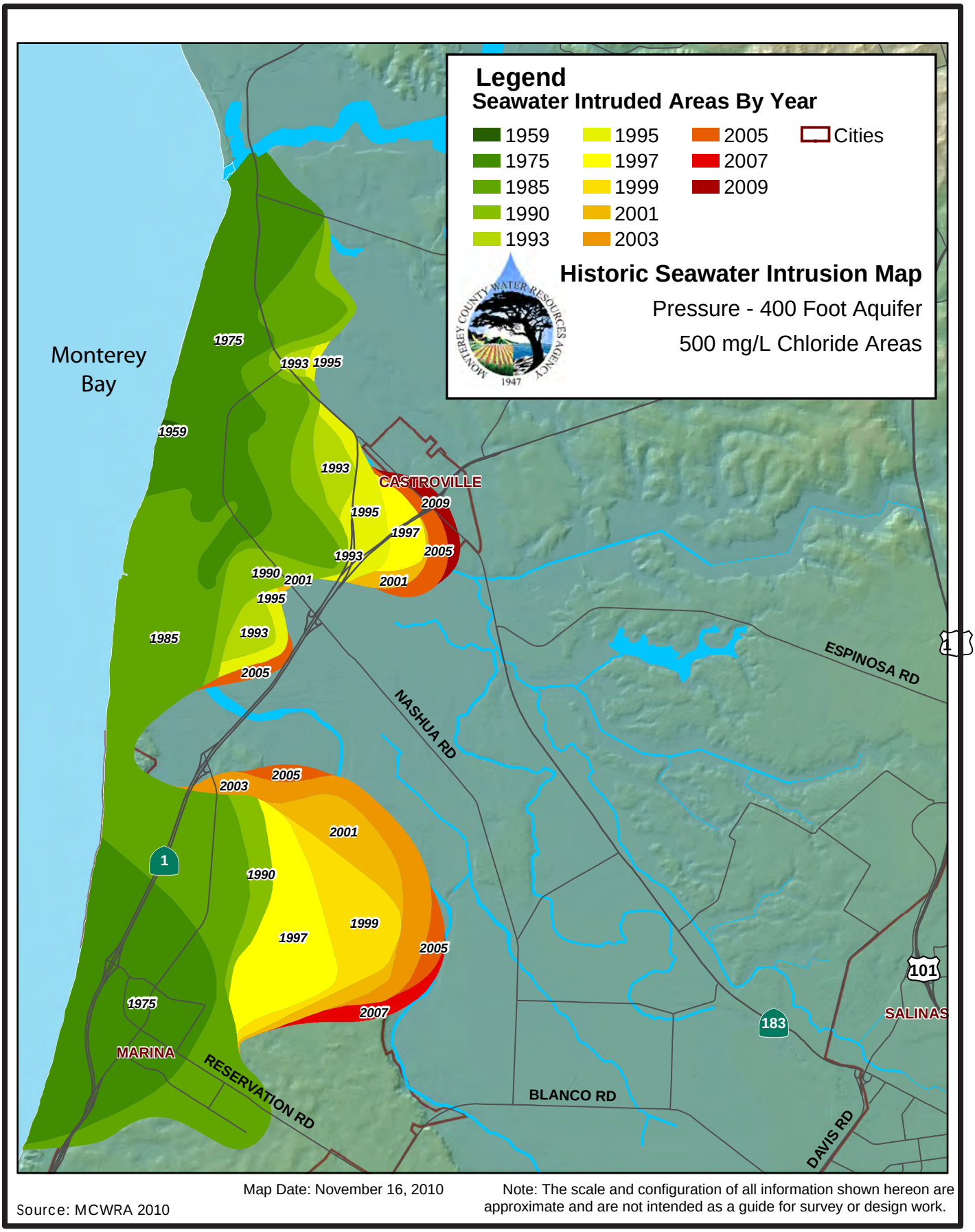

Source: MCWRA 2010

Map Date: November 16, 2010

Note: The scale and configuration of all information shown hereon are approximate and are not intended as a guide for survey or design work.

T:_CS\Work\Monterey, County of\Ferrini Ranch\Figures\Section 3-6\Figure 3.6-2a Historic Seawater Intrusion - 180ft.ai, April 2007

FIGURE 3.6-5B
HISTORIC SEAWATER INTRUSION MAP - 400-FOOT AQUIFER

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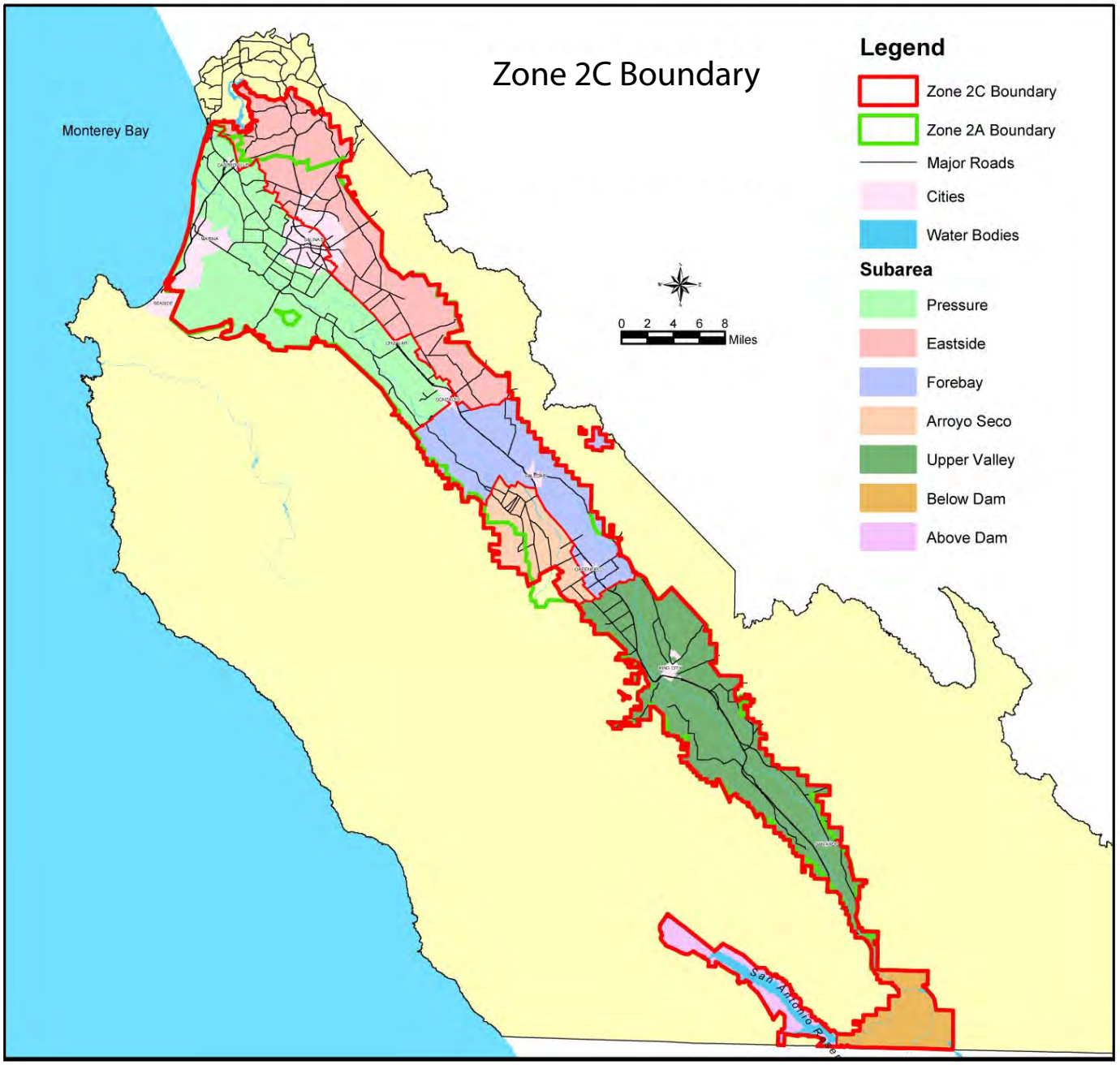

Source: MCWRA 2003

T:_CS\Work\Monterey, County of\Ferrini Ranch\Figures\Section 3-6\Figure 3.6-3 Water Project Zone2c Boundary.ai, April 2007

FIGURE 3.6-6
SALINAS VALLEY WATER PROJECT ZONE 2C

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Under California Water Code Section 350, the California Department of Health Services can direct that a water supplier (both public and private) declare a water supply emergency, either on a short-term basis, during an extended drought, or on a long-term basis, where there is evidence that the available water supply may not be able to meet existing public needs.

Department of Water Resources

The California Department of Water Resources (DWR) is the state agency responsible for managing California's water resources other than water quality, including conducting technical studies of surface water and groundwater in cooperation with local agencies, overseeing certain flood prevention and floodplain management programs, and developing and implementing water conservation and efficient water use strategies and programs in cooperation with local agencies. The DWR is also responsible for building, operating, and maintaining the State Water Project, which supplies drinking water and agricultural irrigation water to various parts of the state, but not to Monterey County. The DWR has also been given the responsibility for overseeing the preparation of Groundwater Management Plans.

State Water Resource Control Board/Central Coast Regional Water Quality Control Board

The passage of the Porter-Cologne Water Quality Control Act by the State of California in 1969 established the State Water Resources Control Board (SWRCB), and the nine Regional Water Quality Control Boards (Regional Boards) became the principal state agencies with responsibility for the coordination and control of water quality. The SWRCB was created by merging the State Water Quality Control Board and the State Water Rights Board. The SWRCB is generally responsible for setting statewide water quality policy and is solely responsible for the allocation or determination of surface water rights.

The Regional Boards are responsible for water quality planning and regulatory decisions for their respective regions. The Central Coast Regional Water Quality Control Board (Region 3) (CCRWQCB) has the authority to implement water quality protection standards through the issuance of permits for discharges to waters in Monterey County. Their jurisdiction also extends to discharge of wastes and wastewater to land, and to land disturbance, if the activities could affect the beneficial uses of surface water or groundwater. The CCRWQCB has a Water Quality Control Plan for basins within its jurisdiction (Central Coast Basin Plan) that identifies beneficial uses of surface waters, establishes numeric and narrative objectives for protection of beneficial uses, and sets forth policies to guide the implementation of programs to attain certain objectives.

Water pollution, including control of waste discharges to lands that might impact surface water and groundwater, as well as direct point source and diffuse or non-point source discharges, are primarily administered by the CCRWQCB. The primary CCRWQCB programs include the National Pollutant Discharge Elimination System (NPDES) program,

the Total Maximum Daily Load (TMDL) program, the Conditional Waiver Program for Agriculture, and the Watershed Management Initiative. In addition, the Regional Board often investigates and oversees the cleanup of contaminated surface water and groundwater bodies, is involved in the review and issuance of water quality certifications for Section 404 wetlands fill permit requests, and works closely with the County on a variety of wastewater treatment, pollution control, development, and mineral resource extraction projects.

Watershed Management Initiative

The Watershed Management Initiative (WMI) guides the water resource protection efforts of the SWRCB and the Regional Boards. The WMI is designed to integrate various surface water and groundwater regulatory programs while promoting cooperative, collaborative efforts by various agencies and interest groups within a watershed. Local governments that provide or maintain underground drinking water supplies within their boundaries are responsible for developing wellhead protection programs. Wellhead protection programs (including local ordinances and land use control programs for lands immediately surrounding public water supply wells) focus on preventing groundwater drinking water supplies from being contaminated.

Salinas River Watershed Management Action Plan

The Salinas River Watershed Management Action Plan, completed in 1999, outlines the watershed characteristics and management actions recommended to control point source and non-point source pollution in the Salinas River watershed. The upper watershed is primarily in San Luis Obispo County and overlies the Paso Robles Groundwater Basin, while the lower watershed extends from Bradley to Monterey Bay and overlies the Salinas Valley Groundwater Basin.

AB 3030 Groundwater Management Plans

In 1992, the State passed Assembly Bill (AB) 3030 (and later amended it in Senate Bill 1938), which provides authority for local water agencies to adopt groundwater management plans if certain procedures are followed (California Water Code Section 10753). These plans involve collaboration among numerous agencies and thus offer opportunities for local governments to participate in groundwater management planning in cooperation with water providers. No new level of government is formed under AB 3030, and action is voluntary rather than mandatory. The Water Code also provides the local water supplier with the powers of a Water Replenishment District in order to raise revenue to pay for facilities used for basin management (including extraction, recharge, conveyance, and water quality). Jurisdictions have typically included aspects of groundwater management in their watershed management or stormwater management plans, or refer to the CCRWQCB Basin Plan, as well as plans devoted to a particular resource, such as the Carmel or Salinas Rivers. The MCWRA has completed and adopted

detailed Basin Management Plans that describe the management actions and capital improvement projects they will undertake to bring the basin into water supply/consumptive use balance over the long term.

LOCAL AGENCIES AND REGULATIONS

Monterey County Water Resources Agency

The MCWRA was formerly called the Monterey County Flood Control and Water Conservation District. This agency oversees the development and implementation of water quality, water supply, and flood control projects in Monterey County. Primary responsibilities are management of water supply resources in the reservoir system, including San Antonio and Nacimiento Reservoirs, and permitting and development of the Salinas Valley Water Project. Maintaining high water quality standards for both supply and environmental habitat are major goals of the agency. Goals are achieved through the development and implementation of water quality programs such as those designed to evaluate and develop strategies for reducing contamination of waterways from chemicals used in agriculture and agricultural waste products or for overall watershed protection in reservoir areas.

The MCWRA and its cooperators, including the Monterey Regional Water Pollution Control Agency, have two major capital projects that are currently moving forward to better manage groundwater quality and reverse the long-term trend of seawater intrusion and groundwater declines in the Salinas Valley Groundwater Basin. They include the Castroville Seawater Intrusion Project (CSIP) and the Salinas Valley Water Project (SVWP).

Monterey County Health Department, Environmental Health Bureau

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

Monterey County Code

Except for water quality issues, most of the regulations affecting water resources (both surface water and groundwater) are contained in the Monterey County Code and related ordinances, with code enforcement primarily by the MCWRA and EHB. In many cases however, development and implementation of a local program or ordinance has been mandated by the State of California or the federal government.

Water Data from Water Distribution Systems

Ordinance 3438 (1989) requires water distribution systems to implement record management procedures and provide water use information to the District. The purpose of the ordinance is "to facilitate and encourage water conservation in Monterey County by monitoring water use patterns and practices, through the collection and analysis of water use records and data." The MCWRA has prepared an amendment to this ordinance, which is currently under consideration by the Board of Directors. Proposed changes include a clarification that the ordinance also applies to governmental water users, requirements for metering of supply wells and service connections for all distribution systems, and modifications of the data reporting procedure.

Hydrology and Hydrogeology

Chapters 19.03, 19.05, and 19.07 of the Monterey County Code regulate subdivisions, land divisions, and other development. The code requires submission of verification of legal rights to water supply, evaluation of site hydrology, hydrogeology, surface and groundwater resources, water balance, and long-term safe yield of the aquifer if development occurs, and analysis of potential changes in water usage due to subdivision development. Verification of water resources is subject to review by the Director of Environmental Health.

Groundwater Resources

Groundwater resources are required to be identified as part of Chapter 19.07.020. The ordinance requires the following submittals:

- Hydrogeologic environment shall include aquifer identification and characterization, groundwater basin delineation, well yields, and a characterization of soils.

- Groundwater levels and flow shall include a discussion of groundwater levels, a groundwater contour map, and a discussion of any seasonal and/or long-term fluctuations. This Section shall also include a discussion of the recharge areas and the amount of recharge shall be quantified using monthly time-step methodology. It shall also evaluate the impact of pumping on neighboring wells.

- Groundwater in storage shall be quantified by discussing the amount of groundwater in storage and the amount that can be recovered.

- Groundwater quality shall be discussed and any impacts on the groundwater by the proposed project shall be discussed and mitigation measures listed.

Wells and Domestic Water

Title 15 of the Monterey County Code regulates public services, including Chapters 15.04 Domestic Water Systems and Chapter 15.08 Water Wells. Domestic water supply is regulated to ensure that the citizens of Monterey County receive safe and pure drinking water. Regulatory requirements include compliance with state laws, as well as ensure that development does not occur where there is a lack of sustainable water resources.

Water Resources and Conservation

Water conservation is regulated in Chapter 18.50 of the Monterey County Code, which is intended to reduce the excessive use of water within the following planning areas: Greater Salinas, Toro, Greater Monterey Peninsula, and a portion of North County including the Coastal Zone. These regulations require the installation of low-water-use plumbing fixtures and water-efficient landscape materials as part of new construction, as well as prohibiting certain excessive use of water.

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 Increased uses of groundwater shall be carefully managed, especially in areas known to have groundwater over drafting.

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 subdivisions 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 Draft 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.

4) Lack availability of sufficient water supplies to serve the project from existing entitlements and resources, or require new or expanded entitlements.

METHODOLOGY

Kleinfelder prepared a hydrogeologic assessment in July 2008. This assessment included a review of published reports, maps, and other technical documents. Whitson Engineering prepared the *Preliminary Drainage Report for Ferrini Ranch Subdivision* in February 2010 that provides estimated recharge and detention volumes used in the water balance. Both of these reports are included in **Appendix E**. In addition, the EIR preparers coordinated closely with Monterey County Planning Department and MCWRA staff to remain up to date on the findings of recent groundwater studies and analysis documents used by the County.

PROJECT IMPACTS AND MITIGATION MEASURES

Drinking Water Quality Standards

Impact 3.6-1 Implementation of the proposed project would result in the extraction of groundwater from the 180/400-Foot Aquifer Subbasin of the Salinas Valley Groundwater Basin, within which arsenic, total dissolved solids (TDS), and nitrates are of particular concern. However, according to the California Water Service Company, water quality from the two source wells is in compliance with the primary and secondary drinking standards in accordance with the Safe Drinking Water Act. Water procured for the proposed project would be required to adhere to state and federal mandated standards of water quality, and the project will not directly or

indirectly affect water availability at the source wells. Therefore, this would be considered a **less than significant impact.**

The proposed project's water demands would be met by water procured from wells that pump water from the 180/400-Foot Aquifer Subbasin of the Salinas Valley Groundwater Basin. The wells are operated and managed by the California Water Service Company (CWSC) and are located along River Road in an area referred to as the Spreckels area of the Salinas District. According to CWSC's 2005 water quality report for the Spreckels area (part of the Salinas District), water procured from the wells is in compliance with primary and secondary drinking standards in accordance with the Safe Drinking Water Act. In the Salinas River watersheds, arsenic, total dissolved solids (TDS), and nitrates are of particular concern. The average concentrations of arsenic, TDS, and nitrate for the wells are summarized in **Table 3.6-1**.

TABLE 3.6-1
2005 WATER QUALITY DATA FOR THE WELLS

PRIMARY CONSTITUENTS	CURRENT MCL	SOURCE WELL CONCENTRATION
Arsenic	10 ppb	1.34 ppb
Nitrate	45 ppm	1.9 ppm
SECONDARY CONSTITUENTS	**CURRENT MCL**	**CONSTITUENT CONCENTRATION**
Total Dissolved Solids	1000 ppm	493 ppm

Notes: MCL = Maximum Contaminant Level; ppm = parts per million; ppb = parts per billion; Umhos/cm = micromhos per centimeter

Source: Kleinfelder 2008

Water procured for the proposed project would be required to adhere to state and federal mandated standards of water quality. Therefore, the primary and secondary drinking standards would be met, and this would be considered a **less than significant impact**. No mitigation measures are necessary.

Long-Term Impact to Groundwater Resources

Impact 3.6-2 Implementation of the proposed project would result in a gross increase in groundwater pumping of approximately 113 acre-feet per year (AFY), which would result in an increased long-term water demand on the Salinas Valley Groundwater Basin. However, the project site is located within MCWRA's Zone 2C and will obtain potable water from the 180/400-Foot Aquifer Subbasin. The quantity and source of water would result in a **less than significant impact** on groundwater resources.

Residential Water Demand Rates

Water demand rates vary dependent upon the area, proposed use, number of fixtures, implementation of water-efficient plumbing fixtures, and amount and type of landscaping at a residence. Over the years, a number of residential water demand rates have been used in various reports prepared for projects in the vicinity of the Ferrini Ranch project site.

According to CWSC's *Urban Water Management Plan – Salinas District* (2007), water use in 2003 was 110 gallons per capita per day (0.12 AFY) for residential uses and 156 gallons per capita per day (0.17 AFY) for all uses. However, according to the CWSC, the average interior/exterior water demand for the neighboring Las Palmas development was 0.40 AFY in 2006 and 0.60 in 2004, both of which are lower than the state average and other residential developments in the area. According to MCWRA's *North Monterey County Area Hydrogeologic Study* prepared by Fugro in October 1995 used water demand rates of 0.70 AFY for residential lots less than 1 acre, 0.80 AFY for residential lots 1 to 10 acres, 1.7 AFY for residential lots greater than 10 acres, and 1 AFY for commercial lots (MCWRA 1995).

The County of Monterey has analyzed water demand rates from several sources. Rates can vary depending on the type of development proposed. The *Final Revised Water Demand Analysis for the September Ranch Subdivision Project* was prepared by the County of Monterey in August 2010. This analysis identified water demand rates for market-rate lots, inclusionary housing lots, and workforce housing lots based on various assumptions. According to this analysis, the water demand for a market-rate lot was determined to be approximately 0.54 AFY (0.28 AFY indoor and 0.26 AFY outdoor) based on the following assumptions:

- 4.4-acre lots with an allowable building envelope size of 0.59 acres;
- 3 to 4 full baths and 2 half baths using EPA WaterSense Tank-Type High-Efficiency Toilet Specifications (allowing no more than 1.25 gallons per flush) and ultra low flow washing machines for a total fixture count of 24.5 to 29.8; and
- Maximum of 4,275 square feet per lot dedicated to landscaping and exterior water features; compliance with the new Model Water Efficient Landscape Ordinance (Model Ordinance) promulgated by the California Department of Water Resources or the MPWMD rules; and the use of low-water-use plants.

This analysis also determined water demand rates for inclusionary housing lots would be approximately 0.24 AFY (0.14 AFY indoor and 0.099 AFY outdoor) based on the following: lot sizes of 0.15 acres (6,500 square feet); 1,500-square-foot homes with 2-car garage; decking and patios for a total area of 4,900 square feet; 2 bathrooms with a total fixture count of 13.6; maximum area for landscaping and water feature area of 1,600 square feet; and medium consumption rated based on the Maximum Applied Water Allowance (MAWA) formula. This analysis also determined water demand rates for workforce housing lots would be approximately 0.29 AFY (0.17 AFY indoor and 0.1233 AFY outdoor) based on the following: lot size of 0.20 acres (8,500 square feet); 2,000–square-foot homes with 2-car garage, decking and patios for a total area of 6,500 square feet; maximum area for landscaping and water feature area of 1,600 square feet; 2 full baths and 1 half bath with a total fixture county of 16.9; and medium consumption rated based on the MAWA formula. Use of drought-tolerant landscaping and application of the model ordinance would reduce the water demand rates for inclusionary and workforce housing lots. In addition, California Water Services' *Urban Water Management Plan – Salinas District* projects district system

losses ranging from 9.6 to 10.3 percent of total water use between 2010 and 2030. The district's system loss would likely recharge the groundwater basin as opposed to be consumed. Therefore, the system losses would not play a significant factor in the proposed project's effect on the groundwater basin.

A comparison of various consumption rates in the area is summarized in **Table 3.6-2**.

TABLE 3.6-2
SUMMARY OF VARIOUS WATER RESIDENTIAL CONSUMPTION RATES

Agency/Development	Residential Consumption Rates (AFY)		
	Indoor	Outdoor	Lot
Kleinfelder			
Cluster and Inclusionary Residential			0.25
Residential Lots < 1 acre			0.3
Residential Lots 1–10 acres			0.4
Residential Lots > 10 acres			1.7
Commercial Lots			1.0
EPA/East Bay MUD (Family of 4)[1]	0.20		
Monterey County[1]			
Aromas Water District			0.41
California Water Service-Salinas District			0.38
North County[4]			
Lots < 1 acre			0.70
Lots 1–10 acres			0.80
Lots > 10 acres			1.7
Cal-Am: Bishop			0.65
Cal-Am: Ambler			0.49
Cal Am Service Area (MPWMD)[1]			
Incorporated Areas			0.15–0.21
Unincorporated Areas			0.15–0.81
Development Projects			
Santa Lucia Preserve[1] *(1–5A blvd. env.)*			0.66
Monterra Ranch[1] *(1.33A bldg. env.)*			0.41
Tehema[1] *(1.30A bldg. env. + caretaker)*			0.48–0.64
September Ranch[1]			
Inclusionary (0.15A bldg. env.)	0.14	0.10	0.24
Workforce (0.20A bldg. env.)	0.17	0.12	0.29
Market Rate (0.59A building env).	0.28	0.26	0.54
Oaks[2]	0.20	0.28	0.48
Harper Canyon (Encina Hills)[3]			0.75
Pasadera			
Structured Housing			0.25
Standard Lots			0.35
Lots > 1 acre			0.60
Hidden Hills/Las Palmas[1]			0.41

Notes:
1. Final Revised Water Demand Analysis for the September Ranch Subdivision Project (Monterey County 2010)
2. Oaks Residential Subdivision Certified EIR (Monterey County 2001)
3. Harper Canyon (Encina Hills) DEIR (Monterey County 2010e)
4. Preliminary Geologic, Geotechnical, Hydrogeologic, Erosion, Drainage and Environmental Phase I Assessment (Kleinfelder 2008), and North Monterey County Area Hydrogeologic Study (MCWRA 1995)

Estimated Existing Water Demand

Currently, there is one occupied residential lot on the project site. Based on the estimated water demand assumptions *for the September Ranch subdivision, the existing single-family residence is estimated to have a conservative water demand of approximately 0.5 AFY. Other uses contributing to the* existing *water demand* of the property *include* ongoing *grazing* and ranching *operations. Three existing on-site wells meet the existing water demands by procuring groundwater from the Corral de Tierra Subbasin of the Salinas Valley Groundwater Basin.*

Post-Project Water Demand

Implementation of the proposed project would result in the demolition of the existing residence; however, existing grazing operations would continue to be served by the three existing wells.

Buildout of the proposed project would result in new development of the following: approximately 192 acres of low-density residential use providing a total of 212 residential units consisting of 146 market-rate residential lots, 23 market-rate clustered housing units, and 43 inclusionary units; approximately 600 acres of open space on three parcels (Parcels A, B, and C); approximately 35 acres of agricultural/industrial use on one parcel (Parcel D); and approximately 43 acres of roadways. The open space area and road parcels totaling approximately 643 acres would not result in an increase in water demand. However, the proposed residential and agricultural/industrial (conceptual winery and related uses) uses would increase the potable water demand and increase the demand on groundwater resources within the Salinas Valley Groundwater Basin.

According to Kleinfelder, the proposed project would have the following water demand rates: cluster and inclusionary units would consume 0.25 AFY per unit; residential lots less than 1 acre would consume 0.30 AFY per lot; residential lots 1 to 10 acres would consume 0.4 AFY per lot; residential lots greater than 10 acres would consume 1.7 AFY per lot; and the agricultural/industrial lot (Parcel D) would consume 1 AFY. Based on these demand rates, Kleinfelder determined that the proposed project would have a gross water demand of approximately 63.9 AFY. The water demand rates utilized by Kleinfelder were based on water demand rates for the Las Palmas and Hidden Hills developments, which take into account building codes that require the use of water-efficient plumbing fixtures. However, since this analysis was prepared, more detailed data has become available to more accurately estimate the water demand for the Ferrini Ranch project. This additional data includes the *Supplement to the El Toro Groundwater Study* (MCWRA 2010); the water demand rates of the *Final Revised Water Demand Analysis for the September Ranch Subdivision Project* (Monterey County 2010); water demand rates for wineries per the *2010 Monterey County General Plan EIR* (Monterey County 2008); and the Salinas Valley Water Project. In addition, the actual agricultural/industrial uses proposed on Parcel D have been further defined by the project applicant. Therefore, water demand rates have been revised in this Draft EIR to account for the more recent data.

According to the Ferrini Ranch Vesting Tentative Map, the proposed project includes 43 affordable units and 23 market-rate units on Parcel E (13.4 acres). These units would be similar to September Ranch's inclusionary units and workforce units, respectively. In addition, the proposed project includes an additional 145 market-rate lots that range from 0.28 to 2.17 acre plus a 72.38-acre market-rate lot (Lot #145). The average lot size is 1.21 acres (including the 72.38-acre lot), which is much smaller than the September Ranch average. Approximately 53 lots are smaller than the average building envelope size for September Ranch. Although building envelopes have not been identified on the Vesting Tentative Map for the proposed project, site constraints such as slope, visual sensitivity, oak woodlands, etc., would limit the developable area. Therefore, applying a water demand rate somewhere between September Ranch's water demand rate for workforce lots and market-rate lots would provide a valid water demand assumption for Ferrini Ranch's market-rate lots. The 72.38-acre lot (Lot #145) is assumed to have a higher water demand rate, similar to rates identified in the *Final Revised Water Demand Analysis for the September Ranch Subdivision Project* for the Monterra and Tehema developments, which use demand rates of approximately 0.62 AFY and account for caretaker units (Monterey County 2010). Applying water demand rates and loss rates similar to those identified for other approved developments (i.e., September Ranch, Monterra, and Tehema) would result in a water demand of approximately 95.17 AFY, as shown in **Table 3.6-3**.

TABLE 3.6-3
ESTIMATED GROSS WATER DEMAND FOR THE PROPOSED PROJECT

Lot Type	Units	Water Consumption Rate			Water Demand (AFY)
		Interior	Exterior	Lot (AFY)	
RESIDENTIAL USE					
Parcel E – Inclusionary (0.15A)	43 Units	0.14	0.10	0.24	10.32
Parcel E – Market Rate (0.20A)	23 Lots	0.17	0.12	0.29	6.67
Market-Rate Lots (<0.60A)	53 Lots	0.23	0.19	0.42	22.26
Market-Rate Lots (0.60–2.17A)	92 Lots	0.28	0.26	0.54	49.68
Market-Rate Lot #145 (72.38A)	1 Lot			0.62	0.62
Subtotal					**89.55**
AGRICULTURAL/INDUSTRIAL USE					
Winery and Related Uses	1 Facility	3.9 AFY/75,000 cases annually		3.9	3.87
Office	25,000 SF	0.00007 AFY/SF		1.8	1.75
Subtotal					**5.62**
Water Demand Total					**95.17**

Sources: Monterey County 2008, 2010; MPWMD 2007

Table 3.6-3 also applies more precise water demand rates to Parcel D than originally estimated by Kleinfelder. As mentioned above, the uses proposed on Parcel D have been better defined since Kleinfelder originally estimated the water demand for the proposed project. The conceptual design for Parcel D includes the following: a 60,000-square-foot

winery production and storage building; a 25,000-square-foot office building; a 10,000-square-foot visitors facility; a 15,000-square foot tasting facility; and three parking areas providing approximately 260 parking spaces as shown in **Figure 2-6**. Based on these uses, the water demand for the agricultural/industrial use was updated by PMC using data provided in the *2010 Monterey County General Plan Draft EIR*. Table 4.3-11 of the *Draft EIR for the 2010 Monterey County General Plan* (Monterey County 2010) provides estimated annual water demands for six types of wineries based on the annual volume of wine cases produced at the winery. The types of wineries included "artisan," which would produce a maximum of 25,000 cases of wine per year, as well as five types of "full-scale" wineries, which would produce from 75,000 to 1.5 million cases of wine per year. For purposes of this analysis, the Draft EIR assumes a full-scale winery at Parcel D with production of up to 75,000 cases annually. The estimated water demand for a full-scale winery is 3.87 AFY.

The water demand associated with 25,000 square feet of related office was estimated using the Monterey Peninsula Water Management District's (MPWMD) nonresidential water use factors for office use (MPWMD 2007). Although the project site is not located within the MPWMD's service area, the MPWMD has established water demand rates for various uses that are helpful in estimating anticipated water demand. According to the MPWMD, office uses are estimated to have an annual water demand rate of 0.00007 acre-feet per square foot (AFY/SF). Based on a water demand of 0.00007 AFY/SF, the future development of a 25,000-square-foot office would be estimated to have a water demand of approximately 1.8 AFY.

As shown in **Table 3.6-3**, the proposed project would result in an estimated gross water demand of 89.55 AFY for residential use and 5.62 AFY for agricultural/industrial use for a total water consumption rate of 95.17 AFY, which is approximately 94.67 AFY greater than the pre-project water demand of 0.5 AFY. Although the updated estimated water demand is approximately 49 percent greater than the 63.9 AFY originally estimated and analyzed by Kleinfelder, this estimate is more conservative, is based on more current data, and would not warrant different findings (of significance) since the project is located in MCWRA Zone 2C.

Estimated Recharge

Recharge occurs through the infiltration of irrigation water, rainfall, and stormwater runoff. As noted above the project site is primarily undeveloped and contains one existing occupied residential unit, which has minimal recharge value. The existing sources of recharge would be primarily associated with the undeveloped areas of the project site, which encompass approximately 869 acres. Based on an average rainfall of 14.58 inches per year and a recharge factor of 0.00065 (SMB zone 5, see note 4 in **Table 3.6-4** below), the pre-project average recharge return was estimated to be approximately 0.69 AFY. Although there may be additional recharge attributable to irrigation used around the existing occupied residence, that amount of recharge would be offset by the small amount of impervious surface area associated with the driveway for the occupied residence. Therefore, the pre-project average return from irrigation was assumed to be zero.

Post-Project Recharge

The proposed project would result in the development of impervious surfaces, which would increase the amount of stormwater runoff on the project site. Stormwater will be collected in a stormwater drainage system on-site and routed to various detention areas located throughout the project site as shown in **Figure 3.7-3**, where the water will be allowed to naturally percolate, providing a minor amount of recharge to the aquifers.

As discussed in further detail in **Section 3.7, Surface Water Hydrology and Water Quality**, there are seven drainage watersheds within the project site. Runoff within these drainage areas will be conveyed to stormwater detention basins located throughout the property at natural topographic low points. The basin areas, conceptually designed to detain over 112,000 cubic feet of water, are where best management practices (BMPs) (i.e., filters, traps, bio-filtration swales, etc.) will be implemented to allow captured runoff to percolate back into the aquifers. The basins would detain approximately 2.6 AF of runoff on-site, which would provide recharge to the Salinas Valley Groundwater Basin. According to Figure 4-5 of the *El Toro Groundwater Study* (MCWRA 2007), the inferred groundwater flow in this area is to the northeast toward the Salinas Valley. The rate of recharge associated with the stormwater runoff generated and captured on the project site would be influenced by the amount of undeveloped area, annual precipitation, and the average annual deep percolation rate.

Recharge rates in the undeveloped areas of the project site were estimated based on recharge data provided in the *Laguna Seca Subarea Phase III Hydrogeologic Update* (*Laguna Seca Update)* (Yates, Feeney, and Rosenberg 2002). This report estimates recharge rates using a soil moisture budget (SMB) model. The SMB model defined SMB recharge zones by overlaying maps of average annual precipitation, soils, slopes, available water capacity (AWC), and land use (including vegetation types). Based on soil types, soil characteristics (slope and AWC), and existing vegetation, recharge rates of the *Laguna Seca Update* analysis were compared to similar site conditions at Ferrini Ranch. Two recharge zones had site characteristics similar to approximately 95 percent of the Ferrini Ranch project site, which consists of about 45 percent grasslands and 49 percent of oak woodlands. The recharge rates for SMB zones 2 and 88 provided in the *Laguna Seca Update* were averaged to obtain the estimated recharge rate for Ferrini Ranch.

SMB zone 2 is characterized with an average annual rainfall of 15 inches, native grass vegetation, and soils with low AWC (less than 0.07 inches per inch) and low slope (less than 25 percent). SMB zone 88 is characterized with an average annual rainfall of 15 inches, native trees and shrub vegetation, and soils with high AWC (greater than 0.07 inches per inch) (Yates, Feeney, and Rosenberg 2002). Based on the soils on the project site, approximately 35 percent of the project site has a low AWC (less than 0.07 centimeter per centimeter (cm/cm)) and gradual slopes (less than 15 percent), which is similar to SMB zone 2. Approximately 65 percent of the soils on the project site have a high AWC (greater than 0.07 cm/cm), and approximately 52 percent of the site has slopes equal to or greater than 15 percent, which is similar to SMB zone 88. According to Figure 1-14 of the *Laguna*

Seca Update, SMB zone 2 has an average recharge rate of approximately 0.0012 inches per year and SMB zone 88 has an average recharge rate of approximately 0.0001 inches per year. The average of the recharge rate for these two SMB recharge zones is approximately 0.00065. Based on this average rate of recharge, the post-project recharge would be 0.58 AFY for watersheds A through G, as summarized in **Table 3.6-4**.

According to Kleinfelder, the average return from irrigation would be approximately 0.034 AF per residential unit, which would result in approximately 7.2 AFY (212 residential units x 0.034 AF/residential unit) being recharged to the groundwater basins via infiltration of irrigation water. However, the average return rate from irrigation is highly variable based on vegetation, rate of irrigation, vegetation stress, evapotranspiration, and soil types. Therefore, this analysis assumed that any recharge from irrigation was considered to be minimal and excluded from the overall post-project recharge rate.

Water Balance

The proposed project would result in an increased gross water demand of approximately 95 AFY and would result in approximately 0.11 AFY less recharge. When compared to existing conditions, the proposed project would result in a net negative change of approximately -95 AFY, as summarized in **Table 3.6-4**. Groundwater use for existing grazing and ranch operations is assumed to remain unchanged between the pre- and post-project condition, and does not factor into the project's water balance analysis.

TABLE 3.6-4
WATER BALANCE

PRE-PROJECT					
WATER USE	**DEMAND/UNIT[1] (AFY)**	**NUMBER OF UNITS**			**WATER USE (AFY)**
Existing Residential Unit	**0.5**	**1**			0.5
				Total Pre-Project Water Use	**0.5**
RECHARGE	**TOTAL AREA[2] (ACRES)**	**UNDEVELOPED AREA[2] (ACRES)**	**MEAN ANNUAL PRECIPITATION[3] (INCHES/YEAR)**	**RECHARGE RATE[4]**	**RECHARGE (AFY)**
Project Site	**870.0**	**869.0**	**14.58**	**0.00065**	0.69
Existing Residential Unit	**1.0**	**0.1**	14.6	**0.00012**	0.00
				Total Pre-Project Recharge	**0.69**
Pre-Project Water Balance [Recharge - Water Use]					**0.19**
POST-PROJECT					
WATER USE	**DEMAND/UNIT[1,5] (AFY)**	**NUMBER OF UNITS[6]**	**AREA[6] (SQUARE FEET)**	**MULTIPLIER**	**DEMAND AFY**
Residential Use					
Parcel E – Inclusionary (0.15A)	**0.24**	**43**			10.32
Parcel E – Market Rate (0.20A)	**0.29**	**23**			6.67
Market Rate Lots (<0.60A)	**0.42**	**53**			22.26
Market Rate Lots (0.60–2.17A)	**0.54**	**92**			49.68
Market Rate Lot #145 (72.83 A)	**0.62**	**1**			0.62
Agricultural/Industrial Use					
60,000 SF Winery/Storage Bldg	**3.87**[5]	**1**			3.87
10,000 SF Visitors Facility *					

TABLE 3.6-4
WATER BALANCE

15,000 SF Tasting Facility *					
25,000 SF Office Bldg			**25,000**	**0.00007**	1.75
				Total Post-Project Water Use	**95.17**
RECHARGE	**TOTAL AREA[2] (ACRES)**	**UNDEVELOPED AREA[2] (ACRES)**	**MEAN ANNUAL PRECIPITATION[3] (INCHES/YEAR)**	**RECHARGE RATE[4]**	**RECHARGE AFY**
Project Site-Watershed A	**160.0**	**147.20**	14.58	**0.00065**	0.12
Project Site-Watershed B	**80.0**	**71.00**	14.58	**0.00065**	0.06
Project Site-Watershed C	**80.0**	**74.20**	14.58	**0.00065**	0.06
Project Site-Watershed D	**75.0**	**66.10**	14.58	**0.00065**	0.05
Project Site-Watershed E	**70.0**	**57.60**	14.58	**0.00065**	0.05
Project Site-Watershed F	**75.0**	**71.70**	14.58	**0.00065**	0.06
Project Site-Watershed G	**235.0**	**229.20**	14.58	**0.00065**	0.18
RECHARGE	**RECHARGE PER UNIT (AFY)**	**NUMBER OF UNITS**			
Irrigation	**0.000**	**0**			0.00
				Total Post-Project Recharge	**0.58**
Post-Project Water Balance [Recharge - Water Use]					**-94.59**
Net Change [Post-Project Water Balance - Pre-Project Water Balance]					**-94.78**

Notes:
1. Water Demand per Unit values for residential use are based on the water demand rates for existing single-family residences for the September Ranch, Monterra, and Tehema subdivisions which were provided in the Final Revised Water Demand Analysis for the September Ranch Subdivision Project (Monterey County 2010).
2. Pre- and post-project area (acres) referenced from the Preliminary Drainage Report of Ferrini Ranch Subdivision (Whitson 2011) .
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. Water Demand per Unit values for winery production use based on Draft EIR for 2007 Monterey County General Plan for a winery that produces up to 75,000 cases wine/year (Monterey County 2008).
6. Residential unit and commercial sq.ft. values cited from the Ferrini Ranch Subdivision Vesting Tentative Map dated March 2005 (Whitson 2005) and subsequent project description information submitted by the applicant in March 2010.
7. Based on water demand factors from Monterey Peninsula Water Management District's nonresidential water use factors for office and deli use (MPWMD 2007).

Salinas Valley Water Project/Zone 2C

As discussed previously, the MCWRA constructed the Salinas Valley Water Project to address water resource management issues within the Salinas Valley. The SVWP provides for the long-term management and protection of groundwater resources by stopping seawater intrusion and providing adequate water supplies and flexibility to meet the current and future water demand. In addition, the SVWP provides the surface water supply necessary to attain a hydrologically balanced groundwater basin. The SVWP went into operation in 2010. As mentioned above, these improvements were funded by a special assessment zone, MCWRA Zone 2C. Property owners in Zone 2C are assessed a special tax to fund the SVWP. Although the SVWP does not physically deliver potable water to urban users, it does provide water to agricultural users, which in turn reduces pumping of groundwater for agricultural uses and makes more groundwater available for urban uses. The project site is located in Zone 2C and will obtain its water source from the Salinas

Valley Groundwater Basin that benefits from the SVWP. Since the project site is located within Zone 2C, the property owner contributes financially towards the SVWP. 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.**

Even though a confirmed, reliable water source is available to the project, the County of Monterey recognizes that water resources are finite, require ongoing management and conservation, and should not be wasted or allowed to exceed projected use. For these reasons, and consistent with other project approvals in the county such as September Ranch, the following mitigation measures have been provided as project conditions.

Mitigation Measures

MM 3.6-2a Prior to filing the final map, the project applicant shall submit CC&Rs for review and approval by the Director of Planning that prohibit water-intensive uses, including but not limited to vineyards, ornamental fountains that do not recirculate water, and washing of hard surfaces such as streets, gutters, sidewalks, and driveways in any portion of the proposed lots, open space parcels, or Parcel D.

MM 3.6-2b Prior to issuance of building permits, the project applicant shall submit for review and approval by the Director of Planning a Landscape Documentation Package that includes a water-efficient landscape sheet, soil management report, landscape design plan, irrigation design plan, and grading design plan. The Landscape Documentation Package shall demonstrate compliance with the substantive requirements of the Department of Water Resources' Model Water Efficient Landscape Ordinance, Title 23, California Code of Regulations, Sections 490–495, or any subsequent water conservation Ordinance adopted by the County for the same purpose. The final map and each site plan shall indicate that submittal and approval of the Landscape Documentation Package for each lot is required for development of the lot prior to issuance of building permits. Building permits shall specify ongoing compliance with the ordinances in place at the time of issuance.

MM 3.6-2c Prior to final map approval, the project applicant shall submit for review and approval by the Director of the Planning Department CC&Rs that contain language requiring that all toilets installed on the project site meet the requirements of the U.S. Environmental Protection Agency's specifications for Water Sense Tank-Type High-Efficiency Toilets and ultra low flow devices, respectively.

Implementation of the above mitigation measures will help to minimize water use during the life of the project.

Adversely Affect Nearby Wells

Impact 3.6-3 Implementation of the proposed project would result in long-term groundwater pumping in proximity to neighboring wells. However, the proposed project would be served water by a public utility company (California Water Service Company) that is annually monitored to ensure there is no adverse effect on nearby wells. No new wells are proposed at the project site. Continued operation of the SVWP would also enhance recharge in the groundwater basin over time, providing additional stability to groundwater levels. Project impacts to nearby wells are considered a **less than significant impact.**

In the general vicinity of the project site, there are approximately 25 wells. Thirteen wells, including the two CWSC source wells that would serve the project, are located in the Spreckels area of the Salinas District. These wells procure water from the Salinas Valley Groundwater Basin. For security reasons, the exact well locations have not been provided by the California Water Service Company.

According to the CWSC, the wells in the Spreckels area of the Salinas District have a design capacity of producing approximately 4,260 gallons per minute (GPM). Currently, CWSC are serving approximately 2,216 connections with an average demand of 1,464.72 AFY (approximately 908 GPM) (He 2007). The project's estimated water use of 95 AFY represents a 6 percent increase over existing demand from these wells. However, the wells in this area are operating at only 34 percent of their capacity. The project's water demand, relative to the size of the groundwater basin and capacity of the existing water delivery system, is not significant with respect to neighboring wells and stabilizing groundwater levels in the basin as a whole.

Since the project site is located within MCWRA's Zone 2C, it benefits from the Salinas Valley Water Project. As previously discussed, the SVWP was developed by the MCWRA to address water resource management issues within the Salinas Valley and provide for the long-term management and protection of groundwater resources. Since construction of the SVWP, groundwater levels are rising in some areas of the Salinas Valley, and the basin as a whole appears to be becoming more hydrologically balanced. Because the project is within the benefit area of Zone 2C, and due to the relatively large size of the groundwater basin compared to project demand, increased pumping within the 180/400-Foot Aquifer Subbasin to serve the proposed project would have a **less than significant impact** on nearby wells. No mitigation measures are necessary.

CUMULATIVE IMPACTS AND MITIGATION MEASURES

Cumulative Adverse Effect on the Surrounding Subareas

Impact 3.6-4 Implementation of the proposed project, when combined with other reasonably foreseeable projects, would increase groundwater pumping in

the Salinas Valley Groundwater Basin. This is 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 provides additional water resources from the Nacimiento and San Antonio Reservoirs via the Salinas River. The project applicant contributes financially to the SVWP and its groundwater management strategies. The project's impact on the groundwater basin is therefore mitigated by this contribution.

According to DWR basin maps, the project site is located in the northeast portion of the Corral de Tierra Subbasin (DWR 2010) of the Salinas Valley Groundwater Basin. However, potable water for the proposed project would be provided by wells in CWSC's Salinas District, which procures water from the 180/400-Foot Aquifer Subbasin of the Salinas Valley Groundwater Basin. Since the SVWP went into operation in 2010, the entire basin appears to be becoming more hydrologically balanced, as a noticeable change 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. Development forecasts for the project site previously assumed a maximum allowable buildout of 447 units. The proposed project now includes only 212 residential lots and has been deemed consistent with AMBAG's 2008 population forecasts. The higher density (and associated water consumption) was accounted for in 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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