4.3 Water Resources

This section of the EIR discusses water and its importance as a fundamental component of the environment, beginning with an overview of the current physical characteristics of Monterey County's surface- and groundwater systems. Water supply and demand for human consumption and associated infrastructure is also discussed. Related topics such as tsunamis, seiches, and mudflows are discussed separately in Section 4.4, Geology, Soils, and Seismicity.

4.3.1 Abstract

Monterey County depends on supplies from its own watersheds and does not receive imported water from other regions of California. The three major watersheds in Monterey County—the Salinas, Carmel, and Pajaro Rivers—all have significant constraints. Erosion associated with agriculture has deteriorated surface water quality in the Salinas and Pajaro Valleys. High nitrate levels have been recorded in the Salinas Valley and in the area known as "North County," which lies between the Salinas and Pajaro Valleys. Groundwater overdraft is a significant problem in North County. Seawater intrusion into groundwater sources is a substantial issue near Pajaro and Castroville. Flood hazards are present along the major drainages in the county. Tsunami inundation areas are located in the coastal portions of the county.

Development and land use activities contemplated in the 2007 *Monterey County General Plan* (2007 General Plan) would result in the following significant impacts on water resources.

- **Water Supply**—Implementation of the 2007 General Plan would increase demand for water up to the 2030 planning horizon. Supply in the Salinas Valley provided by the Salinas Valley Water Projects is adequate to provide new water for new development up to 2030. Increased demand on the Monterey Peninsula and in the Pajaro Valley would require new or expanded water facilities and new or expanded water entitlements. Supply on the Monterey Peninsula will be adequate to meet current demand, assuming that the CalAm seawater desalination plant is permitted and operational by 2015 as currently expected, but will not be sufficient to meet additional demand up to the 2030 planning horizon without adversely affecting groundwater; thus additional water supply infrastructure will be needed. Supply in the Pajaro Valley would not meet demand up to the 2030 planning horizon without overdraft of the aquifer even with implementation of local recycled water projects, diversions, and conservation due to the difficulties with importation of water. Current water supply planning does not anticipate meeting demands to the 2092 planning horizon; while water resources are available from county rivers and in some groundwater basins, these resources have not yet been fully proven and thus are uncertain at this time. Mitigation

measures are proposed to provide additional water supply, but uncertainty over their success leaves this a significant, unavoidable impact in all basins for buildout.

- **Water Supply Infrastructure** – Implementation of the 2007 General Plan would result in demand for new water infrastructure including: the under-construction Salinas Valley Water Project (SVWP) and new distribution facilities in the Salinas Valley for 2030 and new diversions, reservoir expansion, and distribution facilities for buildout; desalination, aquifer storage, recycled water, and distribution facilities for 2030 and further desalination, recycling, aquifer storage, diversions, and distribution facilities for buildout related to the Monterey Peninsula; and recycled water, desalination, distribution facilities and possible future import pipeline facilities for the Pajaro Valley. This new infrastructure would have construction and/or operational impacts on biological resources, hydrology and water quality, farmland, recreation, geology and soils, cultural resources, traffic, noise, air quality, utility disruption, and growth inducement. While many of these impacts can be mitigated to a less-than-significant level (as shown in completed CEQA evaluations of the MCWRA SVWP, the MPWMD aquifer storage and recovery project, and the PVWMA's Basin Management Plan), it is not considered feasible that all significant impacts will be mitigated to a less than significant level and thus this is identified as a significant and unavoidable impact.
- **Groundwater level decline and overdraft and saltwater intrusion**: Current water supply planning, with mitigation, is adequate to address overdraft and saltwater intrusion in the Salinas Valley up to the 2030 planning horizon. Development and land use activities anticipated in the 2007 General Plan would exacerbate existing groundwater overdraft conditions and saltwater intrusion within the Seaside Aquifer and the Pajaro Valley. Mitigation is proposed, but this would be a significant and unavoidable impact under the 2030 planning horizon for the Seaside Aquifer and Pajaro Valley due to the uncertainty regarding the feasibility and timing of new supplies. Current water supply planning does not anticipate meeting demands to the 2092 planning horizon; while water resources are available, they have not yet been fully proven and thus their feasibility for, and timing to, avoid further groundwater overdraft and saltwater intrusion is uncertain. Mitigation is proposed but this would be a significant and unavoidable impact for buildout for all areas in 2092 due to the uncertainty.

All other water resources impacts would be less than significant during the 2030 planning horizon and would not require mitigation.

4.3.2 Existing Conditions

4.3.2.1 Regional Setting

Climate

The climate of Monterey County is characterized by warm dry summers and cool moist winters. The average temperature is approximately 56°F. Average rainfall across the county is approximately 15 inches per year, though rainfall in excess of 30 inches has been recorded in some years. Approximately 90% of this rainfall occurs between November and April. Measurable precipitation averages 51 days per year, and the average length of the growing season is 235 days (Monterey County Water Resources Agency 2003).

Average annual precipitation in King City, in the inland portion of the Salinas River watershed, is 11 inches. In contrast, average annual precipitation for the Big Sur watershed is estimated at 43 inches (Monterey County Water Resources Agency 2003).

Topography and Drainage

Topography within Monterey County is extremely varied. Elevations range from sea level to 5,844 feet at Junipero Serra Peak, which is located 12 miles inland in the Santa Lucia range. The county includes the famous Salinas Valley, which is bounded by the Gabilan Mountains to the east and the Santa Lucia Mountains to the west. The valley is 10 to 20 miles wide and 130 miles long and has approximately 1,000 square miles of broad bottom land (Monterey County Water Resources Agency 2003).

The Gabilan and Santa Lucia Mountains are the sources of the principal watercourses in the area. The largest of these, the Salinas River, is 155 miles long. This river roughly bisects the county, running from Santa Margarita Reservoir in San Luis Obispo County northwest to its termination point at Monterey Bay. Meandering creeks generally have their headwaters in the surrounding mountains and then drain across the flat, alluvial portions of the Salinas Valley.

Drainage patterns in Monterey County have been altered by urbanization, resulting in increased runoff that poses a greater flood threat than in previous years. To accommodate the increasing runoff, many cities in the county have developed extensive storm drainage systems. The overall drainage pattern in the county is from south to north, the direction of flow of the Salinas River.

4.3.2.2 Monterey County Watersheds

Water resources are commonly described and characterized in terms of "watersheds," referring to the topographic area that is tributary to a particular river system. Watershed and drainage basin often are used interchangeably. Both terms refer to surface water, the component of the natural water system that originates in precipitation, gathers to form runoff, and either infiltrates into the soil or flows into creeks and rivers. Groundwater basins, though not corresponding to watershed boundaries, convey underground flows and have a direct relationship via the soil to surface water flows.

Monterey County has two major watersheds (Exhibit 4.3.1), the Salinas River watershed (by far the largest) and the Carmel River watershed. There are also many smaller watersheds, including those of the Big Sur Coast, El Toro, Laguna Seca, and Canyon del Rey. The Pajaro River watershed in the North County and the Estrella watershed in the southeast county are only partially within Monterey County. Each of these watersheds has tributary drainages with seasonal creeks and streams. The following section describes water resources of major watersheds—their surface water, their groundwater, and the influences on their hydrology. A subsequent section discusses water quality and supply issues in each of the basins.

Three major water resource agencies have somewhat overlapping daily responsibilities in overseeing and managing surface- and groundwater within the county.

- The Monterey County Water Resources Agency (MCWRA) has countywide jurisdiction over flood control and water resources management.
- The Monterey Peninsula Water Management District (MPWMD) manages water resources on the peninsula, primarily the Carmel River, its tributaries, and impoundments, as well as the groundwater beneath its management area.
- The Pajaro Valley Water Management Agency (PVWMA) manages surface- and groundwater along the Pajaro River, both in the North County area of Monterey County and in Santa Cruz County.

Because of their overlapping areas of responsibility and the need to coordinate water resources management on a larger scale, these agencies have Memoranda of Understanding (MOUs) with each other that outline how they will coordinate planning and engineering, policy development, and program development and implementation. Section 4.3.3, Regulatory Framework, provides more detailed information on these and other state and federal agencies that have some jurisdiction over Monterey County's water resources.

Salinas River Watershed

The Salinas River basin hydrology, as it exists today, is far from natural. In addition to altering the basin's hydrology by extracting water for consumption,

human activities have significantly altered the natural hydrology through various diversions of the basin's surface water. Major alterations include the Nacimiento and San Antonio Reservoirs, which alter the timing and magnitude of flows in the river throughout its entire length in the county. In its natural state, most of the land west of the city of Salinas was swamp. In 1917, the Reclamation Ditch was constructed, partly along the historical course of Gabilan Creek as it wound its way through low-lying sloughs and swamps to Tembladero Slough, the Old Salinas River Channel, Elkhorn Slough, and Monterey Bay. Land reclamation to accommodate agriculture and urban development has eliminated most natural lakes and ponds (including eight lakes that historically drained into Tembladero Slough). Grading and irrigation for agricultural fields has redirected, channelized, or removed many creeks and tributaries throughout the basin floor. Urban development has eliminated or greatly modified the natural course and flow of creeks. Further modifications to accommodate human activities currently are planned as part of the Salinas Valley Water Project (SVWP).

The Salinas River drains an area of approximately 3,950 square miles and is the largest water system in Monterey County (Exhibit 4.3.2). In Monterey County, the river meanders through the Salinas Valley floor, an area of about 1,000 square miles (Monterey County Water Resources Agency 2003). Several tributaries enter the river along this length, including Pancho Rico Creek, Santa Rita Creek, Estrella Creek, Reliz Creek, Chalone Creek, San Lorenzo Creek, the Arroyo Seco River, El Toro Creek, Prunedale Creek, the Nacimiento River, and the San Antonio River. The Nacimiento and San Antonio Rivers are by far the largest tributaries, encompassing tributary watersheds of about 330 square miles. Dams owned and operated by the MCWRA control flow volumes in both of these rivers.

Average annual flows to the ocean from the Salinas River are around 282,000 acre feet per year (AFY), most of which occurs from November through March (an acre-foot of water is defined as the volume of 1 acre of surface area to a depth of 1 feet and is equal to 325,851.4 gallons). This period corresponds to the months of peak seasonal rainfall and coincides with a seasonal drop in irrigation in the valley. During spring and summer, the two reservoirs on the Nacimiento and San Antonio Rivers regulate flow to minimize outflow to the ocean and maximize groundwater recharge through the Salinas River bed. Under current reservoir operations, water is released into the river during summer to recharge groundwater in the basin. Because a natural clay layer underlies the river north of Chualar inhibiting groundwater recharge from the channel, outflows from the dams are regulated to maintain river flow only as far north as the State Route (SR) 68 bridge.

As previously mentioned, water resources in the Salinas River watershed are managed by the MCWRA. Most water users in the Salinas Valley unincorporated county area are agricultural, using the majority of the more than 700 wells throughout the basin. All the water used in the basin—for irrigation, domestic, municipal, and industrial purposes—is supplied from groundwater (with the exception of an area near Greenfield, which has a diversion from the Arroyo Seco River). One of the main environmental water uses in the region is

for the 366-acre Salinas River National Wildlife Refuge, where the Salinas River empties into Monterey Bay (California Department of Water Resources 2005).

Nacimiento Reservoir

Nacimiento Dam is a large earth fill dam, constructed in 1957, owned and operated by the MCWRA. Although it is located approximately 15 miles northwest of Paso Robles in San Luis Obispo County, Nacimiento Reservoir is an important component of the region's existing water supply. It impounds 377,900 acre-feet of water, which then is released for groundwater recharge. When full, the lake is 18 miles long and has 165 miles of shoreline (Monterey County Water Resources Agency 2003).

Currently, the storage capacity in Nacimiento Reservoir is constrained because of rule curve restrictions mandated by the State of California Division of Safety of Dams (DSOD) and the Federal Energy Regulatory Commission (FERC). Rule curves ensure that sufficient flood storage is available in the reservoir to safely pass the inflow design flood (Monterey County Water Resources Agency 2003).

The reservoir has a minimum pool volume of 22,300 acre-feet and a conservation pool of 237,700 acre-feet. Water from the conservation pool is released during the summer, in conjunction with releases from San Antonio Reservoir, to enhance groundwater recharge in the Salinas Valley. During the winter, flood protection is provided by keeping an empty space, called the flood pool, in the reservoir to temporarily store flood water. The flood pool is between elevation 777.3 feet and the top of the spillway, elevation 800 feet. Nacimiento Reservoir's flood pool storage is 117,900 acre-feet (Monterey County Water Resources Agency 2003).

San Antonio Reservoir

San Antonio Dam and its reservoir are located approximately 7 miles southwest of Bradley on the San Antonio River in Monterey County. The earth fill dam, constructed in 1965, is owned and operated by the MCWRA. It has a 330-square-mile watershed. When full, it is 16 miles long and has approximately 100 miles of shoreline (Monterey County Water Resources Agency 2003).

The reservoir has minimum pool storage of 23,000 acre-feet. On July 24, 2000, the MCWRA Board of Directors adopted a new rule curve, reducing the maximum flood pool to 30,000 acre-feet and increasing the conservation pool to 282,000 acre-feet. When the reservoir is full (spillway elevation 780 feet), it has a maximum storage capacity of 335,000 acre-feet (Monterey County Water Resources Agency 2003).

Both Nacimiento Reservoir and San Antonio Reservoir are multiuse facilities, meaning the dams are operated for flood control, water conservation, recreation uses, and water supply. The most important priority of the water conservation operation is to maximize the amount of percolation into the Salinas Valley aquifer. This is accomplished by storing water that flows into San Antonio Reservoir so that water is available for later release during the dry summer

months when water demand is greatest (Monterey County Water Resources Agency 2003).

Groundwater

Groundwater recharge in the Salinas Valley basin is principally from infiltration from the Salinas River, from Arroyo Seco, and, to a much lesser extent, from deep percolation of rainfall. Minor amounts are derived from infiltration from small streams and inflow from bedrock areas adjoining the basin. Percolation of applied irrigation water is the second largest component of the groundwater budget, but because it represents recirculation of existing groundwater rather than an inflow of "new" water, it is not considered a source of recharge.

According to the California Department of Water Resources (DWR), the Salinas Valley groundwater basin consists of one large hydrologic unit composed of four subareas (Exhibit 4.3.3). These subareas have different hydrogeologic and recharge characteristics, but barriers to horizontal flow do not separate them, and water can move between them (California Department of Water Resources 2004a–d).

- **Upper Valley Aquifer Subarea** includes approximately 98,200 acres near the south end of the Salinas Valley, from approximately Greenfield to San Ardo. The primary aquifer of the subbasin is unconfined and is represented by unconsolidated to semiconsolidated and interbedded gravel, sand, and silt of the Paso Robles Formation, alluvial fan, and river deposits. Groundwater recharge to the Upper Valley Aquifer Subarea occurs primarily from percolation in the channel of the Salinas River. (California Department of Water Resources 2004a)
- **180-Foot/400-Foot Area Subarea** includes approximately 84,400 acres of the lower reaches and mouth of the Salinas River, between Gonzales and Monterey Bay. It is composed mostly of confined and semiconfined aquifers separated by clay layers (aquitards) that limit the amount of vertical recharge. Three primary water-bearing strata have been identified in this subarea: the 180-foot aquifer (average 100 feet thick), the 400-foot aquifer (average 200 feet thick), and the Deep Zone (up to 900 feet thick). These aquifers are separated by aquitards, although areas of thin or absent aquitards allow some interconnection between the 180- and 400-foot aquifers. Heavy pumping of the 180- and 400-foot aquifers has caused significant seawater intrusion into both. Because of the impermeable nature of the clay aquitard above the 180-foot aquifer, surface recharge (including that from precipitation, agricultural return flows, and river flow) does not occur. Instead, recharge is from underflow originating from the Upper Valley and Forebay Subareas and, more recently, from seawater intrusion (California Department of Water Resources 2004b). Seawater intrusion has rendered many coastal wells in the 180-foot aquifer unusable. Much of the runoff from the Salinas River either evaporates or discharges into Monterey Bay during the wet season.
- **Forebay Aquifer Subarea** extends from Gonzales to Greenfield and consists of approximately 94,000 acres of unconsolidated alluvium (including the Arroyo Seco Cone, a large and relatively permeable alluvial fan on the west side of the Salinas Valley). The primary water-bearing units of this subbasin

are the same units that produce water in the 180- and 400-foot aquifers. Principal sources of recharge to the Forebay Subarea are percolation from the Salinas River and the Arroyo Seco River and groundwater outflow from the Upper Valley Aquifer Subarea. (California Department of Water Resources 2004c)

- **East Side Aquifer Subarea** consists of 57,500 acres from just south of Prunedale to Gonzales, along the eastern side of the lower Salinas Valley. The primary water-bearing units of this subbasin are the same units that produce water in the 180- and 400-foot aquifers. It includes unconfined and semiconfined aquifers in the northern portion of the basin that historically received most of its recharge from percolation from stream channels on the west slope of the Gabilan Range. Because of extractions in excess of recharge, the declines in groundwater level in the East Side Aquifer Subarea have induced subsurface recharge from the 180-Foot/400-Foot and Forebay Aquifer Subareas. This inflow is now a larger source of recharge than the stream channels coming from the Gabilan Range. (California Department of Water Resources 2004d.)

Table 4.3-1 provides a summary of groundwater extraction in the four subareas of the Salinas Valley groundwater basin. In all four subareas, primary groundwater quality issues are twofold: high levels of total dissolved solids (TDS) and chloride, due to seawater intrusion; and extensive nonpoint source nitrate, due to long-term agricultural production in the Salinas Valley (California Department of Water Resources 2004a–d; Monterey County Water Resources Agency 2001).

Table 4.3-1. Total Extraction Data in the Salinas Valley Groundwater Basin (2005)

Subarea	Agricultural Pumping (acre-feet)	Urban Pumping (acre-feet)	Total Pumping (acre-feet)
Upper Valley Aquifer	126,488	4,536	131,024
Forebay Aquifer	139,951	8,571	148,522
180-Foot/400 Foot Aquifer	97,028	21,344	118,372
East Side Aquifer	80,100	16,028	96,128
Total	443,567	50,479	494,046

Source: Monterey County Water Resources Agency 2007.

The MCWRA and its co-operators, including the Monterey Regional Water Pollution Control Agency (MRWPCA), have several major capital projects to better manage groundwater quality and reverse the long-term trend of seawater intrusion and groundwater declines in the Salinas Valley groundwater basin. Some of these projects have been completed, and others are underway.

- The MCWRA completed the Castroville Seawater Intrusion Project (CSIP) in 1998. This project injects recycled water into the aquifer to establish a hydraulic barrier to further seawater intrusion.

- The SVWP includes improvements and operational changes to management of flows in the Salinas River. It will recharge the Salinas Valley groundwater basin, halting seawater intrusion, as well as avert a maximum flood event at Nacimiento Reservoir Dam. The SVWP is currently underway; construction on the Nacimiento Dam Spillway Modification Component began in April 2008. This component will enlarge the spillway and install a rubber spillway gate to allow the reservoir to store more water, and release more water during the late spring and summer months. It is expected to be completed in the fall of 2009. The second component of the SVWP is construction of a rubber dam on the Salinas River near Marina to allow diversion of river water from late spring to early fall for treatment and piping to nearby farms for irrigation. An average of 9,700 AFY of water is expected to be made available by pumping pooled water behind the dam into the existing CSIP distribution pipeline for delivery to agricultural users. This will substantially reduce groundwater pumping during those periods and thereby allow the aquifers to retain the pressure needed to keep out seawater intrusion. The second component will begin construction after completion of the Nacimiento Dam work.

El Toro Creek Subwatershed

Surface water in the El Toro Creek portion of the Salinas Valley watershed drains approximately 41 square miles to El Toro Creek, which flows northeastward into the Salinas River. The longest distance for water to run off to the Salinas River is 16.8 miles via Calera Canyon and El Toro Creek. The 100-year flood velocities on El Toro Creek range from 3.9 to 8.8 feet per second (Monterey County Water Resources Agency 2003). High infiltration rates and low precipitation levels result in little surface runoff. Most streams in the El Toro Creek subwatershed are intermittent, flowing less than 25% of the year. Much of the upper portion of the subwatershed is composed of steep slopes and narrow alluvium-filled valleys. The lowest portion of the subwatershed is the most highly urbanized. Large amounts of sediment and debris were deposited in the stream channel during the 1995 and 1998 floods, resulting in increased flooding on lower El Toro Creek (Monterey County Water Resources Agency 2003).

Water supply for the El Toro Creek subwatershed is derived entirely from groundwater, which is composed of the Corral de Tierra Area subbasin. The Corral de Tierra Area subbasin is a 22,300-acre area within the Salinas Valley groundwater basin, located in the eastern portion of the former Fort Ord and other unincorporated areas. Multiple water-bearing units include poorly consolidated marine sandstone and alluvial material along creeks (California Department of Water Resources 2004e).

The MCWRA has divided the El Toro Creek subwatershed into five planning areas: Corral de Tierra, El Toro Creek, San Benancio Gulch, Watson Creek, and Calera Creek. Groundwater levels in some portions of the El Toro Creek subwatershed have declined severely in recent years. Several groundwater studies have been conducted in El Toro Creek to determine the extent of groundwater depletion. A 2007 groundwater study concluded that additional

groundwater production may be feasible in the Upper Corral de Tierra Valley where the Basal Sand unit is a relatively productive aquifer (Geosyntec Consultants 2007). The remaining four subareas have poor groundwater potential. As such, the study recommends expansion of the County's restrictive B-8 zoning into these areas.

In addition to water quantity concerns, only a few areas in the region are connected to sewer systems; consequently, most parcels use septic systems for wastewater disposal. This has exacerbated the poor groundwater quality in the El Toro Creek watershed by contributing to nitrate contamination. Additionally, groundwater pumped from the El Toro Creek watershed generally contains arsenic at concentrations exceeding primary drinking water standards.

Seaside Area Groundwater Subbasin

The Seaside Area groundwater basin contains 25,900 acres within the coastal communities of Seaside and Marina, as well as the western portion of the former Fort Ord. The overall Seaside groundwater basin supplies the Laguna Seca Water Company, the Bishop Water Company, the Carmel Valley Mutual Water Company, and the Laguna Seca Golf Course (all currently operated by the California-American Water Company [Cal-Am]); the Society for the Prevention of Cruelty to Animals, the County park, and various unincorporated and incorporated areas.

No major surface water features are located within the basin. Ultimately draining to the Salinas River to the north, the Seaside Area groundwater basin is composed of a number of smaller subbasins. Multiple water-bearing units in the Seaside basin include poorly consolidated marine sandstone and dune sand deposits. Groundwater recharge is from deep percolation of local precipitation, subsurface inflow from the Corral de Tierra Area subbasin to the east, and seepage of minor amounts from creeks (California Department of Water Resources 2004f).

The Laguna Seca planning area is a 4,320-acre portion of the Seaside Area groundwater basin that parallels SR 68. Almost all groundwater production is from the Santa Margarita aquifer in the eastern half of the planning area. Water levels in that aquifer have been chronically declining (Monterey Peninsula Water Management District 2005b). The Seaside Area and El Toro Creek groundwater subbasins are hydrogeologically contiguous in the area along SR 68, which has suffered the greatest declines in groundwater levels.

Cal-Am presently operates eight wells in the Seaside Area groundwater basin, and ten wells currently are operated by non–Cal-Am entities. Groundwater conditions in the Seaside Area basin have deteriorated in the past decade. Groundwater extraction near the coast increased markedly beginning in 1995, resulting in declining water levels and depletion of groundwater storage. Storage depletion of an aquifer occurs when groundwater extraction exceeds groundwater recharge, which leads to the decline in the groundwater volume held in storage.

During 2006, a total of 13,400 acre-feet was reported produced in wells from the Seaside aquifer, including 3,710 acre-feet by Cal-Am and 1,296 acre-feet by other parties (MPWMD 2006).

In recent years, California State Water Resources Control Board (SWRCB) regulation has limited available surface water supplies from the Carmel River, such that new water supply sources must be developed before additional regional growth can be supported (California Department of Water Resources 2005). The State Water Board has limited diversion from the Carmel River in order to protect fish habitat. As a result, Cal-Am has increased pumping from the Seaside Area groundwater subbasin, exceeding the sustainable yield (refer to the groundwater adjudication discussion under Section 4.3.2.5 below). The following projects are underway to relieve pressure on the Seaside groundwater basin.

- Cal-Am and MPWMD's Seaside Basin Aquifer Storage Recovery (ASR) project is described in detail in Section 4.3.2.5 ("Carmel River Watershed").
- Cal-Am's Coastal Water project proposed a desalination plant at the Moss Landing Power Plant (MLPP) that will supply about 11,730 AFY to allow Cal-Am to meet the SWRCB's order to reduce its reliance on the Carmel River. It is under consideration by the California Public Utilities Commission.
- The Marina Coast Water District (MCWD) has built a new water desalination plant that has a peak capacity of 300,000 gallons per day when in operation (Marina Coast Water District 2008).
- The MPWMD currently is evaluating the feasibility of a desalination plant in Sand City, which would take 15 million gallons per day (mgd) of saline groundwater from the coastal beachfront and produce 7.5 mgd of potable water (Monterey Peninsula Water Management District 2004).

Carmel River Watershed

Unlike the Salinas River, the Carmel River flows in a well-defined channel for much of its 36-mile length. Most of the river's watershed (approximately 65%) is upstream of the confluence with its major tributary, Tularcitos Creek (Exhibit 4.3.4). Downstream of the Tularcitos Creek confluence (at about 15 river miles, measured from the river's mouth), the channel widens from 20 to 150 feet. Alluvial deposits that comprise a groundwater basin underlie this downstream reach of the channel.

The Carmel River drains a 255-square-mile watershed. Average annual runoff (from 1962 to 2006) is 78,190 acre-feet (Monterey Peninsula Water Management District 2007). Its larger tributaries include Garzas Creek, San Clemente Creek, Tularcitos Creek (with its tributaries, Choppiness and Rana Creeks), Pine Creek, Danish Creek, Cachagua Creek, and the Miller Fork. The Carmel River originates in the Santa Lucia Mountains, with headwaters at 4,500- to 5,000-foot elevations. The upper reaches flow northwesterly, generally following the trend

of the fault block structure of the Coast Ranges, to a confluence with Tularcitos Creek. From this point, the lower reach flows in a more westerly direction through the Carmel Valley and into the Pacific Ocean at Carmel Bay, just south of the City of Carmel-by-the-Sea (Monterey County Water Resources Agency 2003).

The average gradient of the upper reach from the source to the confluence with Tularcitos Creek is about 320 feet per mile, and the stream is actively eroding its bed. Valley trenching is particularly evident in the Tularcitos Creek and Cachagua Creek subwatersheds. The average gradient of the lower reach through the Carmel Valley is only about 40 feet per mile. In portions of the downstream reach, the valley is braided with discordant channels, and evidence exists that the river has meandered considerably over the floodplain in the recent geological past (Monterey County Water Resources Agency 2003).

Before European settlement, the Carmel River was in a state of dynamic equilibrium. Periodically, extremely large floods deposited large quantities of sediment in the river's lower reaches. In succeeding years, the river would gradually cut down into the sediments, forming an incised, meandering channel until a large flood again altered the channel. This natural cycle of disturbance on the Carmel River has been altered by human activities.

River flows in 1995 were among the highest recorded on the Carmel River in the past 60 years. In March 1995, a 30- to 50-year flood event occurred in the Carmel River watershed, and many low-lying areas were flooded. Commercial properties and hundreds of homes were inundated at the mouth of the Carmel Valley and in residential neighborhoods in Mission Fields, Hacienda Carmel, Valley Greens, Robles del Rio, and Camp Steffani. Floodplain areas along Cachagua Creek also were submerged by several feet of water. The March 1995 flood caused the SR 1 bridge and several private bridges to collapse, and also resulted in damage to wells (Monterey County Water Resources Agency 2003).

Following the high flows in 1995, many private property owners and several public agencies completed repair projects related to flood control and streambank stabilization. At the mouth of the Carmel Valley, a multiagency habitat enhancement and flood control project was initiated. To reduce flood hazards in Mission Fields and implement components of both the lagoon enhancement plan and the Lower Carmel Valley Flood Control Project proposed by the MCWRA, short segments of the protective levee were removed along the south side of the river. Farther upstream, the United States Army Corps of Engineers (USACE) issued a regional emergency permit to the MCWRA for several streambank repair projects along 15 miles of the lower Carmel River. In conjunction with the MCWRA, the MPWMD issued river work permits to rebuild banks to pre-flood conditions, including the addition of native willows and structural protection from riprap, gabion baskets, concrete cubes, and rubble. The Natural Resources Conservation Service (NRCS) funded streambank repair projects.

In February 1998, streamflows in the Carmel River were again very high. The river flooded low-lying areas and caused substantial bank erosion. Although

some areas repaired after the 1995 floods maintained their integrity, others were severely eroded again. Bank repair and property restoration began again in 1998 under a regional general permit issued by the USACE.

Only a small amount (40 acre-feet) of surface water diversion by a non–Cal-Am party from the Carmel River was reported by MPWMD (Monterey Peninsula Water Management District 2006).

An additional water supply issue in Carmel Valley is the potential unquantified impacts of increased use and demand by riparian users along the Carmel River. No action by the SWRCB or the courts has evaluated the cumulative impacts on the public trust resources by individual well owners since the time of the MPWMD Water Allocation Program EIR (Monterey Peninsula Water Management District 1990). As the allocated water has been exhausted, an increase in claims of riparian rights has been observed. It is unclear whether these claims represent an increased demand on the water resource system and whether environmental impacts are associated with the potential increased demand.

San Clemente Reservoir

The San Clemente Dam, constructed in 1921, is a concrete arch dam with a 300-foot crest, 106 feet above the bedrock and 65 feet above the streambed. The dam was constructed and is operated by Cal-Am to supply water for the growing needs of the Monterey Peninsula. The storage capacity has decreased dramatically from the original 2,260 acre-feet to 150 acre-feet. As a result of an order from the Division of Dam Safety to draw down water levels in order to avoid potential dam failure, the reservoir no longer provides water to the system. (Monterey County Water Resources Agency 2007).

Los Padres Reservoir

The Los Padres Dam was built in 1949 by Cal-Am, 6 miles upstream from the San Clemente Dam, to augment the water supply. This dam is a rock- and earth-filled dam with an overall crest measurement of 680 feet. There is a concrete spillway to allow excess water to exit the reservoir. The normal outflow is controlled by a system of pipes and valves during the rainy season. The lake extends 2 miles into wooded backcountry with an original storage capacity of 3,000 acre-feet that has dwindled to 1,500 acre-feet due to sedimentation (Monterey County Water Resources Agency 2003).

Groundwater

The Carmel River groundwater basin lies along the downstream portion of the Carmel River (Exhibit 4.3.5). Covering approximately 5,160 acres, the groundwater basin consists of younger alluvium and river deposits and older alluvium and terrace deposits. The primary water-bearing formation is the younger alluvium, with a typical thickness of 50 to 100 feet (California Department of Water Resources 2004g).

The Carmel River is the primary source of recharge, constituting 85% of the net recharge. With the presence of surface water, groundwater levels recover

rapidly. After water level recovery, levels range from 5 to 30 feet below the land surface. During normal years, water level fluctuations range from 5 to 15 feet while experiencing declines of up to 50 feet below land surface during droughts (California Department of Water Resources 2004g). The level of groundwater in the aquifer is influenced by pumping from wells operated by Cal-Am, as well as by evapotranspiration of riparian vegetation, seasonal infiltration, and subsurface inflows and outflows. Cal-Am is the primary urban water supplier to about 100,000 residents on the Monterey Peninsula area. In 2006, Calm obtained about 75% of its water from wells in the Carmel Valley basin. The remaining 25% is supplied from wells in Seaside Area basin aquifer (22%) and the Laguna Seca subarea (Monterey Peninsula Water Management District 2006).

During the dry season, pumping of wells has caused significant declines in the groundwater levels of the Carmel River groundwater basin. Because streamflow and groundwater supplies are directly linked, lowered groundwater levels diminish surface flows in the river. During normal water years, surface flow in the lower Carmel Valley becomes discontinuous or nonexistent in summer and fall. This condition has been cited as causing adverse impacts on native fish populations (most notably the central coast steelhead) and riparian habitat in the lower reaches of the river's course.

During 2006, a total of 13,400 acre-feet was reported produced in wells from the Carmel Valley aquifer, including 10,954 acre-feet by Cal-Am and 2,435 acre-feet by other parties (Monterey Peninsula Water Management District 2006).

As described above, SWRCB regulation has limited diversion from the Carmel River and thereby affected the rate of pumping from the Seaside Area groundwater basin (refer to the groundwater adjudication discussion under Section 4.3.2.5 below). As a result of the need to meet the water demand of the Monterey Peninsula without overusing either the Carmel River or the groundwater basin, the following projects are underway or proposed.

- Cal-Am's Coast Water Project, including a pilot desalination facility at the MLPP.
- Cal-Am and MPWMD's Seaside Basin ASR Project, which involves diverting excess winter flows from the Carmel River for injection into the Seaside aquifer.
- MPWMD currently is evaluating the feasibility of a desalination plant in Sand City, which would take 15 mgd of saline groundwater from the coastal beachfront and produce 7.5 mgd of potable water (Monterey Peninsula Water Management District 2004).

North County Watersheds

The North County watersheds lie between the Salinas River and Pajaro River watersheds, straddling a watershed divide that is not topographically well

defined, and includes the Elkhorn Slough watershed (Exhibit 4.3.6). Elkhorn Slough receives drainage from most of the area.

The Elkhorn Slough drainage and its major tributary, Carneros Creek, extend beyond the county's eastern boundary into San Benito County. The central portion of the watershed includes the Elkhorn Highlands, a hilly upland area transected by several smaller valleys—all of which drain into the slough. North of Elkhorn Slough, and tributary to Elkhorn Slough, is McClosky Slough. To the south, Moro Cojo Slough, which is larger than McClosky Slough, drains a large subarea. Its brackish waters drain northward into the Elkhorn Slough near its entry to Monterey Bay. This complex system of estuaries and uplands combines to create a regionally significant constellation of diverse habitats (see Section 4.9, Biological Resources).

The major water feature north of the Elkhorn Slough watershed is the Pajaro River. Although the Pajaro River enters Monterey Bay at the tip of northern Monterey County where it forms the boundary with Santa Cruz County, most of its large watershed extends into Santa Cruz, Santa Clara, and San Benito Counties. The Pajaro River drains an area of about 1,187 square miles, with headwaters in the Gabilan and Diablo Mountains. Near its mouth at Monterey Bay, the river flows through Watsonville, Harkins, Struve, and McClosky Sloughs in Santa Cruz County. Annual streamflow as recorded at the Chittenden gauging station averaged 124,640 AFY (Pajaro Valley Water Management Agency 2001).

The Special Flood Hazard Area (SFHA) of the Pajaro River affects several hundred acres on both sides of the river channel. Much of this area is farmland, and the community of Pajaro is located entirely within the SFHA. In recent years, flood events have caused tens of millions of dollars in property damage, displaced thousands of persons, and damaged significant riparian and aquatic habitat. In 2002, a Phase 1 report for the Pajaro River Watershed Study was completed to model the hydrologic and sediment regimes in the Pajaro River watershed in order to identify flood control measures (Pajaro River Watershed Flood Prevention Agency 2002). Existing land uses within the flood zone remain at risk until flood control improvements are made. Future growth in the Pajaro community would increase the exposure of persons and property to flood hazards.

Significant constraints affect water quality and quantity in North County. Only a few areas in the region are connected to sewer systems; consequently, most parcels use onsite septic systems for wastewater disposal. This has exacerbated the poor water quality in North County by contributing to nitrate contamination. Subdivisions and second units are prohibited in a portion of Prunedale (B-8 zoning overlay over portions of the Granite Ridge and Highlands South areas) due to nitrate contamination and limited water availability.

Groundwater

Groundwater in the North County can be divided into five planning areas with varying hydrogeologic and water use characteristics: the Pajaro, Springfield

Terrace, and Highlands North planning areas are managed by PVWMA; and the Highlands South and Granite Ridge planning areas are managed by MCWRA (Exhibit 4.3.7). The Highlands North and South areas reflect the jurisdictional boundary between the PVWMA and the MCWRA. This jurisdictional boundary is based on hydrogeology because relatively impermeable mud fills a deep valley underlying Elkhorn Slough and acts as a barrier to groundwater movement between the Salinas and Pajaro Valleys. Local recharge in the area may flow into either the Pajaro Valley groundwater basin or the Salinas Valley groundwater basin.

The Granite Ridge community has experienced problems with water quality and supply. The Granite Ridge area is characterized by fractured granite in lieu of the alluvial soils that make up the Salinas groundwater basin. The County of Monterey and the County Water Resources Agency are assessing potential solutions including new delivery infrastructure and financing options. Other agencies are also assessing the situation, including the Pajaro Sunny Mesa Community Services District and the Pajaro Valley Water Management Agency.

A small portion of the 76,800-acre Pajaro Valley groundwater basin, composed of unconsolidated terrace deposits, is located within Monterey County. The primary sources of recharge to the Pajaro Valley groundwater basin are infiltration of rainfall, seepage of streamflow from the Pajaro River and its tributaries, and percolation of irrigation water. Groundwater supply in North County is limited, however, by a combination of natural conditions, including relatively small aquifers, limited recharge potential, and impermeable layers between subareas.

As documented in numerous groundwater studies conducted over the past 55 years, the Pajaro Valley groundwater basin is in an overdraft condition (Pajaro Valley Water Management Agency 2002). In historic time, artesian conditions existed at the coast (meaning that groundwater levels were high enough in past years that groundwater surfaced in some of the coastal areas). By the 1940s, however, following the major development of groundwater resources to support the agricultural industry, some wells were still artesian but only during winter months. By the 1970s, water levels west of Watsonville were consistently below sea level from approximately May to December, lending the conditions necessary for the occurrence of seawater intrusion (Pajaro Valley Water Management Agency 2002).

The area is used primarily for growing strawberries, a crop that typically requires high levels of irrigation and nitrogen-based fertilizers but that also compromises the aquifer with high nitrate concentrations and saltwater intrusion—especially in the Pajaro and Springfield Terrace planning areas. Nitrate contamination is a major concern in drinking water sources in the Pajaro Valley groundwater basin (Pajaro Valley Water Management Agency 2002).

Other Watersheds

Estrella Watershed

The Estrella River is a main tributary of the Upper Salinas River, located in northeast San Luis Obispo County and the southeast corner of Monterey County. The watershed is bounded by mountain ranges and low hills, including the Cholame Hills, Diablo Range, Temblor Range, and La Panza Range. Soils ranging from silty clays to coarse sandy loams are derived from weathered sandstone and shale and alluvium. The landscape is influenced by movement along the San Andreas Fault, which runs through the Cholame Valley and the town of Parkfield.

Land in the watershed is used predominantly for agricultural production, including dryland range, production of dryland grain and hay, and irrigated vineyards and orchards. Land is predominantly privately owned, numbering approximately 600 farms and ranches in the watershed.

The Cholame Valley groundwater basin is a 39,800-acre watershed located partially within Monterey County. The basin is comprised of Quaternary alluvium and drains toward the Salinas Valley.

Big Sur Coast Watershed

The Big Sur Coast watershed includes the 61-square-mile drainage area of the Big Sur River, on the coastal side of the Santa Lucia Mountains. Water from the upper basin is funneled through the Big Sur Gorge in the eastern portion of Pfeiffer Big Sur State Park and enters the 12.5-square-mile Lower Big Sur River basin. The lower basin includes approximately 8,000 acres on the west slope of the Santa Lucia Mountains. The river flows in a northerly direction through the Big Sur Valley, 7.6 miles to the mouth in Andrew Molera State Park. Pfeiffer Ridge separates the Big Sur Valley from Sycamore Canyon and the ocean to the west. Major tributaries include Pfeiffer-Redwood , Juan Higuera, and Pheneger Creeks. The Post Creek drainage defines the southern limit of the basin, which is bounded on the east by Pine Ridge. At the north end of the valley, the Lower Big Sur River again has an extensive floodplain and forms a lagoon as it nears its mouth.

The average annual runoff of the Big Sur River is 64,900 AFY based on United States Geological Survey (USGS) stream gauge records, with peak flows in January (Monterey County Water Resources Agency 2003). The *Big Sur River Protected Waterway Management Plan* (Monterey County et al. 1983) states that there are no significant water storage facilities within the basin, and water is supplied by shallow wells or stream diversions from the major tributaries. Septic tanks near the river (including the state park) are a concern for water quality.

In October 2006, the Monterey Bay National Marine Sanctuary (MBNMS) released a comprehensive watershed management and ecosystem plan, the *Big Sur Coastal Ecosystem Action Plan,* as part of the MBNMS draft management plan (Monterey Bay National Marine Sanctuary 2006). The Joint Management Plan Review is a multiagency task force convened to prepare a series of

management plans. The task force includes MBNMS; the Bureau of Land Management (BLM); the California Coastal Commission; California State Parks; the California Department of Transportation (Caltrans); the County; and the U.S. Forest Service, Los Padres National Forest.

4.3.2.3 Water Quality

Land use and water resources are unequivocally linked. A variety of natural and human factors can affect the quality and use of streams, lakes, and rivers. The type and intensity of land use developed within a region will have a strong influence on receiving water resources.

Pollution sources that affect surface water may be separated into two categories: point and nonpoint sources. Point sources include sewage treatment plants, industrial discharges, or any other type of discharge from a specific location (commonly a pipe) into a stream or water body. By contrast, nonpoint sources—which include runoff from lawns, roads, or fields—are diffuse sources of contaminants that are not as easily identified or measured as point sources. Typically, the contaminant concentration from nonpoint sources will increase as flow increases during storm runoff; conversely, concentrations from point sources generally decrease through dilution during storm runoff. The type and severity of these pollution sources often are directly related to human activity, which can be quantified in terms of the intensity and type of land use and the associated densities of humans and livestock in source-water areas.

Poor water quality can adversely affect natural resources, including aquatic, coastal, terrestrial, and marine ecosystems. Point and nonpoint source pollution can cause destruction or physical alteration of vegetation and degraded water quality (levels, clarity, and temperature), resulting in reduced diversity and abundance of aquatic and riparian organisms (California Coastal Conservancy 2006). Section 4.3.3, Regulatory Framework has a discussion of water quality regulations and a list of impaired water bodies within the county.

Urban Runoff

Urban areas can contain up to 90% hard surfaces, such as rooftops and pavement, where water collects and quickly runs off. As water passes over hard, impermeable surfaces in the watershed, it can pick up a variety of potential pollutants—such as fertilizers and pesticides (used for landscaping), sediments, construction chemicals (oils and grease, paint, and solvents), nutrients, toxic chemicals (for industrial uses), and pathogens—which can be transported to the region's rivers, wetlands, and harbors. Urban runoff, often called "stormwater pollution," is difficult to prevent because this nonpoint source pollution is spread throughout the watershed. Any deposits of natural (sediment) and human-made pollutants (e.g., oils, pesticides, and heavy metals) in these areas are flushed by rainwater, landscape irrigation, and other means down storm drains and directly into streams, rivers, or Monterey Bay. This problem becomes worse with

population growth and urbanization because such activities alter natural hydrologic processes.

Salinas River Watershed

Urban runoff has the potential to directly affect Salinas River waters. Urban runoff transported by the river also affects water quality in Monterey Bay. Water quality in urban runoff is not currently monitored except in the city of Salinas as part of National Pollutant Discharge Elimination System (NPDES) Phase I requirements. See the discussion of the NPDES program under "Clean Water Act" below.

Carmel River Watershed

Relatively little urbanization has occurred in the Carmel River basin. However, because most of the urban uses are close to the river, they present the potential for direct impacts on surface water quality.

North County Watersheds

There is relatively little urban land use in the North County. Urban runoff sources are limited to the areas of commercial development and small communities at Moss Landing, Castroville, Pajaro, and Prunedale. However, because of their proximity to water bodies throughout the North County area, such as the Pajaro River, Elkhorn Slough, and creeks and sloughs tributary to Elkhorn Slough drainage system, these limited urban uses have the potential to generate significant adverse water quality impacts.

Groundwater Quality

Groundwater is an important water resource in Monterey County. Groundwater recharge is commonly concentrated along undeveloped river channels or beneath lakes/reservoirs where water is able to seep through relatively permeable sediments on the bed. Groundwater basins are horizontally divided into aquifers, which are composed of the most permeable strata. This may be porous sandstone, coarse sandy or gravel alluvial deposits, or fractured rock. Such layers often form aquicludes, or barriers to flow that divide aquifers. In Monterey County, it is not uncommon for wells to penetrate several different aquifers at discrete intervals. Typically, the uppermost aquifer is unconfined by a layer above, while deeper aquifers are more likely to be confined and under pressure. Groundwater flow is strongly tied to the underlying geologic structure, including the pattern of folding and faulting.

Groundwater is tied to the hydrologic cycle, since recharge comes from seepage of surface water through lakes, rivers, and overland flow. However, groundwater basins typically have a much larger volume than surface water reservoirs. They are capable of storing large quantities of water developed through infiltration and seepage of water over a very long time, where storage volume is not lost to the transient effects of runoff and evaporation. Depletion is mainly through diversion of surface water and pumping.

Overall groundwater quality throughout Monterey County is generally considered excellent to good. However, localized water quality problems exist from seawater intrusion and nitrate contamination, most prevalent in agricultural areas. Nitrate contamination levels have been increasing over time. This problem has had a significant local impact on domestic water supplies in the Salinas Valley and North County areas. Each year, the California Department of Food and Agriculture conducts a sampling of agricultural wells throughout the county, and to date it has not reported any problems with synthetic organic pesticide contamination of wells, such as those affecting other agricultural areas of California.

Other problems similar to those found in many communities throughout the state include urban runoff and leaking of underground tanks. These problems have resulted in very limited impacts on supplies of drinking water. Leaks from Underground Storage Tanks (USTs) or Leaking Underground Fuel Tanks (LUFTs) often are cleaned up on an individual site basis per the County's Environmental Health Division or other local regulatory jurisdiction, with oversight by and in compliance with guidelines of the Central Coast Regional Water Quality Control Board (RWQCB). There are also some larger comprehensive cleanup efforts, such as the groundwater contamination cleanup operations at the former Fort Ord Army Base.

The five most prominent water quality problems affecting water basins in Monterey County are: erosion and sedimentation, pollutants in urban runoff, nitrate contamination, salinity/chloride ions resulting from seawater intrusion, and inorganic and secondary constituents.

Erosion and Sedimentation

Erosion problems are widespread in Monterey County, partly because of the erosive nature of local soils. Erosion results from natural conditions and land use practices. The four common causes of excessive erosion and sedimentation in the county are listed below.

- Farming on steep slopes and erosive soils can lead to soil erosion problems. Growing strawberries on the sandy, erosive, hilly soils of the North County and Elkhorn Slough areas has resulted in erosion problems that are currently being addressed.
- Dirt roads that have been graded on slopes without proper design or facilities to accommodate storm runoff are a common source of erosion. Heavy rain can erode slopes undercut for roads or erode the road surface, sending sediment downstream into creeks. Erosion often occurs where dirt roads cross intermittent creeks. Many of these dirt roads are located on private property in the county. Unmaintained or abandoned dirt roads are an especially severe source of erosion.
- Excess erosion occurs when the hydrology (and hydraulic characteristics) of a river or stream is altered (by water management practices and/or land uses upstream) to change the suspended sediment load in water as it flows through the channel. Water with diminished sediment load will erode banks and

channels, altering the channel bottom and destabilizing the stream or riverbank.

- Areas that have been denuded of vegetation by fire, overgrazing, or clearing are also subject to erosion. Grading prior to development without proper erosion control measures can cause erosion and downstream sedimentation, especially during the rainy season.

Salinas River Watershed

Erosion and sedimentation problems in the Salinas Valley often are related to farming activities because of the dominance of intensive agriculture and its reliance on irrigation. Agricultural management practices are uneven throughout the Salinas Valley. Outreach and advisory programs conducted locally by the Resource Conservation District (RCD) and NRCS, to assist growers in controlling erosion, applying fertilizers and crop nutrients according to crop demand, and irrigating more efficiently and cost-effectively, have succeeded in greatly improved practices in many areas. Expansion of these programs would help reduce erosion and sedimentation impacts to an even greater degree.

In much of the Salinas Valley, particularly on the valley floor and alluvial fans where irrigated agriculture is dominant, the local hydrology has been converted to a conveyance system of straight, unlined ditches. The braided streams that drained the eastern slopes of the valley, for example, have been straightened and deepened into channels to allow cultivation of fields. These ditches convey water at a faster rate, resulting in unnaturally high rates of erosion upstream and higher rates of deposition downstream. Consequently, the ditches must be maintained repeatedly after every rainy season. In addition to the adverse environmental impacts, this self-perpetuating system of erosion/sedimentation and repeated maintenance incurs significant costs to farmers as well as to the County, which is burdened annually with clearing downstream roads and culverts of sediments.

Carmel River Watershed

As in the Salinas Valley, the presence of agriculture in the Carmel River basin creates the potential for erosion and sedimentation from farming activities. Agriculture is much less extensive in the Carmel Valley than in the much larger Salinas Valley. The primary source of erosion is bank failure associated with flooding events and destabilization of riverbanks associated with land use activities along the river.

North County Watersheds

North County has areas with significant erosion problems. In the interior hills of North County, soils and topography are conducive to erosion, especially where intensively cultivated strawberries are grown on sandy erosive soils on sloping lands and without proper attention to erosion control. In recent years, increased strawberry farming has resulted in intensive

cultivation on sloping terrain. Strawberries have a high demand for water, relative to most other crops grown in the county. Cultivation practices have led to high erosion/sedimentation rates, primarily in the Elkhorn Highlands and to a lesser extent in the Carneros Creek watershed. This problem not only incurs a significant loss of valuable topsoil, but also potentially affects freshwater wetlands and ponds in the upper reaches of Elkhorn Slough (which contain state and federally listed endangered amphibian species) and riparian habitats in lower Carneros Creek. The RCD is assisting farmers in addressing this problem.

Nitrate Contamination

Nitrate contamination was not a widespread problem until the use of synthetic fertilizers became common shortly after World War II. Organic fertilizer (manure) used in the Salinas Valley before the 1950s provided its own source of organic carbon, which allowed ammonia sulfate and phosphorous in manures to convert to a harmless gas, organic nitrogen. Synthetic fertilizers, however, do not breakdown in this manner. Instead, the nitrogen in chemical fertilizers oxidizes into nitrate as it percolates down into the root zone. The resulting nitrate is an inert form, not subject to further chemical conversion. It remains in the soil or enters the groundwater with subsequent irrigation or is flushed into irrigation drainage ditches to join other nitrate-laden waters flowing toward creeks, rivers and estuaries, and eventually into Monterey Bay.

Nitrate is commonly measured in terms of concentration of nitrate (NO_3) and concentration as nitrogen (N). The state and federal Maximum Contaminant Level (MCL) for NO_3 in drinking water is 45 milligrams per liter (Mg/l). This is also represented as 10 Mg/l for total N.

Nitrate contamination occurs commonly in unconfined and semiconfined aquifers that underlie areas of intense agricultural activity, where excess applied fertilizer can migrate to the groundwater body by leaching from the soil or by deep percolation from surface water bodies fed by agricultural runoff. The widespread use of nitrogen-based fertilizers in the intensive, high-productivity irrigation agriculture of vegetable and truck crops practiced in the Salinas Valley has greatly accelerated in the past 20 to 50 years. However, a cooperative effort between the MCWRA and the USGS has found that nitrates are present in the Salinas Valley basin in concentrations generally below the MCL threshold (U.S. Geological Survey 2005).

Elevated nitrate levels also exist near septic systems and wastewater treatment plants, which contain high nitrogen concentrations in their effluent. The most common cause of septic system failure is inadequate maintenance or degradation of an aging system. Systems also can fail to function if they are sited in conditions that are adverse to infiltration and dispersal of effluents, such as areas of thin soil, steep slopes, or high groundwater, or where too many systems are sited too close together. In addition, septic systems are a contaminant source even when they function properly. Residences that obtain their water supplies from shallow domestic wells often also use septic systems with associated leach fields, thereby increasing their risk factor for nitrate contamination of their

drinking water supply. Another source of nitrate contamination is sewage treatment ponds located in flood zones, such as those in the Salinas River basin. During periods of exceptionally high floods (such as the flows of 1995 and 1998), sewage from these ponds is conveyed in floodwaters and carried downstream. Under normal conditions, nitrate from these ponds also can percolate into the groundwater. Finally, waste from livestock is a common source of nitrate, especially in areas where they are kept in relatively high concentration such as dairy farms, feedlots, and horse stables.

There are two available technologies for removal of nitrate in groundwater: ion exchange and reverse osmosis. Both of these methods are very expensive, particularly if applied to groundwater basins the size of those in Monterey County. Filtration systems are available for individual users to treat water at the "point of use," which is at the individual residence. But disposal of the effluent is a problem. The Central Coast RWQCB has placed restrictions on onsite disposal by individual users, and state and federal law prohibits the use of treatment systems by individual users served by regulated water systems (i.e., four connections or more). Treatment to remove nitrates and other contaminants remains very cost-prohibitive. For this reason, the common solution in most areas of the county is to drill a new and deeper well with a deep seal to prevent contaminated water from entering the perforations. All of the Salinas Valley water utilities, as well as many small water systems throughout the county, have implemented this solution. It is unknown how long this approach will be successful; in some areas, it may have the undesirable effect of drawing the nitrates deeper into the aquifer system.

Sufficient information is available, and initial steps have been taken, toward developing best management practices (BMPs) that would reduce the rate of nitrate contamination in the Salinas Valley basin (and other areas of the county). Nitrate contamination can be partially reduced by improved soil management and water conservation practices adopted by farmers. Achieving this level of mitigation almost certainly necessitates a basin-wide program to assist development of more cost-effective management practices, based on the already successful programs in North County and along Chualar Creek, in which local farmers and landowners partner with the RCD and NRCS. Even so, nitrate contamination will continue at significant rates as long as chemical fertilizers are used in irrigated agriculture.

Salinas River Watershed

Nitrate contamination is present throughout the Salinas Valley basin in varying concentrations. The MCWRA has documented increasing trends of nitrate levels, and levels are anticipated to increase with time. All of the Salinas Valley cities have had to replace domestic water wells due to high nitrate levels that exceed the drinking water standard of 45 Mg/l established by state and federal standards. New wells typically are drilled to a depth of 1,000 feet or more and sealed to at least 450 feet.

The MCWRA reports that nitrate concentrations in the Salinas Valley are highest in the 180-foot aquifer. The 400-foot aquifer has low nitrate levels because the intervening clay layers prevent nitrates from percolating farther into the groundwater table (Monterey County Water Resources Agency 2001). Table 4.3-2 provides a summary of nitrate contamination in the Salinas Valley groundwater aquifers. In nearly 30% of wells sampled throughout the Salinas Valley, nitrate exceeds the 45-Mg/l MCL for drinking water (Exhibit 4.3.8). In some wells, nitrate has reached several hundred Mg/l. Groundwater in these areas of the valley is sufficiently high in nitrate to function as effective fertilizer without further chemical additives. These statistics strongly indicate that nitrate contamination has affected the upper aquifer layer throughout the Salinas Valley basin.

Table 4.3-2. Summary of Nitrate-NO_3 Concentrations for 367 Study Wells in the Salinas Valley Basin (1996)

Subarea	Number of Wells Sampled	Nitrate as NO_3 (mg/l)	Number of Wells Greater than DWS[a]	Percent of Wells Greater than DWS[a]
100-Foot/400-Foot Aquifer	200	22	23	12
East Side Aquifer	57	66	25	44
Forebay Aquifer	78	48	34	44
Upper Valley Aquifer	32	74	17	53
Total Areas	367	38	99	27

[a] DWS = Drinking water standard. The MCL for NO_3 in drinking water is 45 Mg/l.

Source: Monterey County Water Resources Agency 2001.

Carmel River Watershed

In 1983, based on nitrate levels in groundwater identified in a study included in the *Carmel Valley Master Plan*, the County Board of Supervisors adopted a resolution that prohibits further subdivision of lots within four subbasins of the Carmel River. Currently, each property owner in the subbasins is restricted to development of one single-family dwelling (or equivalent). The County also adopted a threshold of 25 Mg/l as the standard for the limits of nitrate concentration in the basin. (Monterey County 2006)

The MPWMD has been monitoring nitrate levels at several wells in the alluvial aquifer of the Carmel River basin since 1981. Results indicate that nitrate levels are well within established standards, with no discernible trend of deteriorating water quality. Under normal conditions, the Carmel River basin flushes out each year when seasonal water levels are restored. This process usually prevents nitrate from accumulating in the basin. The relatively high nitrate levels identified in the four subbasins in 1982 may reflect episodic effects brought on by local conditions or drought. The MPWMD monitoring data suggest that the elevated levels within the four subbasins do not represent basinwide nitrate contamination similar to the

widespread contamination found in North County and the Salinas Valley basin.

North County Watersheds

There are approximately 680 small water systems in North County. This includes all wells serving from 2 to 200 connections. Of these, 77 (about 11% of the total) currently exceed the 45-Mg/l nitrate standard. Approximately 165 systems (about 23% of the total) have nitrate levels greater than half but not in excess of the standard (23–45 Mg/l) The remainder of the systems (about 66% of the total) have nitrate levels of from 0 to 22 mg/L (Monterey County Health Department 2008b).

Seawater Intrusion

Seawater intrusion is the migration of ocean water inland into a freshwater aquifer. This condition occurs when a groundwater source (aquifer) loses pressure, allowing the interface between freshwater and seawater to move into the aquifer. Reducing pressure also can allow seawater to seep into the aquifer from estuaries such as Elkhorn Slough in north Monterey County. A common activity that induces intrusion is pumping of the groundwater basin faster than the aquifer can recharge.

Seawater intrusion is the primary source of salinity in coastal wells. Salinity refers to the salt content, or chloride level, of water. Chlorides in excess of 100 Mg/l produce a salty taste in drinking water. This 100-Mg/l chloride level is a threshold value for irrigation. Ionic constituents of water are important considerations for agricultural supply because of their impact on crops and soils. Increased chloride levels in irrigation water eventually force cropping changes in affected areas.

Although seawater intrusion can be halted by stabilizing groundwater levels and may be reversed to some degree, it may not be possible to restore the seawater/freshwater interface completely to its pre-intrusion location. The difficulty is being able to sufficiently reduce the pressure of a larger body of water (the ocean) to push the line back. There are no documented instances of fully restoring groundwater basins to pre-intrusion conditions.

Salinas River Watershed

Seawater intrusion occurs near the coast principally because extraction of fresh groundwater exceeds recharge in the northern part of the Salinas Valley. Any significant pumping of groundwater between Salinas and the coast causes seawater intrusion. The MCWRA formulated long-term plans to construct and operate facilities to alleviate the seawater intrusion problem with implementation of the *Salinas River Basin Management Plan*.

Seawater intrusion has affected the coastal portion of the 180-Foot/400-Foot Subarea of the Salinas Valley basin since at least the 1940s. Seawater has contaminated two of the three primary producing aquifers in the coastal part

of the Salinas Valley basin, the 180- and 400-foot aquifers. The MCWRA uses the California Safe Drinking Water Act, Secondary Drinking Water Standard, upper limit of 500 Mg/l for chloride as a measurement of impairment of water and, subsequently, as the basis for determining the seawater intrusion front. By 1999, seawater was estimated to affect as much as 24,019 acres overlying the 180-foot aquifer (Exhibit 4.3.9) in the northern Salinas Valley and 10,504 acres overlying the 400-foot aquifer (Exhibit 4.3.10) (Monterey County Water Resources Agency 2001). Table 4.3-3 depicts the magnitude of this problem over time.

Table 4.3-3. Estimated Acreage Overlying Seawater Intrusion

	180-Foot Aquifer		400-Foot Aquifer	
Year	Acres Advanced from Last Date	Total Acres	Acres Advanced from Last Date	Total Acres
1944	1,833	1,833	No data	No data
1959	No data	1,833	22	22
1965	5,839	7,672	No data	22
1975	3,973	11,645	3,695	3,717
1985	4,576	16,221	3,804	7,521
1990	No data	16,221	826	8,347
1993	3,596	19,817	311	8,658
1995	No observed change	19,817	407	9,065
1997	1,802	21,619	896	9,961
1999	2,400	24,019	543	10,504

Source: Monterey County Water Resources Agency 2001.

The intrusion of seawater has forced all water supply wells in the affected area of the 180-foot aquifer to be re-drilled into the 400-foot aquifer. Additionally, in those areas where the 400-foot aquifer also suffers from seawater intrusion, the Deep Zone aquifer has become a major source of water (Marina Coast Water District 2005). The water of this aquifer is up to 30,000 years old. However, because of the prehistoric origin of this water, withdrawal from the Deep Zone is a non-sustainable activity and is the effective equivalent of "mining" water.

Carmel River Watershed

According to the 1998 SEIR for the Carmel River Dam and Reservoir Project (Jones & Stokes Associates, Inc 1998), monitoring wells near the coast indicate that a mixing zone of fresh- and seawater exists at the mouth of the valley near the Carmel River State Beach, but no seawater intrusion into the freshwater aquifer has been recorded.

Monitoring results in the nearby Seaside groundwater basin indicate that it does not have substantial seawater intrusion problems. (Monterey Peninsula Water Management District 2007)

North County Watersheds

The North County groundwater subbasins are shown in Exhibit 4.3.8. Elevated chloride concentrations caused by seawater intrusion have been measured in the Springfield Terrace Subarea and areas adjacent to Elkhorn Slough (Exhibit 4.3.11).

Prior to 1909, Elkhorn Slough was a fresh-to-brackish water estuary that discharged to the Salinas River. At that time, the Salinas River shared a common mouth with the Pajaro River. After 1909, the slough became a closed estuary that seasonally breached the beach, discharging to the Pacific Ocean. In 1947, the USACE created Moss Landing Harbor and initiated dredging operations to keep the harbor mouth open. Since then, Elkhorn Slough has been subject to tidal surge and the mixing of freshwater and seawater. In the slough, saline water, as surface water, overlies aquifers containing fresh groundwater. Because seawater is denser than freshwater and the current water levels are below sea level within the underlying aquifers, seawater within the slough moves vertically downward into the underlying aquifers. Although this is not seawater intrusion in the conventional sense (horizontal movement of seawater through the aquifer from offshore outcrops), it degrades fresh groundwater in areas below and adjacent to the slough.

Thus, while over-pumping in North County has undoubtedly induced lateral intrusion in local aquifers, human activities have engineered changes to the salinity of the slough's waters; these changes have affected the salinity of groundwater that underlies the slough.

Inorganic and Secondary Constituents

Inorganic and secondary constituents refer to the presence in potable water of certain nonorganic compounds regulated by the State Drinking Water Act (SDWA), such as nitrates, iron, and certain other metallic and semimetallic compounds. Primary standards regulate the levels of constituents in water that affect public health, such as nitrate (discussed above) and heavy metals, while secondary standards affect the aesthetics of drinking water, such as taste, color, and odor problems. For instance, at moderate levels, iron can cause water discoloration but may not cause health problems.

Such contaminants either would be introduced into the groundwater by human activities, such as farming, industrial activities, and onsite septic systems, or can be naturally occurring and associated with geologic conditions in aquifers, such as high levels of iron. There is also concern that hazardous substance contamination detected at the former Fort Ord might adversely affect the quality of groundwater extracted from the Salinas Valley groundwater basin (Marina Coast Water District 2005).

High levels of arsenic that approach and exceed SDWA levels occur naturally in certain hardrock or bedrock aquifer materials in parts of Monterey County, especially in parts of the North County and along the SR 168 corridor. This is of concern as long-term exposure to low levels of arsenic can cause multiple human health conditions and even increased risk of cancer. This problem is compounded by the fact that the Environmental Protection Agency (EPA) has recently lowered the arsenic standard for drinking water from 0.050 parts per million (50 parts per billion) to 10 parts per billion to protect consumers served by public water systems from the effects of long-term or chronic exposure to arsenic. Water systems, including those overseen by the County's Environmental Health Division, must comply with this standard as of January 23, 2006. Individual private and certain small water systems may not be able to achieve these standards—even with treatment—either administratively or technically.

Fort Ord

The former Fort Ord was identified by the EPA as a National Priority List federal Superfund site on the basis of groundwater contamination discovered on the installation in 1990. The facility was listed "fenceline to fenceline," all 28,000 acres. Investigations pinpointed 43 sites of concern, including motor pools, vehicle maintenance areas, dry cleaners, sewage treatment plants, firing ranges, fire drill burn pits, hazardous waste storage areas, and unregulated disposal areas (Marina Coast Water District 2005).

In June 2002, a low level of trichloroethylene (TCE), a cleaning solvent, was detected in one of the three water supply wells at the former Fort Ord. The contamination is coming from an abandoned landfill and a fire training pit that were used by the Army once but are closed now. The Army has responded to the landfill contamination problem by installing extensive groundwater cleanup systems to remove the contamination and prevent its further migration (Marina Coast Water District 2005).

4.3.2.4 Potable Water Supply and Infrastructure

The available water supply is a consequence of natural conditions, including climate (precipitation and evaporation), soil permeability, topography, and hydrogeology (the capacity, location, and quality of aquifers), and management activities that function to enhance or redistribute the water supply. The long-term sustainability of water supplies requires major comprehensive management across jurisdictions, as well as planning for emergencies such as drought or disruption of infrastructure.

Management actions are also important in maintaining water quality. Poor quality can render available water unusable. The supply available for human uses is also limited by the consumption requirements of natural ecosystems, both terrestrial and aquatic. Neither water demand nor water supply are constant values, but vary over time, depending for instance on rainfall—which affects runoff, reservoir storage, and groundwater recharge—and temperature—which affects irrigation needs. For management purposes, the long-term objective is to

ensure that these two variables are held in balance, and that demand does not exceed supply for a prolonged period.

There are a number of different agencies that manage water resources within Monterey County (Exhibit 4.3.12).

MCWRA is responsible for management of the water resources in Monterey County. However, in the Monterey Peninsula area, MPWMD has authority over local issues related to water supply. Together, MCWRA and MRWPCA oversee the Monterey Regional Water Recycling projects, which consist of a reclamation plant and a 45-mile distribution system known as the Castroville Seawater Intrusion Project (CSIP). MCWRA is undertaking the SVWP, which consists of changes to the upriver reservoir operations, modifications to the Nacimiento Dam, and installation of a rubber dam on the Salinas to increase summer flows and provide agricultural water to offset the use of groundwater.

The PVWMA has authority over water supply issues in the Pajaro River basin, which includes parts of both Monterey and Santa Cruz Counties. The Marina Coast Water District (MCWD) supplies water to the City of Marina and the former Fort Ord.

These agencies generally regulate private and public water suppliers in the unincorporated area. The major providers are Cal-Am in the Monterey Peninsula Area, California Water Service Company (Cal-Water) in the Salinas Area, and the Castroville and Pajaro/Sunny Mesa Water Districts in the North County area. The vast majority of supply is pumped from groundwater and is allocated for agricultural use.

Water Sources

Monterey County derives a majority of its total water supply from groundwater storage. Groundwater is the primary source of water in the region, accounting for roughly 75% of the annual supply in 2000 (California Department of Water Resources 2005). Local and some imported surface water supplies make up the rest of the available water for this region. Major reservoirs are primarily used as a source of groundwater recharge supply. The two major groundwater basins in Monterey County are the Salinas Valley and the Carmel Valley basins (see Exhibits 4.3.3 and 4.3.5). Several smaller groundwater basins are located throughout the various watersheds (see Exhibit 4.3.7).

Most of these groundwater basins lie beneath thick alluvial deposits of the major rivers, marine terrace deposits, or other thick sedimentary deposits. Groundwater is recharged or replenished through gradual seepage and infiltration of surface water, especially during the wet season. Most recharge occurs where runoff is low due to permeable soils or fractured rock and where slopes are gradual enough to allow water to seep into the ground. Recharge is concentrated where there is sustained flow or a sufficient depth of water to allow for groundwater infiltration and downward seepage into the water table. Recharge also occurs in

any open or unpaved areas where the ground is saturated and water is not lost to evaporation, plant transpiration, consumption, or runoff. Because groundwater provides a majority of the water supply, the protection of this resource from contaminated surface water recharge and spills or leaks of contaminants below the ground, especially around wells, is vital. A significant amount of groundwater recharge is provided by the Pajaro, Salinas, and Carmel Rivers, and by the Arroyo Seco which flows into the Salinas River (California Department of Water Resources 2005). Recharge also occurs beneath surface water reservoirs, such as the San Clemente and Los Padres dams on the Carmel River, San Antonio Reservoir on the San Antonio River, and Nacimiento Dam on the Nacimiento River in San Luis Obispo County (California Department of Water Resources 2005).

As illustrated by the overdraft conditions, current demand exceeds supply in the major supply areas of the county, an issue also present at the time of the existing 1982 General Plan. Goals, objectives, and policies in that plan addressed the need to "promote adequate, replenishable water supplies of suitable quality; to eliminate groundwater overdrafting; and to implement a program to prevent further seawater intrusion by developing supplemental sources of water for North County." These issues are the subject of exhaustive groundwater studies and basin groundwater management plans undertaken by the respective water management agencies and the County since the existing 1982 General Plan. While progress has been made by MCWRA, MPWMD, and PVWMA in halting the rate of groundwater level decline and seawater intrusion, these issues remain a significant challenge to sustainable growth based on the goal of a sustainable groundwater supply.

Groundwater management is complicated, especially in water basins where several hundred or more long-term historical users are pumping from a common groundwater system, as is the case in much of Monterey County. Issues of water supply are further complicated by a number of different water suppliers, obligations, contracts, and disputes over water rights. Following is a summary of water supply issues for the major groundwater basins and planning areas in the county. The major groundwater management authorities and water suppliers for each of the Community Areas are summarized in Table 4.3-4.

Table 4.3-4. Community Area Groundwater Basins and Water Suppliers

Community Area	Planning Area	Groundwater Basin	Management Authority	Water Supplier
Pajaro	North County	Pajaro Valley basin	PVWMA	Pajaro/Sunny Mesa Community Services District
Castroville	North County	Salinas Valley basin (180-Foot/400-Foot Subarea)	MCWRA	Castroville Water District
Boronda	Greater Salinas	Salinas Valley basin (180-Foot/400-Foot Subarea)	MCWRA	California Water Service Co., Salinas District
Chualar	Central Salinas	Salinas Valley basin (180-Foot/400-Foot Subarea)	MCWRA	Cal-Am Water Company, Monterey District
Fort Ord	Greater Monterey Peninsula	Salinas Valley basin (Seaside and Corral de Tierra Subareas)	WPWMD (and Fort Ord Reuse Authority) and MCWRA	Marina Coast Water District

Monterey County also has several major wastewater recycling and desalination efforts in progress or in action. The CSIP provides approximately 19,000 AFY of recycled water to replace coastal groundwater pumping for irrigating vegetables and fruit crops. PVWMA's Watsonville Area Water Recycling Project and the associated Coastal Distribution System are similarly using recycled wastewater for injection into the aquifer and to replace groundwater supplies. The Carmel Area Wastewater District/Pebble Beach Community Services District Reclamation Project replaces approximately 700 acre-feet of potable water for golf courses and other open space in Pebble Beach with recycled water (Monterey Peninsula Water Management District 2007). MCWD has built a new water desalinization plant with a peak capacity of 300,000 gallons per day when in operation (Marina Coast Water District 2008).

Cal-Am has applied to the PUC for a desalination plant at Moss Landing with a proposed capacity of approximately 11,730 AFY. MPWMD is currently evaluating the feasibility of a desalination plant in Sand City, which would take 15 mgd of saline groundwater from the coastal beachfront and produce 7.5 mgd (23.02 AFY) of potable water (Monterey Peninsula Water Management District 2004).

The following sections provide a discussion of the potable water supply obtained through groundwater basins in each of the major watersheds in Monterey County. For a full description of each watershed's characteristics, please refer to Section 4.3.2.2.

Salinas Valley Groundwater Basin

Most of the proposed Community Areas and Rural Centers are located within the Salinas Valley groundwater basin. Community Areas proposed in the 2007 General Plan include Pajaro, Castroville, Boronda, Chualar, and Fort Ord. Rural Centers proposed in the 2007 General Plan include Bradley, Pleyto, Lockwood, San Ardo, Pine Canyon (King City), River Road, and San Lucas. One new Affordable Housing Overlay area will be established in the Salinas Valley watershed—Reservation Road/Hwy 68.

MCWRA is responsible for regulation and supply of groundwater within the Salinas Valley groundwater basin. The Salinas Valley groundwater basin provides water supply to properties in the Greater Salinas plan area, Central Salinas Valley plan area, and Greater Monterey Peninsula plan area. Groundwater subbasins that are hydrogeologically connected to the Salinas River supply water to the Toro and Cachagua plan areas. Incorporated cities that draw water from the basin include Marina, Salinas, Soledad, Gonzales, Greenfield, and King City. Major issues include chronic overdraft that has contributed to seawater intrusion in the north and nitrate contamination due to agricultural runoff.

According to the California Department of Water Resources (DWR), the Salinas Valley groundwater basin consists of one large hydrologic unit comprised of four subareas: Upper Valley Subarea, Forebay Subarea, 180-Foot/400-Foot Subarea, and East Side Subarea. These subareas consist of three main vertically divided aquifers: the 180-foot aquifer, the 400-foot aquifer, and the Deep Zone, which extends approximately 2,000 feet below land surface.

Total estimated water demand in the Salinas Valley, including agricultural and urban requirements, has averaged 507,000 AFY between 1995 and 2005. This includes well extraction data reported to MCWRA and an estimate of other unmeasured or unreported water extraction. Table 4.3-5 provides a summary of groundwater extraction within the MCWRA's service boundary from 1995 to 2005.

In 2005 (the most recent data available as of July 2008), MCWRA estimated total annual extraction from the Salinas Valley groundwater basin at 494,000 acre-feet, including 443,600 acre-feet of agricultural pumping (90% of total) and 50,500 acre-feet (10% of total) of urban pumping (Monterey County Water Resources Agency 2007). A majority of urban pumping supplied water to both unincorporated and incorporated areas around the population centers of Salinas, King City, Fort Ord, and Soledad (86%); 5% to the Former Fort Ord; 4% to MCWD; and 5% to Salinas Valley State Prison (Monterey County Water Resources Agency 2007).

Table 4.3-5. Salinas Valley Groundwater Basin Extraction Data, 1995–2005 (acre-feet)

Year	Urban Pumping	Percent	Agricultural Pumping	Percent	Total
1995	41,884	8	462,628	92	504,512
1996	42,634	8	520,804	92	563,438
1997	46,238	8	551,900	92	598,138
1998	41,527	9	399,521	91	441,048
1999	40,559	8	464,008	92	504,567
2000	42,293	9	442,061	91	484,354
2001	37,693	9	403,583	91	441,276
2002	46,956	9	473,264	91	520,220
2003	50,472	10	450,864	90	501,336
2004	53,062	10	471,052	90	524,114
2005	50,479	10	443,567	90	494,046
Average	**44,891**		**462,114**		**507,004**

Sources: Monterey County Water Resources Agency 2008b.

MCWRA reports that in the 180-Foot/400-Foot Subarea north of Salinas, more than 90% of pumping occurs from the 400-foot aquifer, with 5% from the Deep Aquifer and a smaller fraction from the 180-foot aquifer. In areas south of Salinas, it is estimated that approximately 60% of groundwater pumping occurs from the 400-foot aquifer, while 40% occurs in the 180-foot aquifer (Monterey County Water Resources Agency 2001a). Seawater intrusion into the 100-Foot/400-Foot Subarea was occurring at an annual rate of approximately 14,000 AFY prior to initiation of operations of the MCRWP (particularly the CSIP). As the MCRWP became fully operational, the annual rate of seawater intrusion decreased to approximately 8,900 AFY (Monterey County Water Resources Agency 2001a); this rate of seawater intrusion is the most recent available and is being used as the baseline in this SEIR.

MCWRA indicates that without the SVWP and the associated development of additional water supplies to augment existing groundwater supplies, both existing and future water needs (year 2030 and buildout) would result in further basin overdraft and seawater intrusion. The technical background reports incorporated by reference into the *Draft Environmental Impact Report/Environmental Impact Statement for the Salinas Valley Water Project* (Monterey County Water Resources Agency 2001a) demonstrate that basin overdraft, if left unchanged, is estimated to produce approximately 10,300 AFY of seawater intrusion and 14,000 AFY of storage depletion in 2030.

Table 4.3-6 provides a comparison of the MCWRA's baseline (1995) and projected future (2030) conditions assuming the SVWP is not in place. With full implementation of the SVWP (see discussion below), MCWRA estimates groundwater storage depletion will be substantially improved from their baseline conditions and will avoid additional overdraft. This projection is based on general population projections. Accordingly, it remains valid when a 2007 baseline is substituted.

Table 4.3-6. Estimated Existing and Future Water Conditions in the Salinas Valley Groundwater Basin (AFY)

Parameter	Baseline (1995) Conditions[1]	Projected Future (2030) Baseline Conditions[1]
Groundwater Pumping	463,000	443,000
Urban	*45,000*	*85,000*
Agricultural	*418,000*	*358,000*
Basin Overdraft (Does not include Seawater Intrusion)[2]	17,000	14,000
Seawater Intrusion[3]	8,900	10,300
Salinas River Outflow to Ocean	238,000	249,000

Notes:

[1] Baseline (1995) and Future Baseline (2030) Conditions assume that deliveries from MCWRP are being made. Under 1995 conditions, approximately 13,300 AFY are delivered; under the 2030 conditions, 15,900 AFY are projected for delivery.

[2] Basin overdraft is defined as the average annual rate of groundwater extraction over and above the total recharge to the groundwater basin.

[3] Seawater intrusion is defined as the average annual rate of subsurface flow from the Monterey Bay into the 180-Foot and 400-Foot aquifers in the 100-Foot/400-Foot Subarea.

Source: Monterey County Water Resources Agency 2001a.

The quantity of water used by agriculture is a function of total irrigated acreage, crop types, and, to a lesser extent, irrigation efficiency. Due to market forces driving further irrigation efficiency and a historical change in cropping patterns from truck crops to vineyards in the southern Salinas Valley, as well as urbanization of former agricultural lands, MCWRA projects a decrease in annual groundwater pumping to 358,000 AFY by 2030. While yearly amounts vary, Table 4.3-6 illustrates a general downward trend in groundwater extraction for agricultural purposes. This expected decrease would be partially offset by a projected increase in urban water use from 45,000 to 85,000 AFY by 2030 (Monterey County Water Resources Agency 2001a).

Operation of the SVWP will divert an average of 9,700 AF and up to 12,800 AF of additional Salinas River water (available from reoperation of upstream reservoirs) to the CSIP during the peak irrigation season. This will provide a total yearly average of 12,000 AF and up to 25,000 AF to the CISP for injection into the groundwater aquifer (Monterey County Water Resources Agency 2003).

Modeling undertaken by the MCWRA for the SVWP indicates that by 2030 seawater intrusion will be reduced to 2,300 AF with surface water deliveries only to the CISP. However, if an additional 14,300 AF of SVWP water is delivered outside the CSIP, modeling indicates that seawater intrusion would be halted (Monterey County Water Resources Agency 2001a). The SVWP has been designed to meet the objectives of halting seawater intrusion and meeting water demands to 2030 through drought years through conjunctive use of surface and groundwater. Groundwater would be augmented during wet years from the SVWP, with greater reliance on surface water, and drawn upon in dry years, with less reliance on surface water. This would avoid seawater intrusion through droughts of historic length (Monterey County Water Resources Agency 2001a).

El Toro Creek Groundwater Sub-Basin

El Toro Creek contributes surface flows to the Salinas River watershed and is treated separately for planning purposes relative to the area's groundwater resources. The groundwater basin provides potable water supply to the Toro planning area. No new Community Areas or Rural Centers are proposed in the El Toro Creek basin.

The El Toro Creek groundwater basin is recharged from the surface watershed of El Toro Creek. MCWRA has divided the El Toro Creek basin into five planning areas: Corral de Tierra, El Toro Creek, San Benancio Gulch, Watson Creek, and Calera Creek. Groundwater levels in some portions of the El Toro Creek basin have declined severely in recent years, leading the County to impose a B-8 zoning overlay in these areas, which restricts development to the first single dwelling on existing lots of record. A 2007 groundwater study recommended expansion of the B-8 zoning to cover the entire extent of the El Toro Primary Aquifer System. This same study found that at the current recharge rate for the basin (approximately 1,902 to 2,852 AFY), the projected future demand for 2,145 AFY may lower the groundwater level by 30 feet by 2030 (Geosyntec Consultants 2007)

Future growth in the El Toro Creek basin is constrained by current overdraft conditions and the B-8 overlay zoning. This includes development on existing lots, as well as any future subdivision in areas that draw water from the overdrafted aquifers. Increased withdrawals in these areas would result in significant impacts, without water distribution and/or augmentation to resolve overdraft conditions. Additionally, groundwater drawn in the El Toro Creek basin must treat arsenic to primary drinking water standards

Seaside Area Groundwater Basin

Most of the Seaside Area groundwater basin is within the incorporated cities of Marina, Seaside, and Sand City (see Exhibit 4.3.3). No new Community Areas or Rural Centers are proposed by the 2007 General Plan in the basin. One new Affordable Housing Overlay area will be established in the Seaside basin—Mid-Hwy 68/Mid Peninsula Airport. However, inter-basin transfers of water that may be needed to meet the demands of the 2007 General Plan in neighboring basins would impact the water supply.

The Seaside Area basin is composed of a number of smaller sub-basins. MPWMD is responsible for regulation and supply of groundwater within the Seaside Area groundwater basin. The boundaries of the basin are poorly understood, particularly under Monterey Bay. Total known useable storage in the Seaside basin aquifer is about 6,200 acre-feet. Current water use within the basin is about 5,600 AFY. (Monterey Peninsula Water Management District 2007)

Because of a 1995 State Water Board Order (Order No. WR 95-10) that ruled Cal-Am did not have a legal right to roughly 70% of the surface water it had been diverting from the Carmel River (refer to Carmel River Conflicts), Cal-Am began drawing more water from groundwater wells within the Seaside groundwater basin. In 2006, the basin was adjudicated and a watermaster was appointed to manage the basin and bring its groundwater budget into balance. The adjudication resulted in a court-ordered physical solution to the basin's groundwater problem. The operating yield for three years beginning in 2007 for the basin as a whole was defined as 5,600 acre-feet (including 4,611 acre-feet for the coastal subareas). The judgment requires a 10% decrease in operating yield for the coastal subareas every three years beginning in 2010. The decreases are to continue until production reaches the "natural safe yield" of 3,000 AFY established under the judgment. The watermaster adopted the *Seaside Monitoring and Maintenance Program* in 2006 to implement the decreases. (Monterey Peninsula Water Management District 2007)

Unlike the neighboring Salinas Valley basin, a major portion of the groundwater that is extracted serves urban users. MPWMD reports that the basinwide average annual storage depletion is approximately 1,540 AFY. Annual recharge is estimated to be 3,557 AFY. Based on detailed analysis of water level trends and groundwater budgets, the estimated sustainable yield of the Seaside basin under present conditions is estimated to be 2,880 AFY, but recent average water demand has been approximately 5,600 AFY (Monterey Peninsula Water Management District 2005a). Present production rates are therefore unsustainable.

Water Resources Projects

MCWRA and its cooperators, including MRWPCA, have two major capital projects that are completed or underway to better manage groundwater quality and reverse the long-term trend of seawater intrusion and groundwater declines in the Salinas Valley basin: the CSIP and the Salinas Valley Water Project (SVWP). The Seaside Basin ASR Project, operated jointly by Cal-Am and MPWMD, is described under "Carmel River Watershed" below. The Watsonville Area Water Recycling Project of the PVWMA is described under "Pajaro" below.

Castroville Seawater Intrusion Project

The CSIP was completed in 1998 by MCWRA to mitigate seawater intrusion in groundwater in the Salinas Valley basin. The CSIP includes construction

and operation of a reclaimed wastewater plant that collects sewage from Castroville, Marina, the Monterey Peninsula, Moss Landing, Salinas, and Seaside. The wastewater is treated to agricultural irrigation standards and is provided to area growers in place of water from their private agricultural wells. Through the delivery of water to the farmers, MCWRA is hoping that the CSIP will allow water levels in the 100-Foot/400-Foot Subarea aquifers to recover and possibly reverse the landward groundwater gradient that causes continued inland seawater intrusion. (Monterey County Water Resources Agency 2001b)

Salinas Valley Water Project

MCWRA and MRWPCA are currently proceeding with the SVWP to further manage groundwater quality and reverse the long-term trend of seawater intrusion and groundwater declines in the Salinas Valley groundwater basin. The SVWP was undertaken because studies have established that the primary solution for controlling seawater intrusion and overdraft in the Salinas Valley is by relieving pumping stresses in the aquifers in the 100-Foot/400-Foot and East Side Subareas.

The SVWP project delivery area totals about 12,000 acres (Monterey County Water Resources Agency 2008a). The SVWP is aimed at meeting both agricultural or rural and urban demands in the Salinas Valley, a majority of the countywide demand. The SVWP has two main goals: (1) stopping seawater intrusion; and (2) providing adequate water supply to meet existing and future (2030) water demand on a sustainable basis. The SVWP has three main components (Monterey County Water Resources Agency 2001):

- *Modification of the Nacimiento Dam spillway* to increase flexibility of reservoir operations and allow the reservoir to maintain higher water levels, providing additional storage.
- Reoperation of the Nacimiento and San Antonio Reservoirs to reduce water releases in the wet season, thereby providing additional water available for recharge and diversion year round.
- Surface diversion/impoundment to provide water supply for irrigation during April through October. The facility would divert water to the CSIP system, for delivery to farmers in the Castroville area. The diverted water would supplement the recycled water produced by the CSIP and replace groundwater pumped from irrigation wells.

Nacimiento and San Antonio Reservoirs began operations in 1957 and 1967, respectively. The two reservoirs provide over 700,000 acre-feet of total storage for flood control and conservation purposes. The reservoirs historically have been operated to maximize releases for conservation, while minimizing flood control releases. Changes in the Nacimiento and San Antonio Dam operations under the SVWP will allow for planned releases to recharge into the Salinas Valley groundwater basin (Monterey County Water Resources Agency 2008a).

These components of the project are believed sufficient to halt seawater intrusion in the short term but may not be sufficient to meet water demand through the year 2030. Modeling conducted for the SVWP EIR/EIS determined that groundwater levels would be raised to varying degrees in all four sub-basins of the Salinas Valley groundwater basin (100-Foot/400-Foot, East Side, Forebay, and Upper Valley Subareas) due to decreased pumping and increased recharge along the Salinas River (Monterey County Water Resources Agency 2001). With the SVWP, benefits would be distributed more uniformly throughout the Salinas Valley. An expanded distribution system and expanded deliveries would be necessary to halt seawater intrusion in the long term. This subsequent phase would consist of an additional pipeline extending southeast of the existing CSIP service area, as well as other improvements. The pipeline and its impacts are discussed in concept in the SVWP EIR/EIS, but it has not yet been planned in detail.

An integral feature of the SVWP is restoration of low flows in the river channel during the dry summer season, which would contribute significantly to restoration of instream habitat for several native wildlife species. Restoration of low flows and other habitat restoration measures (see Section 4.9, Biological Resources) may provide the basis of a habitat restoration program that would remedy impaired conditions in a portion of the Salinas River basin.

The SVWP is in the final design stages, with construction on Phase I beginning in 2008. The CSIP and SVWP, along with increased urban and agricultural water conservation efforts, are expected to help bring the Salinas River basin into hydrologic balance.

Carmel River Watershed

No new Community Areas or Rural Areas are proposed in the Carmel Valley groundwater basin. However, one new Affordable Housing Overlay area will be established in the Carmel River watershed—Mid-Carmel Valley. In addition, Carmel Valley Master Plan Policy CV-1.6 would limit buildout to 266 new lots within that part of the watershed.

The Carmel Valley groundwater basin supplies a majority of potable water to the *Carmel Valley Master Plan* and the *Greater Monterey Peninsula Area Plan* properties. Water in the Carmel Valley groundwater basin is derived primarily from alluvial aquifers located along the Carmel River. The water supply wells along the Carmel River aquifer became increasingly important as water supply sources when the Carmel area continued to grow throughout the 1970s and 1980s. The primary water supplier in the Carmel Valley basin is Cal-Am, a private water company that provides water to the MPWMD.

Total known useable storage in the Carmel River basin is about 31,300 acre-feet. This includes about 1,400–1,500 acre-feet in storage in Los Padre Reservoir on the Carmel River (the Seaside basin's 6,200 acre-feet capacity is not included in

this number). Demand in 2006 was estimated to be about 13,150 AFY, of which Cal-Am accounted for about 10,900 AF on average. (Monterey Peninsula Water Management District 2007)

In 2006, the Monterey Peninsula Water Management District estimated that additional demand would be 4,545 AFY by 2026. This was based on estimated water use at buildout of the general plans for the cities within the district and the unincorporated county. (Monterey Peninsula Water Management District 2007)

The water supply deficit in the basin is partly a result of limited water storage capacity. Storage in the Carmel River aquifer system has always been limited because of the naturally small volume of the aquifer, while storage in the two reservoirs has become substantially diminished because of siltation. San Clemente and Los Padres Reservoirs, which formerly had respective storage capacities of approximately 2,260 and 3,000 acre-feet, are now estimated to have only a fraction of their original capacity (Monterey County Water Resources Agency 2003). San Clemente Reservoir is nearly silted up and is no longer used for domestic supply. Los Padres Reservoir has a remaining capacity of approximately 1,400 acre-feet.

The limited reservoir capacity has led Cal-Am to pump more than its allotted water right from the Carmel River to meet customer demand. As a result, Cal-Am has been repeatedly charged by the State Water Board with diverting water from the Carmel River unlawfully (Order WR 95-10 and Order WR 98-04). While no additional demand within the basin is proposed by the 2007 General Plan, current restrictions on extraction in the basin intended to protect fish in the Carmel River (WR Order 2001-04 DWR) may affect adjacent groundwater basins, which must make up the loss of supply. Most recently (January 2008), the State Water Board issued a draft cease and desist order (CDO) (Order WR 2008-00XX-DWR) requiring Cal-Am to stop diverting water from the Carmel River in excess of its legal rights by reducing its unlawful diversions pursuant to a schedule set forth in the CDO (see the full discussion of State Water Board Orders under “Carmel River Conflicts”).

Water Resources Projects

Over-pumping and flow diversion in the area of the lower Carmel Valley basin has caused significant dewatering of the Carmel River and has become a major political and environmental issue, resulting in a major dispute over water rights in the basin.

In the early 1990s, MPWMD pursued the Monterey Peninsula Water Supply Project, which proposed construction of the enlarged dam on the Los Padres Reservoir. However, County voters rejected the project, and, as a result, MPWMD developed an action plan for addressing water supply alternatives that emphasized non–dam-related projects, desalination options, reclamation, and use of the Seaside groundwater basin. Two water resources projects underway for the Carmel Valley are the Coastal Water Project and Seaside Basin ASR Project.

Coastal Water Project

Cal-Am is proposing the Coastal Water Project, which consists of a desalination plant and treatment facilities in the Moss Landing area, conveyance pipelines to transport the desalinated water south, terminal reservoirs and a pump station to distribute the water to Cal-Am's existing system, and facilities for the Seaside Basin Aquifer Storage and Recovery (ASR) Project. The California Public Utilities Commission (CPUC) is preparing the EIR for the Coastal Water Project, which would supply about 11,730 AFY for urban users on the Peninsula, as well as for injection into the Seaside groundwater basin (California Public Utilities Commission 2008a). In the meantime, Cal-Am has initiated a pilot desalination facility at the Moss Landing Power Plant (MLLP), which will divert up to 200,000 gpd from the cooling system of the MLLP (California American Water 2005).

Seaside Basin Aquifer Storage and Recovery Project

The Seaside Basin ASR Project, operated jointly by Cal-Am and MPWMD, involves diverting excess winter flows from the Carmel River for injection into the Seaside aquifer, for recovery in summer months. The State Water Board has granted temporary permits to allow diversion of 2,426 acre-feet of water from the Carmel River between December and May. Diverted water would be treated to potable drinking water standards and pumped through the Cal-Am distribution system to the Seaside groundwater basin, where it would be injected deep into the Santa Margarita Sandstone for storage and subsequent extraction. Maximum extraction would be approximately 2,028 AFY, leaving a portion of the injected water in the aquifer to allow for groundwater basin recovery (Monterey Peninsula Water Management District 2005a).

North County Watersheds

Pajaro is a proposed Community Area in the 2007 General Plan. The North County planning area straddles the Pajaro Valley groundwater basin and the northeastern end of the Salinas Valley groundwater basin (East Side Subarea). The Pajaro Valley basin is administered by the PVWMA, while the Salinas Valley basin is managed by MCWRA. Multiple small groundwater aquifers provide potable water supply to the North County planning area properties.

The PVMA's Basin Management Plan estimates that in 2001 approximately 83% (59,200 AFY) of total water demand (71,500 AFY) was from agriculture, with urban users accounting for 17% (12,200 AFY). The Basin Management Plan projects that by 2040 demand will increase to 80,500 AFY, with agriculture consuming 80% (64,400 AFY) and urban use 20% (16,100 AFY) of that total. (Pajaro Valley Water Management Agency 2001)

Water for agricultural irrigation is mainly supplied by local-farm wells, while residential and municipal supplies are provided either through individual

domestic wells or through relatively small water systems consisting of two or more connections. The public review draft EIR prepared for the 21st Century General Plan update in 2004 reported that there are four large (more than 200 connections) water systems in the study area: Cal-Water's Oak Hills and Las Lomas water systems, Normeo, and the Aromas Water District. These four systems have approximately 2,246 connections, serving approximately 23% of the parcels in North County. There are approximately 600 small (from 2 to 200 connections) water systems in North County, serving approximately 3,707 parcels. This represents 38% of the total number of parcels in the area. Approximately 40% of parcels in North County are served by private wells or are undeveloped.

While the water problem in the greater Salinas Valley has been attributed to lack of effective distribution rather than insufficient supply, the same cannot be said for the North County. The North County aquifers are limited by a much smaller available surface area for recharge and relatively low precipitation compared to some of the highland areas. Due to demand exceeding supply, the area has been in a state of chronic overdraft since the 1950s. Groundwater extractions are estimated to be twice the average annual recharge. Resultant water supply and water quality problems include falling water levels, seawater intrusion, and extensive areas with nitrate contamination. North County problems not only affect residents and agriculture in the area, they also affect water supply and water quality conditions in the adjacent and hydraulically connected Salinas and Pajaro Valleys. Agriculture makes up the largest part of the water demand.

In addition, intensive agriculture and non-sewered residences have resulted in excessive nitrogen loading that has rendered groundwater non-potable in many areas. Continued overdraft of the groundwater will continue to lower water levels and draw seawater into the basin, reducing more of the storage capacity. Continued nitrogen loading will increase nitrate ion concentrations, degrading the potability of additional domestic water supplies.

Pajaro

The PVMWA estimated that net groundwater pumping within the Pajaro groundwater basin (including portions of Santa Cruz County) from agricultural and urban uses, taking into account surface water diversions, was 69,000 AFY in 2001. According to PVWMA, a 65% reduction in basin-wide groundwater pumping (by 45,000 AFY) would be necessary to eliminate seawater intrusion and restore groundwater levels throughout the coastal area. Therefore, the sustainable yield of the groundwater basin at present is approximately 24,000 AFY (Pajaro Valley Water Management Agency 2002). The PVWM Basin Management Plan estimates that total groundwater pumping will increase to 78,000 AFY by 2040 (Pajaro Valley Water Management Agency 2002). This exceeds sustainable yield by approximately 54,000 AFY.

PVWMA is exploring importation from the Central Valley Project and is currently implementing projects that are similar to the CSIP project operated by MCWRA, including the Watsonville Area Water Recycling Project and the

associated Coastal Distribution System. A desalination proposal is also being explored by Pajaro/Sunny Mesa Community Services District.

Potential Importation of Central Valley Project Water

In order to meet supplemental supply volumes, PVWMA is pursuing potential methods of importing water from outside the basin. Importation is considered the only feasible means of mitigating the current overdraft conditions in the Pajaro Valley because of the magnitude of overdraft and the otherwise intractable nature of the supply problem. PVWMA's *Revised Basin Management Plan* includes a 54-inch diameter, 23-mile-long pipeline from the nearest import pipeline in Santa Clara County to the Coastal Distribution System (described below). The amount to be imported was planned to be an average of 11,900 AFY (Pajaro Valley Water Management Agency 2008b). However, the price of the pipeline may be prohibitively high and additional opportunities to obtain Central Valley Project (or other) supply contracts are limited.

Although the PVWMA has a future Central Valley Project entitlement of 19,900 AFY and an existing contract for 6,260 AFY from the U.S. Bureau of Reclamation, these sources will not be available in the foreseeable future, if at all. The Central Valley Project Improvement Act restricts the Bureau of Reclamation from entering into long-term water supply contracts until certain environmental requirements are met. Federal District Court decisions in 2007 and 2008 have restricted water pumping on both the state and federal projects in order to protect special status species fish populations, including the Delta smelt, which have recently plummeted. These restrictions will be modified when the federal wildlife agencies issue new biological opinions for the pumping, but pumping is not expected to return to its prior levels without changes to the system by which water is moved through the Delta itself.

Watsonville Area Water Recycling Project and Coastal Distribution System

The Watsonville Area Water Recycling Project is being built by PVWMA and the City of Watsonville, which owns an existing 8,000-AFY wastewater treatment plant. The plant is undergoing a major upgrade to treat the secondary water to the advanced tertiary level (i.e., Title 22 standards) which is suitable for all uses except for potable uses. The project will provide 4,000 AFY of recycled water for irrigation supply to replace current groundwater pumping (Pajaro Valley Water Management Agency 2008a). In April 2006, the Santa Cruz County Board of Supervisors approved the rezoning and coastal development permit to allow an upgrade of Watsonville's wastewater treatment plant, providing the final approval needed for the projects. Pursuant to the California Coastal Commission's permit for the project, the recycled water available from the plant is to be used for agricultural purposes only and any agricultural groundwater use offset by the delivery of recycled water will not be available for domestic use.

The project is expected to be completed in October 2008. Farmers receiving water will be required to first install backflow prevention devices, so actual water deliveries are not anticipated to occur until March 2009 (Geyer pers. comm. 2008).

The associated Coastal Distribution System is a series of pipelines to deliver the recycled water (and all future sources of new water) to farmlands in the seawater intrusion areas. Groundwater modeling has shown that the most effective way to achieve overall groundwater basin balance and reduce seawater intrusion is to eliminate coastal pumping (Pajaro Valley Water Management Agency 2002). Therefore, replacement water supplies are focused in the coastal zone. Phase 1 of the system was constructed over the last five years on the Santa Cruz County side of the Pajaro River. These pipelines supply water to about 2,000 acres in the areas most impacted by seawater intrusion. Phase 2 of the pipeline, which will serve lands in Monterey County south of the Pajaro River, was completed in June 2008 (Pajaro Valley Water Management Agency 2008a).

Pajaro/Sunny Mesa Desalination Project

The Pajaro/Sunny Mesa Community Services District is currently investigating the possibility of installing a regional desalination plant at Moss Landing to provide freshwater to combat groundwater nitrate contamination and seawater intrusion. The District has entered into an agreement with Poseidon Resources to build the plant, has secured a site, and is pursuing permits (Local Agency Formation Commission of Monterey County 2006). The plant would provide up to 21,000 AFY if approved and built.

Other North County

In 2002, MCWRA drafted a *Comprehensive Water Resources Management Plan* to present strategies to resolve overdraft conditions and associated water quality problems in North County. For the area within MCWRA's jurisdiction (the Salinas Valley basin), the plan proposes a possible long-term expansion of the SVWP to deliver supplemental water to agricultural users in North County. This would be dependent upon the participation and funding support of landowners in the area.

The Final EIR prepared for the Rancho Roberto subdivision in the North County examined the sustainable yields for the area based on the findings of the *Comprehensive Water Resources Management Plan* and an earlier report. The Final EIR stated that the North County recharge volume is between 5,500 AFY and 9,275 AFY. Geologic features underlying the Springfield Terrace sub-area prevent its effective recharge. The following information (Table 4.3-7) taken from the Rancho Roberto Final EIR illustrates the extent of overdraft in the North County. The 1982 General Plan projection would tend to overstate the 2007 General Plan (which limits new development in the North County to the first residence on existing lots of record), except in the Pajaro Community Area, where the 2007 General Plan would authorize more development.

Table 4.3-7. North County Demand, Overdraft, and Sustainable Yield

Subarea	2004 Conditions (AFY)		1982 General Plan Conditions		Sustainable Yield
	Demand	Overdraft	Demand	Overdraft	
Springfield Terrace	7,594	7,594	8,330	8,330	0
Pajaro (Monterey County)	10,130	3,640	10,215	3,725	6,490
Highlands North	5,621	2,701	7,636	4,716	2,920
Highlands South	6,095	1,705	8,399	4,009	4,390
Granite Ridge	1,310	700	1,544	934	610
Total	30,750	16,340	36,124	21,714	14,410

Source: EMC Planning Group 2005.

Other Watersheds

Other areas of the county typically have only small groundwater basins because there are no large alluvial deposits or major valley bottoms through which surface water can infiltrate and collect. This includes most of the mountainous area from the Monterey Peninsula southward through the Big Sur area and within the Diablo Range located east of the Salinas Valley. No Community Areas or Rural Centers are proposed in these areas.

Estrella River Watershed

The Estrella River is a main tributary of the Upper Salinas River and is located in northeastern San Luis Obispo County and the southeast corner of Monterey County. The limited development projected in the 2007 General Plan would occur on land that is currently zoned for resource conservation. Water needed for new development may be obtained from local groundwater wells and would slightly increase pumping.

Big Sur Coast Watershed

The Big Sur Coast watershed includes the steep and rugged terrain on the coastal side of the Santa Lucia Mountains. Development is sparse, with limited cropland and scattered grazing. The major industry of the few small towns such as Big Sur, Gorda, and Lucia is tourism. No significant water storage facilities are located in the basin, and water is supplied by shallow wells or stream diversions from the major tributaries. Septic tanks near the Big Sur River are a concern for water quality. No Community Areas or Rural Centers are proposed within this area under the 2007 General Plan. The developable area is within the Coastal Zone and subject to the Big Sur Local Coastal Program (LCP) Land Use Plan. Because of its beauty and lack of infrastructure this area is not slated for significant future development. The 2007 General Plan does not propose any changes to the Big Sur LCP. The inland portions of the area are not proposed for new development either.

Groundwater Management and Monitoring Programs

Management of the water supply and groundwater system must consider the limits to which water can be drawn without depleting the resource or what exceeds the safe yield. The "safe yield" is defined as the annual draft of water that can be withdrawn without producing some undesirable result. Chronic overdraft can lead to a depletion of groundwater to levels in excess of the system's ability to recover, given the basin's water budget. When groundwater levels decline, they can diminish the productivity of wells altogether or necessitate that wells pump to greater depths.

Overdrafting and diversion or loss of recharge water, as well as periodic droughts, has caused historical declines in the groundwater table and resultant seawater intrusion into coastal aquifers. Long-term management of the overdraft problem through capital programs, water conservation and recycling, and protection of the prime recharge areas for important aquifers play an important role in assuring long-term sustainability in terms of groundwater quality and volume.

Groundwater Extraction Monitoring

There is no overarching monitoring program for all the groundwater basins in the county. However, Ordinances 3663 and 3717 adopted by the Monterey County Board of Supervisors require suppliers within Zones 2, 2A, and 2B to report water use information for groundwater extraction facilities (see Monterey County Water Resources Agency 2007). This includes a majority of the Salinas Valley basin, where water demand is greatest. Information is collected and compiled by the Groundwater Extraction Management System (GEMS) portion of the Water Resources Agency Information Management System, a relational database maintained by MCWRA for most of the Salinas Valley. This information is compiled in an annual groundwater extraction report for domestic water and irrigation systems with pipes of inside diameter exceeding 3 inches. While the information is not comprehensive, it does detail water use statistics for the biggest consumers in the county.

In addition to providing statistical data, the groundwater extraction reports chart trends in agriculture and the success of conservation efforts since 1993 by reporting the net acre distribution of irrigation methods by crop type and implementation of BMPs in agricultural areas, as well as the progress of BMPs used by urban suppliers and consumers. Reports indicate a slight increase in irrigated crop area from the early to mid 1990s (173,600 net acres in 1993) to now (174,500 net acres in 2006) (Monterey County Water Resources Agency 2007). The report also indicates that a shift to the use of water-saving measures, such as drip irrigation versus less conservative irrigation methods such as sprinkler and furrow, has helped reduce total consumption. Use of BMPs by urban providers and consumers has been more variable (Monterey County Water Resources Agency 2007).

As discussed above, the watermaster appointed in the Seaside basin as a result of adjudication of the aquifer established a Seaside Monitoring and Management

Program in 2006 to ensure that the water use reductions established under the adjudication are carried out.

Recycled Water and Reuse

As constraints on local water supply increase, the use of treated wastewater (i.e., recycled water) and other subpotable supplies becomes a more significant component of the total water supply picture. As recycled water becomes more of a commodity, sewerage collection infrastructure may be expanded to developed areas currently being served by onsite septic systems or development-specific "package plants" (hybrid treatment plants that combine two or more of the main treatment stages into one combined process). Many jurisdictions have conducted studies to identify potential uses of nonpotable water supplies. Notwithstanding the significant capital costs associated with recycled water use, opportunities for water recycling do exist throughout the county, provided the proper level of treatment is maintained to ensure protection of public health. The existing 1982 General Plan acknowledged this issue and contains policies in support of water reclamation. Three notable water reuse projects that are currently being implemented in the region include the Monterey County Water Recycling Project and the Watsonville Area Water Recycling project discussed earlier, and the Pebble Beach Community Services District's (PBCSD) use of reclaimed wastewater.

PBCSD contracts with the Carmel Area Wastewater District for use of, on average, 660 AFY of tertiary-treated wastewater for Del Monte Forest/Pebble Beach golf courses, athletic fields, and other landscaped areas. In 1998, Cal-Am sold its Forest Lake Reservoir to PBCSD to increase storage capacity for reclaimed wastewater. The reservoir is expected to supply 800 AFY (496 mgd) for landscaping and irrigation.

4.3.2.5 Carmel River Conflicts

In July 1995, the State Water Board issued Order WR 95-10, which determined that 10,730 AFY of water pumped from the Carmel River was being diverted unlawfully by Cal-Am. The State Water Board also determined that adverse environmental effects had resulted from Cal-Am's actions and that these effects must be mitigated, including impacts on the riparian corridor along the river, wildlife that depends on riparian habitat, and steelhead and other fish inhabiting the river. The order further established an interim annual production goal of no more than 11,285 AFY from the Carmel Valley basin and directed Cal-Am to secure permits for its water use (3,376 AFY), address the adverse environmental consequences of that use, and begin immediate water conservation. This resulted in a judicial order that required Cal-Am to conduct two studies to evaluate whether its existing diversions at San Clemente Dam would be changed in order to maintain more surface flow in the Carmel River.

In settlement of litigation, the State Water Board amended Order 95-10 by issuing Order WR 98-04 in February 1998. This order allowed:

- direct diversion and diversion to storage throughout the year from the Carmel River at times when flows were physically available over and above fish flow requirements;
- that the total quantity of water originating in the Carmel River diverted to beneficial use by Cal-Am and the MPWMD would not exceed 16,000 acre-feet; and
- that Cal-Am would cease withdrawals of water from the San Clemente Dam and reduce diversions from production well facilities in the Carmel River during low flow periods of the year, except during an emergency (California State Water Resources Control Board 2008).

Cal-Am owns and operates San Clemente Dam, Los Padres Dam, and 21 downstream extraction wells on the Carmel River. After reviewing the technical studies prepared by judicial order, the chief of the Division of Water Rights issued WR Order 2001-04 DWR, which directed Cal-Am to shift its diversion from San Clemente Dam to extraction of groundwater in downstream areas. Petitions for reconsideration were filed by the National Marine Fisheries Service (NMFS); Cal-Am; the MPWMD; and, jointly, the Carmel River Steelhead Association and the Ventana Chapter of the Sierra Club. A conservation agreement between Cal-Am and the NMFS later was submitted to the State Water Board for consideration. The conservation agreement required Cal-Am to modify its diversion pattern to forego diversions at San Clemente Reservoir and divert the foregone water at downstream locations to benefit the river's steelhead fishery.

In response to this order, Cal-Am filed a lawsuit to adjudicate the rights of the various groundwater pumpers of the Seaside basin aquifer, where there is also concern about sustainable yield. In a final ruling on March 27, 2006, Cal-Am was required to reduce pumping on the Seaside groundwater basin by 10%, its only current alternative to drawing water from the restricted Carmel River. An additional 10% reduction would be required by 2009. The ruling found that "groundwater production within the Seaside groundwater basin exceeds the Natural Safe Yield" to prevent seawater intrusion and that the solution is to reduce pumping to maintain a positive flow of fresh water into the aquifer and keep out saltwater.

As discussed above, the suit (*Cal-Am v. City of Seaside*) also resulted in a ruling that sets a safe pumping level of 5,600 AFY (500 acre-feet less than the maximum pumped in recent years) and created a "watermaster board" to oversee groundwater management in the Seaside basin, because a groundwater management plan was never adopted. The watermaster board includes representatives from Cal-Am, the City of Seaside, the MPWMD, the MCRWA, the City of Monterey, the City of Sand City, the City of Del Rey Oaks, coastal landowners, and Laguna Seca landowners.

On January 15, 2008, the State Water Board issued a draft CDO (Order WR 2008-00XX-DWR) requiring Cal-Am to stop diverting water from the Carmel River in excess of its legal rights, by reducing its unlawful diversions pursuant to

a schedule set forth in the CDO. The draft CDO alleges that since 2000, Cal-Am has illegally diverted at least 7,164 AFY from the Carmel River and that Cal-Am's unauthorized diversions continue to have adverse effects on the public trust resources on the river (California State Water Resources Control Board 2008). The State Water Board completed its hearings on the draft CDO order in August 2008 and the Board's decision is pending.

As discussed above, Cal-Am has proposed to construct and operate a desalination plant at Moss Landing under its Water Supply Program. This project is being undertaken to provide an alternative water supply that would allow Cal-Am to halt its diversions, while still providing water for existing levels of development on the Monterey Peninsula. The proposed Water Supply Program is subject to review and approval by the CPUC.

4.3.3 Regulatory Framework

Water resources are managed and regulated to meet the needs of human development, while protecting aquatic life and human health, according to the provisions of the federal Clean Water Act (CWA), the California Porter-Cologne Water Quality Control Act (Porter-Cologne), and numerous state and local regulatory programs.

There is extensive overlap in regulatory programs governing environmental aspects of water resources, especially in water quality and the public health and safety aspects of water supply. Much of the development and implementation of local water quality programs or ordinances has been mandated by the State of California, with some of the state programs in turn required by the federal government. Many of the local regulations and ordinances affecting water resources, including drainage and floodplain management, are contained in the Monterey County Code or in the regulations of the MCWRA, or both. In addition, the MPWMD regulates water use on the Monterey Peninsula. As with most counties in California, drinking water standards and local water supply and potable water program enforcement is administered by the County's Environmental Health Division, acting under the guidance of the State Department of Public Health (DPH) and ultimately the federal EPA. Surface water quality and groundwater quality, including point source discharge control programs, groundwater quality that may be affected by surface and subsurface discharges, and stormwater runoff water quality issues, are primarily administered by the Central Coast RWQCB, although certain aspects also may be administered or co-administered by local agencies.

As implied above, water law and water resources regulation in California is very complex, with many regulations and programs, and a large number of separate agencies with a mission to enforce them. Because of the interrelationship among the various issues affecting water resources (for instance, groundwater overdraft and subsequent seawater intrusion affecting groundwater quality and potable water quality and quantity), management often requires close coordination among the many agencies when dealing with a water-related issue.

Consequently, a single project may need to obtain many permits and approvals from several agencies prior to implementation.

4.3.3.1 Federal Regulations

The EPA is the federal entity responsible for establishing and enforcing fundamental water quality regulations in the United States. The EPA also controls public health and the environment by setting standards for drinking water contaminants and protecting sources of drinking water under the Safe Drinking Water Act of 1974. The EPA develops minimum standards, and the states then develop individual programs that best meet their unique needs, consistent with or exceeding the federal minimum standards. The EPA is also responsible for monitoring state adherence to the minimum federal standards.

Clean Water Act

The CWA is the primary federal law protecting the quality of the nation's surface waters, including lakes, rivers, and coastal wetlands. It operates on the principle that all discharges into the nation's waters are unlawful unless specifically authorized by a permit; permit review is the CWA's primary regulatory tool.

Several sections of the 1972 CWA regulate impacts on waters of the United States. CWA Section 101 specifies the objectives of the CWA, implemented largely through CWA Title III (Standards and Enforcement) and CWA Section 301 (Prohibitions). Identification of impaired water bodies and required actions to address the impairments are specified under CWA Section 303. The discharge of dredged or fill material into waters of the United States is subject to permitting specified under CWA Title IV (Permits and Licenses) and specifically under CWA Section 404 (Discharges of Dredged or Fill Material). CWA Section 401 (Certification) specifies additional requirements for permit review by the Central Coast RWQCB.

Section 401—Water Quality Certification

Section 401 requires that an applicant pursuing a federal permit to conduct any activity that may result in a discharge of a pollutant obtain a water quality certification. Water quality certifications are issued by the RWQCBs in California. Under the CWA, the state (as implemented by the Central Coast RWQCB) must issue or waive Section 401 water quality certification for the project to be permitted under Section 404. Water quality certification requires the evaluation of water quality considerations associated with dredging or placement of fill materials into waters of the United States. Implementation of any of the action alternatives would require a Section 401 water quality certification.

Section 402—National Pollutant Discharge Elimination System Program

The 1972 amendments to the CWA established the NPDES permit program (Section 402) to control point source discharges from industrial, municipal, and other facilities if their discharges go directly to surface waters. The 1987 amendments to the CWA created a new section of the CWA devoted to regulating stormwater or nonpoint source discharges (Section 402[p]). The EPA has granted California primacy in administering and enforcing the provisions of the CWA and the NPDES program through the State Water Resources Control Board (SWRCB).

The SWRCB issues both general and individual permits for discharges from certain activities, administered by the RWQCBs. As of 2006, the NPDES program now regulates stormwater discharges from municipal storm sewer systems (MS4s) serving at least 50,000 persons or other areas with a population density of at least 1,000 per square mile based on census counts. Recently, the City of Salinas adopted and started enforcing a new stormwater management plan under the provisions of the Phase II NPDES (Orders 99-087 and 2004-0135). Salinas is the only city in Monterey County with a population exceeding 50,000.

Designated Phase II MS4 areas in the unincorporated county include Carmel Valley; Corral de Tierra/San Benancio; Toro Park; a large area bounded by the Salinas River, Davis Road, SR 68, and the city of Salinas; a second large area southeast of San Juan Grade Road and northeast of Salinas; Pajaro and its surroundings; Castroville; and Prunedale. Since 2001, the Monterey Regional Storm Water Permit Participants Group, composed of the Cities of Monterey, Carmel-by-the-Sea, Del Rey Oaks, Sand City, Seaside, Marina, and Pacific Grove; the County; and the Pebble Beach Co., have been developing a regional stormwater program for the Monterey Peninsula and surrounding areas to prepare an NPDES Phase II permit application. The MRWPCA acts as the group's administrative agent.

Construction activities are regulated under the NPDES General Permit for Discharges of Storm Water Runoff Associated with Construction Activity (General Construction Permit), provided that the total amount of ground disturbance during construction exceeds 1 acre. Coverage under a General Construction Permit requires the preparation of a Stormwater Pollution Prevention Plan (SWPPP) and submittal of a notice of intent (NOI) to comply with the General Construction Permit. The SWPPP includes a description of BMPs to minimize the discharge of pollutants from the site during construction. Typical BMPs include temporary soil stabilization measures (e.g., mulching and seeding), storing materials and equipment to ensure that spills or leaks cannot enter the storm drain system or stormwater, and using filtering mechanisms at drop inlets to prevent contaminants from entering storm drains. Typical postconstruction management practices include street sweeping and cleaning stormwater drain inlet structures. The NOI includes site-specific information and the certification of compliance with the terms of the General Construction Permit.

The NPDES General Industrial Permit requirements apply to the discharge of stormwater associated with industrial sites. The permit requires implementation of management measures that will achieve the performance standard of the best available technology economically achievable and best conventional pollutant control technology. Under the statute, operators of new facilities must implement industrial BMPs in the project SWPPP and perform monitoring of stormwater discharges and unauthorized non–stormwater discharges.

Section 404—Discharge of Dredged or Fill Materials

CWA Section 404 regulates the discharge of dredged and fill material into waters of the United States. "Waters of the United States" refers to oceans, bays, rivers, streams, lakes, ponds, and wetlands, including any or all of the following:

- areas within the ordinary high water mark of a stream, including nonperennial streams with a defined bed and bank;
- any stream channel that conveys natural runoff, even if it has been realigned; and
- seasonal and perennial wetlands, including coastal wetlands.

Applicants must obtain a permit from the USACE for all discharges of dredged or fill material into waters of the United States, including wetlands, before proceeding with a proposed activity. Before any actions that may affect surface waters are carried out, a delineation of jurisdictional waters of the United States must be completed, following USACE protocols, in order to determine whether the project area encompasses wetlands or other waters of the United States that qualify for CWA protection.

The USACE issues several types of permits, including regional general permits (RGPs), nationwide permits (NWPs), and individual permits. General permits are preauthorized and are issued to cover multiple instances of similar activities expected to cause only minimal adverse environmental effects. A NWP is a type of general permit issued to cover particular fill activities, which specifies particular conditions that must be met in order for the NWP to apply to a given project. Individual permits are required when the proposed activity does not meet the criteria allowing use of a RGP or NWP. Individual permits may be issued only for the least environmentally damaging practicable alternative. That is, authorization of a dredge or fill project is prohibited if there is a practicable alternative that would have fewer adverse impacts and that lacks other significant adverse consequences.

Drinking Water

A number of federal, state, and local governments protect beneficial uses and water quality objectives for surface water and groundwater resources. Government Code Section 65302 (Land Use), requires city and county general plans to address water supply as a topical issue, using an Urban Water

Management Plan as a primary source document. Programs and regulations related to drinking water quality, water supply, and wastewater treatment and disposal are described below.

The federal government sets minimum standards for the protection of water quality, including for drinking water and environmental protection, and has jurisdiction over flow in some waters where rivers or streams cross state boundaries. The federal government also has a voice in water management through its jurisdiction over energy regulation (for hydroelectric projects) and where endangered fish and aquatic species occur within a water body.

The federal CWA (including WDRs, the NPDES program, and Section 303(d) impaired water bodies and TMDLs) is described in detail in Section 4.3, Water Resources. The CWA is largely administered by the State Water Board and the Central Coast RWQCB.

Safe Drinking Water Act

Drinking water quality is based on two general standards: (1) organic and inorganic water contaminants that may have detrimental effects on health and safety; and (2) aesthetic qualities of water that may make water unpalatable or unpleasant to customers. The Safe Drinking Water Act of 1974 establishes the EPA as the primary government entity with responsibility for setting national drinking water standards for public water systems. Since 1974, the EPA has set national water quality standards for over 80 contaminants in drinking water. The National Primary Drinking Water Standards establish the maximum contaminant levels (MCLs) allowed in public distribution systems. The National Secondary Drinking Water Standards establish the MCLs that apply to potable water supplies at the point of delivery to the customer. While the EPA and state governments enforce water quality standards, local governments and private water suppliers are ultimately responsible for the quality of water supplies.

Coastal Zone Management Act

The federal Coastal Zone Management Act (CZMA) of 1972 (16 United States Code Sections 1451–1465) encourages states to preserve, protect, develop, and, where possible, restore or enhance valuable natural coastal resources such as wetlands, floodplains, estuaries, beaches, dunes, barrier islands, and coral reefs—as well as the fish and wildlife using those habitats. The CZMA asks coastal states to voluntarily develop and implement a comprehensive coastal management program. California's coastal management program has been approved by the federal government. The program includes the California Coastal Commission's program for the Pacific Ocean coastline segment of the coastal zone and the California Coastal Conservancy's program for the restoration and enhancement of coastal resources.

Monterey County's Coastal Commission–approved Local Coastal Program implements the CZMA and the California Coastal Act. Because the proposed

2007 General Plan would not change the County's approved local coastal plans, the CZMA is not pertinent to analysis of the 2007 General Plan's potential environmental effects.

National Flood Insurance Program

The County and all of the incorporated cities in the county are participants in the National Flood Insurance Program (NFIP) administered by the Federal Emergency Management Agency (FEMA). The NFIP is intended to reduce future flood damage by encouraging local governments to adopt floodplain management regulatory programs. Two subsequent laws, the Flood Disaster Protection Act of 1973 and the National Flood Insurance Reform Act of 1994, have made the purchase of flood insurance mandatory for federal financial assistance for acquisition or construction of buildings in SFHAs. The NFIP is composed of three components: Flood Insurance Rate Maps (FIRMs), flood insurance, and floodplain management regulations. The FEMA FIRMs identify floodplain hazard areas prone to flooding during major storm events. The FIRMs are used by insurance companies to set flood insurance rates and by local municipalities for implementing flood control ordinances, which restrict new development in floodplains.

Exhibit 4.3.13 shows the locations and extent of flood zones identified by the FIRMs within the county. The 100-year floodplain was delineated along the course of the Salinas River, the Pajaro River, and the lower reaches of the Carmel River. In the vicinity of Salinas and North County, it encompasses the sloughs and marshes that function as major drainage features.

4.3.3.2 State Regulations

DWR is the state agency responsible for managing California's water resources, including conducting technical studies of surface- 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. 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. DWR has been given the responsibility for overseeing the preparation of groundwater management plans. DWR does not regulate water quality, which is the realm of the SWRCB.

Section 303—Impaired Water Bodies and Total Maximum Daily Loads

In accordance with CWA Section 303(d), state governments must present the EPA with a list of "impaired water bodies," defined as those water bodies that do

not meet water quality standards, even after point sources of pollution have installed the minimum required levels of pollution control technology. The CWA also mandates that states rank each water body by factors such as severity, potential restoration of beneficial uses, and availability of data; and that Total Maximum Daily Loads (TMDLs) are developed for the pollutants of concern.

On June 28, 2007, the EPA gave final approval to California's 2006 Section 303(d) List of Water Quality Limited Segments. Table 4.3-8 shows Monterey County water bodies on the 2006 Section 303(d) List. These water bodies are depicted in Exhibit 4.3.14.

The CWA requires the development of actions to improve the quality of impaired water bodies identified through Section 303(d). The TMDL is the quantity of a pollutant that can be safely assimilated by a water body while maintaining its designated beneficial uses and not violating water quality standards. The listing of a water body as impaired does not necessarily suggest that the water body cannot support the beneficial uses; rather, the intent is to identify the water body as requiring future development of a TMDL to maintain water quality and reduce the potential for future water quality degradation. NPDES permits (discussed above) for water discharges must take into account the pollutant for which a water body is listed as impaired. Specific requirements for the permits would be stated in the TMDL for that pollutant.

As a process, TMDLs serve to identify impaired water bodies, determine the sources for this impairment, and implement mitigation measures to reduce those sources and remove impairments. Public input and comment is sought at each of these steps. The TMDL document gives a quantitative assessment of water quality problems and contributing pollutant sources. It specifies the amount of pollution reduction necessary to meet water quality standards, allocates the necessary pollutant limits among the various sources in the watershed, and provides a basis for taking actions needed to restore a water body. The goal of a TMDL is to establish water quality standards to be met through local agency action.

TMDLs are adopted as amendments to the RWQCB's basin plan, which are subject to approval by the RWQCB and the State Water Board.

Table 4.3-8. Monterey County Water Bodies on California's 2006 Section 303(d) List of Impaired Waters

Name	Pollutant	Potential Sources	Estimated TMDL Completion	Estimated Size Affected
Alisal Creek (Salinas)	Nitrate	Unknown	2007	7.4 miles
	Fecal coliform	Agriculture Urban runoff/storm sewers Natural sources Nonpoint source	2007	

Name	Pollutant	Potential Sources	Estimated TMDL Completion	Estimated Size Affected
Blanco Drain	Pesticides	Agriculture Irrigated crop production Agricultural storm runoff Agricultural irrigation tailwater Agricultural return flows Nonpoint source	2008	15.3 miles
Cholame Creek	Boron	Unknown	2019	8.7 miles
Elkhorn Slough	Pesticides	Agriculture Irrigated crop production Agricultural storm runoff Agricultural return flows Erosion/siltation Contaminated sediments Nonpoint source	2008	2,034 acres
	Sedimentation/ siltation	Agriculture Irrigated crop production Agricultural storm runoff Channel erosion Nonpoint source	2015	
	Pathogens	Natural sources Nonpoint source	2015	
Espinosa Slough	Pesticides	Agriculture Urban runoff/storm sewers	2008	1.5 miles
	Priority organics	Nonpoint source	2008	
Gabilan Creek	Nitrate as nitrate (NO_3)	Unknown	2019	6.4 miles
	Fecal coliform	Urban runoff/storm sewers Natural sources Nonpoint sources	2007	
Monterey Harbor	Unknown toxicity	Unknown	2019	76 acres
	Metals	Railroad slag pile	2007	
Moro Cojo Slough	Pesticides	Agriculture Irrigated crop production Agricultural storm runoff Agricultural return flows Nonpoint source	2006	62 acres
	Ammonia (un-ionized)	Unknown	2019	
	Sedimentation/ siltation	Agriculture Irrigated crop production Agricultural storm runoff Construction/land development Nonpoint source	2019	
	Low dissolved oxygen	Unknown	2019	
Moss Landing Harbor	Pathogens	Agriculture Nonpoint sources Boat discharges/ vessel wastes	2019	79 acres
	Pesticides	Agriculture Irrigated crop production Specialty crop production	2006	

Name	Pollutant	Potential Sources	Estimated TMDL Completion	Estimated Size Affected
	Sedimentation/ siltation	Agriculture Irrigated crop production Agricultural storm runoff Hydromodification Dredging Channel erosion Erosion/siltation Nonpoint source	2019	
Natividad Creek	Nitrate as nitrate (NO_3)	Unknown	2019	7 miles
Old Salinas River Estuary	Ammonia (un-ionized)	Source unknown	2019	74 acres
	Fecal coliform	Source unknown	2007	
	Low dissolved oxygen	Source unknown	2019	
	Nutrients	Agriculture Irrigated crop production Agricultural irrigation tailwater Nonpoint source	2007	
	Pesticides	Agriculture Irrigated crop production Agricultural storm runoff Agricultural irrigation tailwater Agricultural return flows Nonpoint source	2008	
Pajaro River	Boron	Unknown	2019	32 miles
	Fecal coliform	Pasture grazing–riparian and/or upland Natural sources Nonpoint source	2011	
	Nutrients *Pajaro River (including Llagas Creek) nitrate TMDL approved on October 13, 2006, by the EPA*	Agriculture Irrigated crop production Agricultural storm runoff Agricultural subsurface drainage Agricultural irrigation tailwater Agricultural return flows Urban runoff/storm sewers Wastewater—land disposal Channelization Removal of riparian vegetation Nonpoint source	Complete	32 miles
	Sedimentation/ siltation *Pajaro River (including San Benito River, Llagas Creek, and Rider Creek) sediment TMDL approved on May 3, 2007, by the EPA*	Agriculture Irrigated crop production Range grazing—riparian and upland Agricultural storm runoff Resource extraction Surface mining Hydromodification Channelization Habitat modification Removal of riparian vegetation Streambank modification/ destabilization Channel erosion	Complete	

Name	Pollutant	Potential Sources	Estimated TMDL Completion	Estimated Size Affected
Quail Creek	Nitrate as nitrate (NO_3)	Unknown	2019	4.2 miles
Salinas Reclamation Canal	Pesticides	Minor industrial point source Agriculture Irrigated crop production Agricultural storm runoff Agricultural irrigation tailwater Agricultural return flows Nonpoint source	2008	14 miles
	Priority organics	Minor industrial point source Agriculture Irrigated crop production Agricultural storm runoff Agricultural irrigation tailwater Agricultural return flows Urban runoff/storm sewers Unknown Nonpoint source	2008	
	Ammonia (un-ionized)	Unknown	2019	
	Low dissolved oxygen	Unknown	2019	
	Fecal coliform	Agriculture Pasture grazing—riparian and upland Urban runoff/storm sewers Natural sources	2007	
Salinas River (lower, estuary to near Gonzales Road crossing, watersheds 30910 and 30920)	Pesticides	Agriculture Irrigated crop production Agricultural storm runoff Agricultural irrigation tailwater Agricultural return flows Nonpoint source	2008	31 miles
	Nutrients	Agriculture	2007	
	Nitrate as nitrate (NO_3)	Unknown	2019	
	Salinity/TDS/ chlorides	Agriculture Natural sources Nonpoint source	2019	
	Toxaphene	Unknown	2019	
	Fecal coliform	Unknown	2007	
Salinas River (middle, near Gonzales Road crossing to the confluence with the Nacimiento River)	Pesticides	Agriculture Irrigated crop production Agricultural storm runoff Agricultural irrigation tailwater Agricultural return flows Nonpoint source	2008	72 miles
	Salinity/TDS/ chlorides	Agriculture Natural sources Nonpoint source	2019	

Name	Pollutant	Potential Sources	Estimated TMDL Completion	Estimated Size Affected
Salinas River (upper, confluence of the Nacimiento River to Santa Margarita Reservoir)	Chloride	Agriculture Pasture grazing—riparian or upland Urban runoff/storm sewers	2019	49 miles
	Sodium	Agriculture Pasture grazing—riparian or upland Urban runoff/storm sewers	2019	
Salinas River Lagoon (North)	Pesticides	Agriculture	2008	197 acres
	Nutrients	Nonpoint source	2007	
San Lorenzo Creek	Boron	Unknown	2019	49 miles
	Fecal coliform	Agriculture Pasture grazing—riparian and/or upland Urban runoff/storm sewers Natural sources	2019	
Santa Rita Creek (Monterey County)	Nitrate as nitrate (NO_3)	Unknown	2019	11 miles
Tembladero Slough	Pesticides	Agriculture Irrigated crop production Agricultural storm runoff Agricultural return flows Nonpoint source	2008	5 miles
	Ammonia (un-ionized)	Unknown	2019	
	Nutrients	Agriculture Irrigated crop production Agricultural storm runoff Agricultural irrigation tailwater Agricultural return flows Nonpoint source	2006	
	Fecal coliform	Agriculture Pasture grazing—riparian or upland Urban runoff/storm sewers Natural sources	2007	

Source: California State Water Resources Control Board 2006.

Porter-Cologne Water Quality Control Act

With the passage of California's Porter-Cologne Act, the SWRCB and the nine RWQCBs became the principal state agencies with responsibility for the coordination and control of water quality. Per the California Water Code, 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 RWQCBs are responsible for water quality planning and regulatory decisions for their respective regions. The RWQCBs have the authority to implement water quality protection standards through the issuance of permits for discharges to

waters at locations within their respective jurisdictions. Their jurisdiction also extends to discharge of wastes and wastewater to land, and to land disturbance, if the activities would affect the beneficial uses of surface water or groundwater.

Monterey County is within the jurisdiction of the Central Coast RWQCB. The Central Coast RWQCB 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 the protection of beneficial uses, and sets forth policies to guide the implementation of programs to attain certain objectives.

Water pollution controls, including control of waste discharges to lands that might affect surface- and groundwater, as well as direct point source and diffuse or nonpoint source discharges, are primarily administered by the Central Coast RWQCB. Although the Central Coast RWQCB has many separate programs to help administer, monitor, and enforce its water quality protection authority, the primary programs include the NPDES program, the TMDL program, the Conditional Waiver Program for Agriculture, and the Watershed Management Initiative.

In addition to these programs, the Central Coast RWQCB often will take the lead in investigating and overseeing the cleanup of contaminated surface- and groundwater bodies resultant from spills and leaks. It is involved in the review and issuance of water quality certifications for Section 404 wetlands fill permit requests; provides comments to the State Department of Forestry on Timber Harvest Plan (THP) permit applications; and provides comments to the County and other state agencies on a variety of wastewater treatment, pollution control, development, and mineral resource extraction projects.

Conditional Waiver for Irrigated Agriculture

The RWQCBs have the authority to regulate discharges of waste (such as fertilizer, pesticide, or sediment) that would affect state waters through permits called Waste Discharge Requirements (WDRs). RWQCBs also may conditionally waive WDRs for specific discharges or categories of discharges when it is in the public interest. In 2004, the Central Coast RWQCB adopted a new Conditional Waiver for Irrigated Agriculture, replacing an expired 1983 waiver.

The new conditional waiver was adopted in response to both changing legal requirements and a greater understanding and appreciation of water quality problems in irrigated agricultural areas throughout the region. Prior amendments to California Water Code Section 13269 caused all waivers of WDRs that existed on January 1, 2000, to expire on January 1, 2003, and required RWQCBs to review existing waivers at least every 5 years to renew, terminate, or adopt new waivers. In addition, many of the region's impaired water bodies with TMDL determinations run through agricultural lands, and many groundwater basins underlying agricultural areas show nitrate levels exceeding drinking water standards.

The conditional waiver is applicable to all irrigated lands used for producing commercial crops and requires each grower to:

- submit an NOI to comply with the terms of the waiver;
- complete 15 hours of farm water quality education within 3 years of adoption of the waiver;
- prepare and implement a farm plan for onsite water quality management, including business goals, site assessment, and practices planning; and
- perform individual water quality monitoring or participate in a cooperative monitoring program.

Based on the above requirements, there are two tiers of waivers for reporting frequency. Growers who have completed 15 hours of water quality education and a farm plan qualify for a Tier 1 waiver, requiring them to enroll and submit an updated management plan midway through the 5-year waiver cycle; all others fall under Tier 2 and must submit annual reports until they meet the education and farm plan requirements. Education requirements can be satisfied through courses certified by the Central Coast RWQCB, including the University of California Cooperative Extension's farm water quality short courses and courses through organizations such as the Central Coast Vineyard Team and RCDs. The Central Coast RWQCB certifies courses and evaluates educational availability on an ongoing basis.

The farm plan includes a detailed management practices checklist with four categories of water quality protection strategies: erosion control, irrigation management, pesticide management, and nutrient management. Growers also are required to conduct water quality monitoring and have the option to either perform individual monitoring or participate in a cooperative monitoring program, in which individual growers pool resources and conduct group monitoring. Under the conditional waiver, a group of 23 central coast agricultural organizations have agreed to implement the cooperative monitoring program.

When water quality problems are found where an agricultural facility is determined to be the source, the Central Coast RWQCB will help the facility to come into compliance or to implement alternate BMPs; issue a notice of violation or civil liability complaint; or, where compliance with waiver conditions will not adequately control the discharge, issue individual WDRs.

Watershed Management Initiative

The Watershed Management Initiative (WMI) guides the water resources protection efforts of the State Water Board and RWQCBs. The WMI is designed to integrate various surface- and groundwater regulatory programs while promoting cooperative, collaborative efforts by various agencies and interest groups within a watershed. The WMI takes a watershed management approach for water resources protection by integrating point and nonpoint source discharges, ground- and surface water interactions, and water quality/water quantity relationships. The State Water Board has worked with individual

RWQCBs to identify the major watersheds in each region, prioritizing water quality issues, and developing watershed management policies focused on protecting beneficial uses of water.

Beyond the WMI, NPDES stormwater management, and TMDL programs, there is currently no state mandate to prepare more general or integrated watershed management plans for large (basin-scale) watersheds. In addition, local governments that provide or maintain within their boundaries underground drinking water supplies 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.

Watershed Management Plans

The following watershed management plans have been developed for Monterey County.

Salinas River Watershed Management Action Plan

The *Salinas River Watershed Management Action Plan*, prepared in 1999 by the Central Coast RWQCB, outlines the watershed characteristics and management actions recommended to control point source and nonpoint source pollution within the Salinas River watershed. The upper watershed is mostly within 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.

Carmel River Watershed Assessment and Action Plan

The *Carmel River Watershed Assessment and Action Plan*, prepared in 2004 by the Carmel River Watershed Conservancy, includes an assessment of existing conditions and water quality goals for the Carmel River watershed. The river's water quality and supply have been impaired, with issues regarding water quality and declining flows, lack of riparian habitat for native species, erosion, sediment transport, infiltration and runoff, and flooding/drainage. The plan contains a component with 23 action recommendations for watershed improvement, including habitat restoration, water supply, and groundwater management.

Pajaro Watershed Water Quality Management Plan

The *Pajaro Watershed Water Quality Management Plan*, coordinated by the Association of Monterey Bay Area Governments in 1999, is a comprehensive nonpoint source water quality improvement plan for the Pajaro River watershed, including: (1) identification and assessment of the most significant nonpoint source pollutant types and sources throughout the watershed, (2) identification of recommended strategies for minimizing nonpoint source pollution, and (3) a watershed-wide plan for implementation

of the recommended strategies. The project was facilitated through the Pajaro River Watershed Council, a watershed-wide coordinated resource management and planning group.

Pajaro River Watershed Integrated Regional Water Management Plan

The *Pajaro River Watershed Integrated Regional Water Management Plan* (IRWMP) was a collaborative effort by the PVWMA, San Benito County Water District, and Santa Clara Valley Water District to identify regional and multibeneficial projects for the Pajaro River watershed. Completed in May 2007, the Pajaro River Watershed IRWMP presents the region's water resources management objectives and recommends four water management programs for addressing the highest priority needs: conjunctive water supply management, water supply/salt management, agricultural water quality, and flood protection. The IRWMP will be implemented by the member agencies in collaboration with the sponsors of the individual projects identified for each program.

Monterey Peninsula, Carmel Bay, and South Monterey Bay Integrated Regional Water Management Plan

This IRWMP is coordinating the efforts of more than 30 public and private stakeholders within the watershed. Completed in November 2007, the IRWMP sets out regional goals for the Monterey Peninsula and recommends a number of projects and programs as regional priorities. These include, but are not limited to: lower Carmel River restoration and floodplain enhancement, water conservation retrofit program, and Seaside Basin groundwater replenishment. The IRWMP will be implemented by the member agencies in collaboration with the sponsors of the individual projects identified for each program.

Groundwater Management

In California, surface water rights are regulated by the state, and groundwater is managed by a variety of local entities with a wide array of regulatory authority. Most local governments require well permits that primarily address groundwater quality issues and well construction requirements associated with groundwater. Historically, very few local governments, particularly counties, regulate or manage groundwater usage or withdrawals in order to broadly manage these water resources.

Generally, five methods for groundwater management have evolved over time. Groundwater management can be achieved by one of the following entities or methods.

Local Water Resource Agencies

More than 20 types of local agencies are authorized by the California Water Code to provide water for various beneficial purposes. Many of these agencies also have statutory authority to institute some form of groundwater

management. Most of these agencies are identified in the California Water Code, but their specific authority related to groundwater management varies.

Local agencies within Monterey County with regulatory authority over water resources are listed below.

- Water Management Agencies
  - Monterey County Water Resources Agency
  - Monterey Peninsula Water Management District
  - Pajaro Valley Water Management Agency
- Water Purveyors
  - Aromas Water District
  - Pajaro-Sunny Mesa Community Services District
  - California Water Service Co. (Cal-Water), Salinas District
  - Alco Water Service
  - California American Water Co. (CalAm), Monterey District
  - Castroville Water District
  - Marina Coast Water District
  - Pebble Beach Community Services District
  - Carmel Area Water District
  - San Lucas County Water District
- Wastewater Management Agencies
  - Carmel Area Wastewater District
  - Salinas Valley Solid Waste Authority
  - Monterey Regional Water Pollution Control Agency
- Cities
  - City of Carmel-by-the-Sea
  - City of Monterey
  - City of Del Rey Oaks
  - City of Pacific Grove
  - City of Gonzales
  - City of Salinas
  - City of Greenfield
  - City of Sand City

- City of King City
- City of Seaside
- City of Marina
- City of Soledad

Although the County has the authority to initiate groundwater management, it does not have authority over the above agencies. However, the County would provide management in some areas through its various special water supply or wastewater districts. The County also would develop and implement groundwater management plans under Assembly Bill (AB) 3030 (California Water Code Section 10753).

Groundwater Rights

In general, the state does not regulate groundwater rights. Counties can enact an ordinance to ensure that wells developed on one property do not interfere with the use of adjacent wells. In some areas of overuse, and where there is a high dependence on groundwater, groundwater rights are determined judicially in what are termed "adjudicated" groundwater basins. The Seaside groundwater basin (Coastal and Laguna Seca Subareas) is the only adjudicated groundwater basin in Monterey County.

As discussed above, Carmel Valley is under State Water Board Order WR 95-10, due to overdraft impacts on the Carmel River riparian corridor and associated wildlife, thereby requiring Cal-Am to obtain alternate water supply sources. In response to this order, Cal-Am filed a lawsuit to adjudicate the rights of the various groundwater pumpers of the Seaside basin aquifer, where there is also concern about sustainable yield (refer to discussion in Section 4.3, Water Resources, Water Rights Conflicts).

Groundwater Adjudication

Another form of groundwater management in California is through court adjudication. The groundwater rights of all overlying property owners and appropriators are determined by the court in basins where a lawsuit is brought to adjudicate the basin. The court also decides who the extractors are, how much groundwater those well owners can extract, and who the "watermaster" will be to ensure that the basin is managed in accordance with the court's decree. The watermaster must report periodically to the court. Such adjudications are difficult to achieve, costly, time-consuming, and divisive. The Seaside groundwater basin is the only adjudicated groundwater basin in Monterey County.

Legal action is taken sometimes when stream diversion or groundwater mining directly or indirectly affects stakeholders along waterways. Stakeholders include owners and tenants next to waterways; private, municipal, industrial, and agricultural consumers; and private and public interest groups. A common cause of litigation is the habitat rights of fish.

Flow diversion or over-pumping in an aquifer, or both, may lead to declining surface flows and associated degradation of fish habitat. One such case was brought against Cal-Am and affects the Seaside groundwater basin (see the discussion of "Carmel River Conflicts," above).

Groundwater Management Agencies

Thirteen California groundwater management agencies have been directly authorized by special state legislation. These entities vary significantly as far as why they were created, how they are managed, and what authorities are granted in each case. There are three such agencies in Monterey County: The MCWRA, the PVWMA, and the MPWMD. As previously discussed, these agencies have somewhat overlapping areas of authority and therefore must closely coordinate their programs and policies. More detailed discussion of each agency is provided in the section about local agencies below.

The MPWMD is the groundwater management agency on the peninsula, authorized by the state to augment the water supply through integrated management of surface- and groundwater resources. The PVWMA has legislative authority to manage groundwater actively and, in certain circumstances, to levy an extraction charge on groundwater use in the North County and in the Pajaro River area near Watsonville. Over a wider area, and especially in the Salinas Valley, the MCWRA is responsible for managing groundwater resources.

Assembly Bill 3030 Groundwater Management Plans

The 1992 Groundwater Management Act (California Water Code Section 10750), commonly referred to as AB 3030, was designed to provide local public agencies in California with increased management authority over groundwater resources. AB 3030 allows, but does not require, local water providers to develop a groundwater management plan for DWR-defined groundwater basins. These plans can 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 plan is only prepared following a public hearing and the adoption of a resolution (barring a majority of opposition).

The California Water Code also provides that a groundwater management plan may include any one or all of the following technical components: control of saline water intrusion, management of wellhead protection areas and recharge areas, well abandonment, conditions of overdraft, conjunctive use operations, groundwater contamination cleanup, and water recycling and extraction.

The MPWMD is in the process of preparing a long-term *Seaside Basin Groundwater Management Plan* following AB 3030 guidelines. Other

jurisdictions have typically included aspects of groundwater management in their watershed management or stormwater management plans, or refer to the *Central Coast Basin Plan*, as well as plans devoted to a particular resource, such as the Carmel or Salinas Rivers.

Both the MCWRA and the PVWMA have completed and adopted detailed basin management plans that, although not submitted to DWR as formal AB 3030 groundwater management plans, describe the management actions and capital improvement projects they will undertake to bring their respective basins into water supply/consumptive use balance over the long term.

Timber Harvest Management

The harvesting of timber for commercial purposes is regulated by the California Department of Forestry and Fire Protection (CDFFP). Timber operations are permitted by the CDFFP pursuant to the Z'berg-Nejedly Forest Practice Act (Public Resources Code Section 4511, et seq.) and the Forest Practice Rules (14 CCR 895 et seq.). Timber operations are primarily addressed at the state and regional level through the THP review program, including the timberland conversion rules. The CDFFP, in consultation with the RWQCB and the California Department of Fish and Game (CDFG), administers this program.

THPs are comprehensive, detailed plans for the sustainable harvesting of timber, describing the timber to be harvested, harvesting methods to be used, and environmental impacts of the activities proposed under the THP. A THP is prepared by a registered professional forester on behalf of the landowner and must include mitigation measures to reduce its environmental impacts. THPs are subject to review, revision, and approval by the CDFFP. The County, interested members of the public, and state and federal agencies, including the RWQCB and DFG, are afforded the opportunity to comment on THPs during the review and approval process. CDFFP must consider the comments received, particularly where the comments relate to potential environmental effects.

Surface Water Rights

The State Water Board has jurisdiction over surface water rights in the State of California under the common law public trust doctrine. The California Water Code Section 1735 provides the regulatory framework for long-term transfers, subject to the requirements of CEQA.

Appropriative water rights allow the diversion of surface water for beneficial use. Prior to 1914, appropriative water rights involved a simple posting to describe intent and scope of water use, diversion, or construction of diversion activities. Since 1914, the sole method for obtaining appropriative water rights is to file an application with the State Water Board. Before it can issue a water rights permit, the State Water Board must demonstrate the availability of unappropriated water.

Both pre- and post-1914 appropriative water rights may be lost if the water has gone unused for a period of 5 years.

Riparian water rights apply only to lands that are traversed by or border on a natural watercourse. Riparian owners have a right (correlative with the right of each other riparian owner) to share in the reasonable beneficial use of the natural flow of water that passes the owners' lands. No permit is required for such use. Riparian water must be used reasonably, beneficially, and solely on riparian (adjacent) land and cannot be stored for later use.

Urban Water Management Planning Act

The Urban Water Management Planning Act requires that each urban water supplier that provides water for municipal purposes to 3,000 or more customers, or more than 3,000 AFY, must submit to DWR an Urban Water Management Plan (UWMP). The UWMP must summarize existing and planned sources of water supply, identify current and projected water usage or demand, and include a discussion of 14 specified demand-management (e.g., water conservation) measures. The following is a list of UWMPs within Monterey County:

- Alisal Water Corporation (Alco)—not submitted.
- California American Water, Monterey District (Cal-Am)—submitted to DWR in July 2006.
- California Water Service Co., Salinas District (Cal-Water)—not submitted.
- Marina Coast Water District (MCWD)—submitted to DWR in January 2006.

The remaining water purveyors in Monterey County are small districts that do not meet the volume criteria for preparation of UWMPs.

Agricultural Water Conservation and Management Act

The Agricultural Water Conservation and Management Act establishes a relationship between DWR and agricultural water suppliers to develop and implement efficient water management practices. The legislation that took effect in January 2002 requires an increased effort to identify and assess the reliability of anticipated water supplies and envisions an increased level of communication between municipal planning authorities and local water suppliers.

California Senate Bills 901, 221, and 610

California SB 901 of 1995 required local planning agencies to consider the availability of water prior to approving any major new project. However, the bill provided little direction for the water supply assessment, planning agencies retained the authority to approve a project whether or not water availability was

firmly established, and the assessment was solicited only if the project resulted in an increase in population density or building intensity. These concerns led to the passage in 2001 of SB 221 and SB 610, which require specific documentation by the local water provider of water availability prior to project approvals.

SB 610[1] and SB 221[2] require a more formal and detailed analysis, including answers to such questions as: Where is the water coming from in normal, dry, and multiple dry years? Has the water supplier accounted for the demands in its planning documents? What right does the water purveyor have to the water? What is the condition of regional groundwater aquifers? Who else is competing for the water?

SB 610 is imposed through CEQA and accordingly has broader applicability than SB 221. All projects that are subject to CEQA and that meet any of the following criteria require the assessment:

- Proposed residential development of more than 500 dwelling units.
- A proposed shopping center or business establishment employing more than 1,000 persons or having more than 500,000 square feet of floor space.
- A proposed commercial office building employing more than 1,000 persons or having more than 250,000 square feet of floor space.
- A proposed hotel or motel, or both, having more than 500 rooms.
- A proposed industrial, manufacturing, or processing plant, or industrial park planned to house more than 1,000 persons, occupying more than 40 acres of land, or having more than 650,000 square feet of floor area.
- A mixed-use project that includes one or more of the projects specified in this subdivision.
- A project that would demand an amount of water equivalent to, or greater than, the amount of water required by a 500 dwelling unit project.

The water supplier must prepare and approve a water supply assessment, using a UWMP as its primary planning tool, if available. If the demands expected from the development are accounted for in the UWMP, the UWMP may be used to establish supply availability under normal and drought conditions. If the project would exceed documented supplies, the assessment must describe the source of the new water supply.

SB 221 has similar requirements. It applies to tentative subdivisions maps creating 500 lots or more. A project cannot be approved if the SB 221 water supply verification finds water supplies inadequate, unless the city or county

[1] An act to amend Section 21151.9 of the Public Resources Code, and to amend Sections 10631, 10656, 10910, 10911, 10912, and 10915 of, to repeal Section 10913 of, and to add and repeal Section 10657 of, the Water Code, relating to water.
[2] An act to amend Section 11010 of the Business and Professions Code, and to amend Section 65867.5 of, and to add Sections 66455.3 and 66473.7 to, the Government Code, relating to land use.

specifically finds that water sources not identified by the water supplier will be available.

State Drinking Water Quality Regulations

The DPH is responsible for regulating public water systems and small water systems and monitoring them for compliance with the California Water Code and national standards for drinking water quality. Public water systems are defined as systems that provide water to 15 or more service connections or regularly serve at least 25 individuals daily at least 60 days of the year. Small water systems serve at least 5 but not more than 14 connections and do not regularly serve drinking water to more than an average of 25 individuals daily for more than 60 days out of the year. The DPH is responsible for the issuance of operational permits, routine water system inspections, evaluation of water quality monitoring data, and follow-up compliance activities for these systems.

Under Water Code Section 350, DPH 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—especially for drinking water, sanitation, and fire protection). In these situations, moratoria on new public water connections may be ordered until an adequate supply is ensured.

Septic System Regulations

In California, all wastewater treatment and disposal systems, including individual septic systems, fall under the overall regulatory authority of the State Water Board and the nine RWQCBs. The RWQCBs' involvement in regulation of onsite systems most often concerns the formation and implementation of basic water protection policies. These are reflected in the regional basin plans, generally in the form of guidelines, criteria, or prohibitions related to the siting, design, construction, and maintenance of onsite systems. The RWQCBs generally delegate regulatory authority for septic systems to counties, cities, or special districts, subject to the condition that the local agency commits to enforcing the minimum requirements contained in the basin plan policies.

The Central Coast RWQCB has adopted policies and requirements pertaining to onsite systems that are contained in the *Central Coast Basin Plan*. The onsite systems element of the Basin Plan sets forth various objectives, guidelines, general principles, and recommendations for the use of onsite systems that cover various topics related to siting, design, construction, operation, maintenance, and corrective/enforcement actions. In Monterey County, the Central Coast RWQCB issues WDRs (described above) for all major point source discharges, such as municipal wastewater treatment plants and package wastewater treatment plants. All of Monterey County's treatment plants, including those operated by municipalities or wastewater management districts, are regulated under a WDR.

Onsite sewage disposal systems in Monterey County are regulated by the County's Environmental Health Division. Monterey County regulations for onsite sewage disposal systems are contained in Chapter 15.20 of the Monterey County Code, the sewage disposal ordinance. Regulations set forth specific requirements related to permitting and inspection of onsite systems; septic tank design and construction; drywell and disposal field requirements; and servicing, inspection, reporting, and upgrade requirements. Additional requirements for onsite systems in Monterey County are adopted as part of community plans or as project-specific mitigation measures or conditions applied to development proposals lying within a designated Special Problem Area of the county. In general, soil percolation rates are required to be no less than 1 inch per hour for an area to be considered suitable for a septic tank leachfield system.

Regulations in Monterey County also require that any person or firm that engages in the business of cleaning septic tanks, chemical toilets, cesspools, or sewage seepage pits possess a valid registration issued by the local health officer or their authorized representative.

Assembly Bill 885 Onsite Wastewater Treatment System Regulations

In 2000, the California State Legislature passed AB 885 (California Water Code Sections 13290–13291.7), which requires the State Water Board, in consultation with various agencies and stakeholders, to develop statewide regulations for onsite wastewater treatment systems (OWTS). In March 2007, the State Water Board released a draft of the OWTS regulations, which contain "minimum requirements for the permitting, monitoring, and operation of OWTS for preventing conditions of pollution and nuisance." The regulations would be implemented through conditional waivers of WDRs by the State Water Board or RWQCBs.

The draft regulations dictate that new and replaced OWTS be operated to accept and treat flows of domestic wastewater (e.g., toilet flushing, food preparation, laundry, household cleaning, and personal hygiene) and be designed to disperse effluent to subsurface soils in a manner that maximizes unsaturated zone treatment and aerobic decomposition of the effluent. The draft regulations contain performance requirements and specifications for the OWTS systems and supplemental treatment components. As of spring 2008, the draft regulations are still under consideration and public review.

4.3.3.3 Local Regulations

A number of agencies manage water resources within Monterey County. The Monterey County Water Resources Agency (MCWRA) oversees management of the water resources. Among its responsibilities is the Salinas Valley Water Project. On the Monterey Peninsula area, the Monterey Peninsula Water Management District (MPWMD) has authority over local issues related to water supply. Together, MCWRA and the Monterey Regional Water Pollution Control Agency (MRWPCA) oversee the Monterey Regional Water Recycling Projects,

which consist of a reclamation plant and a 45-mile distribution system known as the Castroville Seawater Intrusion Project (CSIP). The Pajaro Valley Water Management Agency (PVWMA) has authority over water supply issues in the Pajaro River basin, which includes parts of both Monterey and Santa Cruz Counties. The Marina Coast Water District (MCWD) supplies water to the City of Marina and the former Fort Ord.

There are also a number of private and public water suppliers in the unincorporated area. The major providers are Cal-Am on the Monterey Peninsula, Cal-Water in the Salinas Area, and the Castroville and Pajaro/Sunny Mesa Water Districts in the North County area. The vast majority of the county's water supply is pumped from groundwater and is allocated for agricultural use.

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 MCRMA, MCWRA, and MCHD.

Primary regulatory authority is within the MCWRA and the Environmental Health Division of Monterey County Health Department (MCHD), both of which enforce the County codes. The MCRMA administers the County's permit and planning functions. Surface- and groundwater within certain areas of the county are managed by the MPWMD and the PVWMA, in addition to the MCWRA. These and other agencies with regulatory authority are summarized below.

Monterey County Water Resources Agency

The MCWRA, formerly called the Monterey County Flood Control and Water Conservation District, oversees the development and implementation of water quality, water supply, and flood control projects in Monterey County. Primary responsibilities are the management of water supply resources in the reservoir system, including San Antonio and Nacimiento Reservoirs, and permitting and development of the SVWP. As the local administrator of the NFIP, the MCWRA manages floodplain development and implements activities associated with the community rating system. The MCWRA also oversees resources and development of the Salinas River channel and develops and implements various water quality monitoring programs. Maintaining high water quality standards for both supply and environmental habitat are major goals of the agency. Goals are achieved through 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, and those for overall watershed protection in reservoir areas.

The Monterey County Water Resources Act, codified in Chapter 52 of the Statutes of 1991, authorizes the MCWRA to develop, maintain, and preserve certain water resources, including the following rights.

- Store water in surface or underground reservoirs within or outside of the agency.
- Conserve and reclaim water for present and future use within the agency boundaries.
- Appropriate and acquire water and water rights, and import water into the agency and conserve water within or outside of the agency, for any purpose useful to the agency.
- Prevent interference with or diminution of, or to declare rights in, the natural flow of any stream or surface or subterranean supply of water used or useful for any purpose of the agency or of common benefit to the lands within the agency or to its inhabitants.
- Prevent contamination, pollution or otherwise rendering unfit for beneficial use the surface or subsurface water used or useful in the agency's boundaries, and commence maintain, and defend actions and proceedings to prevent any interference with those waters which endangers or damages the inhabitants, lands, or use of water in, or flowing into, the agency.
- Control the flood and storm waters of the agency and the flood and storm waters of streams that have their sources outside of the agency but which flow into the agency, and conserve those waters for beneficial and useful purposes of the agency by spreading, storing, retaining, and causing to percolate into the soil within or outside the agency, or save or conserve in any manner all or any of those waters and protect from damage from those flood or storm waters the watercourses, watersheds, public highways, life and property in the agency, and the water courses of streams outside the agency flowing into the agency.
- Cooperate with county, state and federal, public and private organizations in the construction of any work for the controlling of flood or storm waters.
- Carry on technical and other necessary investigations, make measurements, collect data, make analyses, studies and inspections pertaining to water supply, water rights, control of flood and storm waters, and use of water both within and without the agency relating to watercourses or streams flooding in or into the agency. For these purposes, the agency has the right of access to all properties within the agency and elsewhere relating to watercourses or streams flooding in or into the agency.
- Enter upon any land, to make surveys and locate the necessary works of improvement and the lines for channels, conduits, canals, pipelines, roadways, and other rights-of-way.
- Acquire by purchase, lease, contract, gift, devise or other legal means lands and water and water rights or other property necessary or convenient for the construction, use supply maintenance, repair, and improvement of those works.
- Acquire the right to store water in any reservoirs, or carry water through any canal, ditch, or conduit of the agency.

- Grant to any owner or lessee the right to the use of any water or right to store water in any reservoir of the agency, or to carry water through any tunnels, canal, ditch, or conduit of the agency.
- Develop agreements for the transfer or deliver to any district, corporation, association, or individual of any water right or water pumped, stored, appropriated, or otherwise acquired or secured, for the use of the agency, of for the purpose of conserving the waters for beneficial use within the agency, or for the protection, enhancement, and use of groundwater within the agency.
- Issue bonds and cause taxes or assessments to be levied in order to pay any obligation of the Agency and carry out any purposes of the Act.
- Buy, provide, sell, and deliver water.
- Develop and distribute water to persons in exchange for ceasing or reducing groundwater extractions, and prevent groundwater extractions, which are deemed to be harmful to the groundwater basin.
- Transport, reclaim, purify, desalinate, treat, or otherwise manage and control water for the beneficial use of persons or property within the agency.
- Provide, generate, sell, and deliver hydroelectric power.

Although responsibilities for stormwater management within the unincorporated county are spread across several different jurisdictional entities, flood control within specific benefit assessment zones is the responsibility of the MCWRA.

The MCWRA performs three services related to flood control. Flows in the Salinas River, along its entire length through the county, are regulated by operation of Nacimiento and San Antonio Dams. These operations are engineered to maintain adequate storage space in order to simultaneously store winter water for summer release for groundwater recharge and to provide some flood control. Nevertheless, some storm events that reach the 100-year level will still cause flooding in the Salinas Valley basin.

The MCWRA also maintains an alert system to monitor rainfall intensity flow rates along the Salinas River and its tributaries as storm events take place. The alert system allows the MCWRA to collect data on rainfall and stream conditions and to provide a system of early flood warning (flood alert) throughout all of Monterey County. This information also may be useful for improving groundwater management.

Thirdly, the MCWRA performs maintenance of many of the irrigation ditches and channels that drain the Salinas Valley. Regular clearing of debris and overgrown vegetation is performed to maintain the channels' ability to convey floodwaters. In the past, the MCWRA performed this role for the Carmel Valley basin as well as the Salinas Valley basin. Recently, the agency discontinued maintenance in the Carmel Valley basin because of discontinued funding.

An example of the MCWRA's role in flood control is the Salinas River and Arroyo Seco Channel Maintenance Program. Flooding along the Salinas River during spring 1995 resulted in damage of an estimated 30,000 acres of Salinas Valley farmland and permanent loss of 1,100 acres of prime agricultural land to erosion. Farmers and property owners along the river and agencies involved in flood control concluded that management and maintenance of the dry river channel would be the most effective, long-range solution to prevent future crop and property loss from flooding. In response, the USACE issued a permit to MCWRA to repair eroded banks and levees; remove sandbars, vegetation, and debris from the river; and construct pilot channels. This permit expired in January 1996, before all work was completed, but was followed by a second permit to allow farmers and property owners to mechanically remove vegetative obstructions and debris from the channel and relocate or remove sandbars and silt deposits. This second permit expired on December 31, 2001, but the MCWRA obtained a new 5-year Section 404 Regional General Permit to continue the Channel Maintenance Program.

Monterey County Health Department

The MCHD is responsible for the enhancement, promotion, and protection of the health of Monterey County's individuals, families, communities, and environment. With regard to water resources, the MCHD and its agent, the director of environmental health, is responsible for drinking water protection, including:

- the Collaborative Aquifer Protection Program (CAPP), a program to identify and destroy abandoned wells in order to improve groundwater management, in association with MCWMA and PVWMA;
- the Cross-Connection Control Program, to monitor and eliminate cross-connections between drinking water and other water lines, such as irrigation or wastewater;
- regulation of desalination treatment facilities;
- conducting drinking water source assessment and protection, to provide information on contaminants in drinking water and water supply;
- regulation of drinking water systems, including more than 1,250 individual water systems, each serving from 2 to 199 connections (includes permitting, construction oversight, and monitoring);
- regulation of local small water systems serving 2 to 4 residential units, including permitting, inspection, and monitoring;
- review of operation and maintenance for community water systems;
- public water system (15 or more connections) (includes permitting, inspection, and monitoring);
- state small water systems (5 to 14 connections) (includes permitting, inspection, and monitoring);

- water quality monitoring program, including water sampling and analysis; and
- well construction/repair/destruction, including permitting and monitoring of well applications, construction, and destruction to protect groundwater.

The MCHD also administers hazardous waste programs (including monitoring wells), review of septic and wastewater plans for proposed projects, and solid waste management.

Monterey Peninsula Water Management District

The MPWMD was formed in 1978 to augment the water supply and manage water resources for communities on the Monterey Peninsula, including Carmel-by-the-Sea, Del Rey Oaks, Monterey, Pacific Grove, Seaside, Sand City, the Monterey Peninsula Airport District, and portions of unincorporated Monterey County (including Pebble Beach and Carmel Valley). The MPWMD was created following the drought of 1976–1977 in recognition of the need for conservation and augmentation of water supplies on the Monterey Peninsula. The MPWMD's enabling legislation provides authority for integrated management of the groundwater and surface water resources within the Monterey Peninsula area, encompassing the waters of the Carmel Valley and Seaside groundwater basins. The MPWMD's integrated management responsibilities include control over both water supply and demand, causing the MPWMD to act both as a planning agency and a regulatory body.

In addition to groundwater and surface water management, the MPWMD is responsible for water conservation, protection of local water supply, and working with local water suppliers to manage water resources and distribution. The MPWMD manages the production of water from two sources: surface water from the Carmel River stored in San Clemente and Los Padres Reservoirs, and groundwater pumped from municipal and private wells in Carmel Valley and the Seaside coastal area basin.

Over-pumping and flow diversion in the area of the lower Carmel Valley aquifer has caused significant dewatering of the Carmel River and has become a major political and environmental issue. Declining water levels in the river may adversely affect species considered threatened under the federal Endangered Species Act (central coast steelhead and California red-legged frogs) and may endanger the riparian habitat. In order to protect these environmental resources, a comprehensive management plan was deemed necessary to both meet water supply demands and protect aquatic and riparian habitat. The MPWMD has studied more than 70 alternatives to develop a water supply project for area rivers and has implemented an environmental mitigation program along the Carmel River.

Pajaro Valley Water Management Agency

The PVWMA is a state-chartered local agency, created in 1984 to manage existing and supplemental water supplies to reduce long-term overdraft and to provide sufficient water supplies for present and anticipated needs within the boundaries of the agency. The PVWMA's jurisdictional boundary encompasses a portion of southern Santa Clara County, the Pajaro Valley area, and the Highlands North and Springfield Terrace planning area subbasins in North County. The PVWMA is responsible for developing and using supplemental water and available underground storage to manage the groundwater supplies.

PVWMA has studied the issues of overdraft, storage depletion, and seawater intrusion for many years. Major agency projects include implementation of the 2002 *Revised Basin Management Plan*, including the Watsonville Area Water Recycling Project and the 23-mile import pipeline to provide sufficient water resources for agricultural uses and reduce saltwater intrusion into coastal wells (Pajaro Valley Water Management Agency 2008b). However, the pipeline project has largely stalled over the high price of the pipeline and the lack of opportunities to obtain Central Valley Project or other inland supply contracts.

The Pajaro Valley water projects have the potential to resolve much of the supply problem facing North County and the Pajaro Valley basins. However, a regional solution will be necessary to solve these problems. The combined projects and the cooperation of the MCWRA, the PVWMA, and the public are key to the resolution of the needs of the area.

Monterey County Resource Management Agency

The MCRMA was formed in 2005 to optimize the County's delivery of land use–related services, including planning, environmental review and permitting, plan check and permitting, zoning enforcement, redevelopment, housing, public works and facilities, land surveying and design, water and sanitation system management, and design and construction of public buildings. The MCRMA is organized into four divisions: the Planning Department, the Building Services Department, the Public Works Department, and the Housing and Redevelopment Office. The Planning Department is responsible for coordinating the review of all applications for land use entitlements in the county, in coordination with the Public Works Department, the MCHD, the County Parks Department, and the agricultural commissioner. The Building Services Department is responsible for most of the code enforcement related to land use and development related to water resources, including residential development, grading, and land subdivision regulation and enforcement. Sewer connection permits are processed by the Public Works Department.

Fort Ord Reuse Authority

The Fort Ord Reuse Authority (FORA) has a 6,600-AFY allocation from the MCWRA to serve the development proposed in the 1997 *Fort Ord Reuse Plan*. The former Fort Ord has been annexed into Zone 2A of the MCWMA. Full implementation of the plan would require approximately 17,000 AFY and would require participation in supplemental water supply projects proposed by the MCWMA. Wastewater treatment is provided at the MRWPCA plant.

Monterey County Local Agency Formation Commission

Under the Cortese-Knox-Hertzberg Local Government Reorganization Act (Government Code Section 56000 et seq.), the Monterey County Local Agency Formation Commission (LAFCO) is responsible for coordinating logical and timely changes in local governmental boundaries. Responsibilities include annexations and detachments of territory; incorporations of cities; formations of special districts; consolidations, mergers, and dissolutions of districts; and reviewing ways to reorganize, simplify, and streamline governmental structure. The County LAFCO also prepares Municipal Service Reviews (MSRs) for each agency to determine the availability of services, efficiency of delivery, and opportunities for greater efficiencies. Where applicable, the MSR, based on information gathered from local water service providers, will assess each provider's ability to provide for existing and future water needs.

Monterey County Code

The Monterey County Code, including various ordinances, provides the regulatory framework for implementing the County 2007 General Plan policies and programs. 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 MCWRA and Monterey County Health Department (MCHD).

The Monterey County Code, including various ordinances, provides the regulatory framework for implementing the 2007 General Plan policies and programs. Title 15 of the Monterey County Code (Public Services), addresses domestic water systems, well construction, water conservation, wastewater and sewage disposal, and discharge to streams.

Grading

The County grading ordinance (Chapter 16.08 of the Monterey County Code) generally regulates grading activities greater than 100 cubic yards and over 2 feet in height. Submittal requirements for a grading permit issued by the County building official include site plans, existing and proposed contour changes, an estimate of the volume of earth to be moved, and soils or geotechnical reports (or both). Projects involving grading activities over 5,000 cubic yards must be

prepared by a civil engineer, and geotechnical reports may be required also. Grading is not allowed to cause degradation of a waterway, and erosion control measures are required. Grading within 50 feet of a watercourse or within 200 feet of a river is regulated in the Zoning Code Floodplain regulations. The Zoning Code, Chapter 21.64.230, details specific regulations for development on slopes in excess of 30%. The County building official has regulatory authority over grading activities, although the MCWRA also enforces drainage regulations.

Work in Salinas River and Arroyo Seco River channels is exempted if it is covered by a USACE 5-year regional Section 404 permit, approved by the CDFG, and approved by the MCWRA. All other work requires a separate permit from these agencies, subject to environmental review.

Drainage

Drainage, and the preparation of design improvement plans to control runoff and prevent erosion, is regulated under Chapter 19.10, regarding subdivision improvements. Improvement plans for drainage and runoff control are subject to the approval of the MCWRA in accordance with the MCWRA design criteria. Drainage is also regulated in the grading ordinance (Chapter 16.08 of the Monterey County Code), erosion control ordinance (Chapter 16.12), Floodplain Development (Chapter 16.16), and Subdivisions and Improvement Plans (Chapters 19.03, 19.04, 19.05, 19.07, and 19.10). Drainage management associated with intensive agricultural uses and grazing is regulated in Chapter 21.32 of the Monterey County Code. Chapter 21.66 regulates drainage, groundwater, and surface water conditions associated with hazardous geologic and other areas.

Erosion Control

Chapter 16.12 of the Monterey County Code establishes erosion control regulations for Monterey County. The purpose of the erosion control ordinance is to "eliminate and prevent conditions of accelerated erosion that have led to, or would lead to, degradation of water quality, loss of fish habitat, damage to property, loss of topsoil or vegetation cover, disruption of water supply, or increased danger from flooding." It "requires the control of all existing and potential conditions of accelerated (human-induced) erosion, sets forth required provisions for project planning, preparation of erosion control plans, runoff control, land clearing, and winter operations." Erosion control measures specified in the ordinance must be in place and maintained at all times between October 15 and April 15. The ordinance specifies fines for any person causing or allowing the continued existence of a condition of accelerated erosion, as determined by the director of building inspection.

Prior to permit issuance for building, grading, or land clearing, an erosion control plan following the ordinance's guidelines must be submitted to MCRMA. The plan must show methods for control of runoff, erosion, and sediment movement. Erosion control plans also may be required for other types of applications where erosion can reasonably be expected to occur. Routine agricultural operations need not submit these plans. Development and related construction activities, such as site cleaning, grading, and soil removal or placement that causes a

permanent change to existing site conditions, are generally prohibited on slopes greater than or equal to 30% (greater than 25% within the North County's Coastal Zone).

Erosion also is regulated in the grading ordinance (Chapter 16.08, discussed above), Floodplain Regulations (Chapter 16.16), Preservation of Oak and Other Protected Trees (Chapter 16.60), Protection of the Pajaro River Banks (Chapter 16.65), and Subdivisions/Tentative Maps (Chapters 19.03, 19.05, 19.07, and 19.10), and is regulated within visually sensitive areas (Chapter 21.46). Finally, erosion is regulated in Chapter 16.04, Surface Mining and Reclamation, and subject to review and approval by the State Department of Conservation.

Hydrology and Hydrogeology

Surface water is regulated under Monterey County Code Title 19, the subdivision ordinance. Chapters 19.03, 19.05 and 19.07 of the 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.

All departments of the County enforce the subdivision ordinance, and verification of water resources is also subject to review by the director of environmental health.

Flood Control and Floodplain Management

Chapters 16.16 and 21.64 of the Monterey County Code contain regulations regarding floodplain development. These sections discuss general and specific standards to prevent flood damage within the county. Such measures apply to all development within SFHAs in the county, as identified on FEMA FIRMs. Monterey County floodplain management regulations are based on the model FEMA program; however, the County has adopted regulatory standards that exceed the minimum federal requirements. County regulations prevent the placement of fill, buildings, and other obstructions in regulatory floodways (the zone along a channel where flow moves with depth and velocity and where obstructions can cause the most damage) and require buildings located in SFHAs to be elevated a minimum of 1 foot above the 100-year flooding elevation.

Chapter 21.64.130 regulates land use in the Carmel Valley floodplain, including development within 200 feet of the Carmel River and lands within the 100-year floodplain, floodway, and floodway fringe as defined on FEMA maps. The general manager of the MCWRA and the director of planning and building inspection have regulatory authority.

Chapter 16.16 regulates development in all SFHAs within the jurisdiction of Monterey County and areas within 200 feet of rivers or within 50 feet of watercourses. The general manager of the MCWRA has regulatory authority.

Carmel Valley Floodplain

The zoning ordinance establishes restrictive regulations that prohibit development within 200 feet of the bank, floodway, or riparian corridor of the Carmel River (Chapter 21.64.130). This ordinance is intended to stabilize the river channel, greatly reducing erosion potential, as well as ensure that structures are not built within the flood zone.

Coastal Areas

The adopted coastal implementation plans regulate land development in the Coastal Zone. Because the proposed 2007 General Plan amendment does not affect the existing Local Coastal Program (LCP) and its component Local Coastal Plans, the coastal implementation plans are not pertinent to the project.

Drinking Water

Domestic Water Systems

Title 15 of the Monterey County Zoning Code regulates public services. Chapter 15.04 of the County Code regulates the construction, installation, maintenance, and repair of domestic water systems. The purposes of the chapter are to: (1) regulate construction, installation, maintenance and operation of domestic water systems which have from 2 to 199 service connections; (2) supplement minimum state laws and standards for construction, installation, maintenance, and operation of state small water systems and; (3) regulate the quality and quantity of water supplied to and by such water systems, thereby promoting the public health, safety, and welfare. The ordinance requires permits for domestic systems to be obtained from the County Director of Environmental Health. The MCHD may issue the permit if it finds that (Section 15.04.050):

- there is a person who, at all times, will be available and legally responsible for the proper performance of the system;
- water service for the proposed water system is not available from a public, private, or mutual water system, thereby demonstrating the necessity of formation of an additional water system;
- the water supplied is pure, wholesome, and potable;
- the system supplies the minimum quantity of water required in the ordinance (6 to 12 gallons per minute, depending on the number of service connections); and
- the supply system complies with the design and construction standards described in the ordinance.

As part of the permit approval, water for the system must be subjected to approved bacteriological and chemical tests at the expense of the applicant. Tests must demonstrate that the water falls below the limiting concentrations given in the ordinance for such parameters as inorganic and organic chemicals, radioactivity, metals, total dissolved solids, and chloride. Bacteriological analysis must be performed on the water at least every 6 months and the results filed with the MCHD.

Design and construction standards outlined in the ordinance include required operating pressures, pumping plants, and pipe specifications. Wells must meet state standards (see above) and the standards of the local well ordinance (see below). Operators of domestic water systems must apply to the MCHD for an amended permit prior to making any modifications to their systems. The MCHD may suspend or revoke permits for systems if conditions of the permit are not being met or if the water becomes unpotable.

Water Conservation

Water conservation is regulated in Chapter 15.12 of the County Code (Ordinance 2181, 1976), which contains findings that there is water demand in excess of available supply on the Monterey Peninsula and that new water service facilities should be regulated. These special provisions apply in MCWRA's Zone 11. In this area "waste" of water is prohibited, requiring the use of low-flow toilets, metering faucets, low-pressure piping, and recycling air conditioners; and prohibiting non-recirculating water features such as fountains and pools.

MCWRA Ordinance 3359, adopted in 1991, defines BMPs and xeriscape principles, and clarifies variance procedures. The purpose of the ordinance is to "bring about public awareness of the need for water conservation, to provide for conservation regulations that will permanently reduce or eliminate waste of water in all areas of Monterey County, and to require the adoption of substantially similar or more restrictive regulations in all jurisdictions of the county."

MCWRA Ordinance 3932 (Appendix B) enacted mandatory water conservation regulations. The purpose of the ordinance is to "bring about public awareness of the need for water conservation, to provide for water conservation regulations that will permanently reduce or eliminate waste of water in all areas of Monterey County, and to require the adoption of substantially similar or more restrictive regulations in all jurisdictions of the county…" Mandatory restrictions on water waste, as enforced by MCWRA, are summarized below:

- Steps must be initiated to repair any broken, leaking or defective plumbing, sprinkler or irrigation system within 72 hours after first learning of the problem, and repair work must be diligently pursued to completion.
- Hoses used for washing vehicles must be equipped with a shutoff nozzle.
- Hoses used with potable water for washing the exterior of buildings or any other structure must be equipped with a shutoff nozzle.
- Potable water through a hose may not be used to clean any sidewalk, driveway, roadway, parking lot, or any other outdoor paved or hard-surfaced area, except where necessary to protect public health and safety.

- Water must not be allowed to spill into streets, curbs or gutters, and water may not be used in any manner, which results in runoff beyond the immediate area of use.
- Swimming pools and spas may not be emptied and refilled except to prevent or repair structural damage or to comply with public health regulations.
- Water may not be used to operate or maintain levels in decorative fountains, unless water is recycled in the fountain.
- Visitor-serving facilities must display signs promoting water conservation and/or advising that public waste of water is prohibited.
- All public and quasi-public entities must display signs in restrooms, kitchens, and dining areas promoting water conservation and/or advising that public waste of water is prohibited.
- Commercial car wash facilities may only use the following methods: 1) Mechanical automatic car wash facilities using water-recycling equipment, 2) hoses which operate on timers for limited periods and then shut off automatically, 3) hoses equipped with automatic shutoff nozzles, or 4) bucket and hand washing.
- Potable water may not be used for compaction or dust-control purposes in construction activities where there is a reasonable source of nonpotable water available. All hoses used in construction activities must have shutoff nozzles.
- Water from fire hydrants may not be tapped for any purpose other than fire suppression or emergency aid, without first obtaining written approval.
- No water system may be tapped into without first obtaining written approval.
- Water supply and distribution companies with 15 or more service connections shall maintain a program to detect and repair leaks in their distribution system, and shall review this program annually with the Agency.
- Water may not be used for agricultural irrigation in a manner which substantially conflicts with best management practices in Monterey County or which allows water to run to waste.
- Potable water may not be used for dust control purposes in agricultural activities where there is a reasonable source of non-potable water available.
- In all new construction, toilets must be ultra low-flow, showerheads must have a maximum flow capacity of 2.5 gallons per minute, and all hot water faucets with more than 10 feet of pipe between the faucet and the hot water heater must be equipped with a hot water recirculating system. All new construction requiring a land use permit must apply xeriscape principles throughout the exterior landscape, including such techniques

and materials as native or low water use plants and low precipitation sprinkler heads, bubblers, drip irrigation systems, and timing devices.

- All existing hotels and motels must be retrofitted with showerheads with a maximum flow capacity of 2.5 gallons per minute.
- All existing residential structure must, at the time of change of ownership, be retrofitted with showerheads with a maximum flow capacity of 2.5 gallons per minute, ultra-low flush toilets or dual flush conversion kits. All existing commercial or residential structures must also make these retrofitting at the time of change of ownership or change of use.
- Indiscriminate running of water not otherwise prohibited above is not permitted if it is wasteful and without reasonable purpose.

This ordinance applies in all areas of the county subject to MCWRA's regulatory jurisdiction, including both incorporated and unincorporated areas and all water districts. However, the ordinance is not implemented in any city or water district that adopts and enforces its own regulations that are at least as restrictive as the regulations contained in this ordinance.

Agricultural Water Conservation Plans

Urgency Ordinance 3592, adopted by MCWRA in 1992, requires all growers in the Salinas Valley groundwater basin to develop a mandatory water conservation plan and to file that plan with MCWRA. The intent of the ordinance is to encourage water conservation as a means to reduce water demand and help reduce further overdraft. Growers farming property, any portion of which lies within MCWRA's Zone 2A, must submit a plan to MCWRA containing the following information:

- a description of the property, terrain, water usage and sources, and acreage under consideration;
- a description of their current farming methods and their impact on water use;
- a description of the changes that will be made in the current farming methods, crop selection and/or acreage cultivated;
- a description of alternative water conservation measures the grower considered and rejected, and a brief explanation of why they were rejected; and
- a schedule showing when each element of the water conservation plan will be implemented.

The ordinance encourages adoption of BMPs by requiring growers to select water-saving alternatives from a list developed by MCWRA. The recommended practices (e.g., use of moisture sensors, drip irrigation, nighttime irrigation, time clocks on pumps, tailwater return systems, and acreage set-asides) have been assigned point values. Growers must accumulate at least one point per acre of land. A fine may be assessed of $50 for each day of violation, for failure to

submit a plan. Enforcement actions may be taken through the District Attorney's office.

Water Data from Water Distribution Systems

Ordinance 3428 was adopted by MCWRA in 1989. It requires water distribution systems to implement water use management procedures and provide water use information to MCWRA. 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." Water distribution systems covered by this ordinance include: (1) any system, regardless of ownership, that provides piped water for domestic use and has 50 or more service connections; and (2) industrial or commercial users that require more than 5 AFY, or that are not a service connection of a registered public water system.

Each system covered by the ordinance must register with MCWRA and provide information on the characteristics of the system and the types of water use records maintained. Each water distribution system must have or develop the capability to track monthly and annual cumulative water use and demand by use category, and must report each year to MCWRA the results of an annual water consumption audit. Water distribution systems in areas with defined allocation plans or in areas defined as having critical water supply problems may also be required to report usage by individual service connections. In areas with critical problems, MCWRA also may require periodic and cumulative water use data on the highest water users in each use category, and on customers identified by the Agency as apparently wasting water.

Water Wells

Chapter 15.08 of the County Code regulates the construction, repair, and reconstruction of all wells to prevent groundwater contamination and to ensure that water obtained from wells will be suitable for its intended purpose and will not jeopardize the health, safety, or welfare of the people of the County. It also regulates the destruction of wells found to be public nuisances, or when otherwise appropriate, to ensure that the wells will not cause pollution or contaminate groundwater.

Wells are regulated by the County Director of Environmental Health. A permit must be obtained from MCHD prior to the construction, repair, reconstruction, or destruction of any well, abandoned well, cathodic protection well, observation well, monitoring well, or test well. The applicants must meet the standards for these procedures set forth in DWR Bulletins 74-81 and 74-90. The ordinance also modifies the state standards in several areas, including: (1) the minimum allowable distance between wells and sewage leaching fields, septic tanks, and seepage pits; (2) requirements for sealing of the annular space surrounding the conductor casing of all wells; (3) restrictions on the discharge of drilling fluids; and (4) prevention of erosion caused by test pumping of wells. Well permits are subject to inspection.

All wells must be constructed and cased to prevent pollution, and all openings to the well must be sealed off to prevent pollution. A well is considered abandoned when it has not been used for a period of 1 year, unless the owner can meet various criteria demonstrating an intention to use the well again. Abandoned wells are destroyed by methods described in DWR Bulletins 74-81 and 74-90, with modifications as specified in the County Code to prevent the migration of water from one aquifer to another. Additional requirements are imposed on wells in the Prunedale area, requiring backflow prevention devices on all pumping equipment where fertilizers, fumigants, or pesticides are injected into the irrigation system.

In areas where groundwater quality problems are known to exist and where a well will penetrate more than one aquifer, the Health Officer requires special well seals to prevent the mixing of aquifers. In MCWRA's Zone 6 well construction is subject to the requirements found in the "Specifications for Wells in Zone 6," which are on file with MCHD and MCWRA. These Zone 6 requirements are designed to prevent the leakage of saltwater between aquifers.

Special Groundwater Protection areas have been established where contaminated groundwater is known to occur. These areas are subject to long-term remediation, with additional regulatory requirements associated with installation (or prohibition) of wells. Regulatory oversight is provided by MCHD. These areas include the following:

- Fort Ord, Special Ground Water Protection Zone and Consultation Zone, where contaminant plumes occur, is regulated in consultation with Fort Ord Base Realignment and Base Closure Team, including representatives of the U.S. Army, EPA, California Department of Toxic Substances Control, and Central Coast RWQCB;
- Monterey Peninsula Airport Prohibition Zone and Consultation Zone, where water well construction is prohibited, are subject to special review. Mapping for these areas is maintained by the USACE, and enforced by the Health Officer or other authority in accordance with the map on file in the MCHD.

Wastewater

Wastewater use and disposal is regulated in Chapter 15.16 of the County Code for all areas within MCWRA Zone 11. It allows for waste water from lavatories, bathtubs, showers, clothes washers and dishwashers to be collected for the purpose of flushing toilets and urinals and for the purpose of landscape irrigation subject to certain conditions.

Sewage disposal is regulated in Chapter 15.20 of the County Code, based on a Memorandum of Understanding with the Central Coast RWQCB signed in 1979. This chapter requires all buildings or structures where people reside, congregate, or are employed which are within 200 feet of an approved sanitary sewer to be connected to such sewer. Section 15.20.070 dictates particular standards and specifications for construction of a sewage disposal system, including septic tanks, leech fields, and seepage pits.

Chapters 15.21 and 15.22 prohibit discharge of sewage or hazardous materials into streams, with the finding that existing state and federal requirements are not sufficient to protect Monterey County's water resources. Chapter 15.22 prohibits any new pipes or conduits to carry discharges into county waters which contain any contaminant or cause any contamination or pollution. Sewage disposal must also be consistent with the Central Coast RWQCB Basin Plan and guidelines.

Title 20, the Zoning Code of the Monterey County Coastal Implementation Plan regulates land development in the coastal zone. Within this zone, wastewater disposal is regulated as part of the permit review process. Depending on the proposed action, an Administrative or Coastal Development Permit is required for a proposed development; and the method and adequacy of the disposal plan are subject to the review of the County's Director of Environmental Health. Development density is subject to adequate wastewater disposal capacity.

Groundwater Resources

Groundwater resources are required to be identified during review of subdivision maps in residential allocation zones, per Section 19.07.020 of the County Code. The ordinance requires submittals, including the following:

- 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.

Other Ordinances

Several other ordinances related to water, which are not described here, are in Chapter 15 of the Monterey County Code. Chapter 15.20 outlines the sewage disposal ordinances regulating toilets, septic systems, and sewer lines. Chapter 15.21 describes the ordinance regulating discharge of sewage into streams, and Chapter 15.22 outlines the ordinance governing discharge of contaminants into County waters. All of these ordinances are enforced by the MCHD.

4.3.3.4 Other Local Plans and Programs

Monterey Bay National Marine Sanctuary Water Quality Protection Program Plans

The MBNMS is a federally protected marine area offshore of the central coast, encompassing 5,322 square miles of ocean and 276 miles of shoreline, from Marin County to San Luis Obispo County. One of 13 national marine sanctuaries administered by the National Oceanic and Atmospheric Administration (NOAA), the MBNMS was established for resource protection, research, education, and public use of this area.

In 1992, eight federal, state, and local agencies signed a memorandum of agreement with the MBNMS to develop collaboratively a Water Quality Protection Program (WQPP) for the MBNMS and its watersheds. The WQPP is now a partnership of 25 federal, state, and local agencies, as well as public and private groups. Four detailed plans have been completed as part of the WQPP: the *Urban Runoff Plan, Marinas and Boating Plan, Water Quality Monitoring Plan,* and *Agriculture and Rural Lands Plan*.

Urban Runoff Plan

The *Urban Runoff Plan* involves seven strategies for controlling nonpoint source runoff pollution: a collaborative effort to develop a regional stormwater management program; a regional education and outreach program; a voluntary technical training program for public works and planning staff; mapping and inspecting storm drains and outfalls; promoting the feasibility of catchment basins and vegetated buffer areas in reducing stormwater pollution; developing a sedimentation and erosion source control program; and developing a modified CEQA checklist to better address urban runoff.

Marinas and Boating Plan

The *Marinas and Boating Plan*, developed in collaboration with harbormasters, resource agencies, and the boating community, involves seven strategies for controlling harbor pollution: a public education and outreach program; a regional technical training program on pollution prevention for harbor and boatyard staff; facilitating the collection of contaminated bilge water and waste oil; promoting the use of containment methods to reduce waste runoff; encouraging the use of less toxic paint on boats and improvements in underwater hull cleanings; developing a pickup system for toxic materials at harbors; and developing a check-off sheet for harbormasters to assess current status and annual progress of pollution control efforts.

Water Quality Monitoring Plan

In an effort to integrate various monitoring programs and their reporting, the WQPP has coordinated with various public and private groups to develop a series of action plans that address the need for an integrated, comprehensive regional monitoring and reporting program. The WQPP's Action Plan II has been

completed and defines priority strategies for addressing monitoring and data sharing issues in the region. Strategies include those listed below.

- Regional monitoring, to coordinate and build on existing federal, state, and local monitoring activities within the MBNMS and its watersheds: Goals include development of a statewide monitoring program for ocean waters and coastal watersheds, and support of citizen monitoring groups (one such group is the Monterey Bay Sanctuary Citizen Watershed Monitoring Network, a network of volunteer monitoring groups, which actively monitor in the watersheds that drain to the MBNMS).
- Data access, to provide local, state, and federal agencies with easy access to existing database systems containing water quality and related information: The goal of this strategy is to provide readily understandable information to resource managers for evaluating environmental problems and making effective management decisions.
- Interagency coordination, to establish a framework for the continuous collaboration on water quality issues and watershed management, including funding priorities, education, technical assistance, monitoring and data exchange, permit review, and enforcement: One goal of the strategy is to establish a water quality coordinating council to ensure implementation of WQPP strategies and to address new problems as they arise.

Agriculture and Rural Lands Plan

The largest of the four plans, the *Agriculture and Rural Lands Plan* was developed in 1999 to address agricultural water quality issues related to runoff from over 4,000 square miles of agriculture and rural lands. It includes an agreement with the six-county Coalition of Central Coast County Farm Bureaus to establish industry-led networks to improve soil, nitrate, and pesticide management practices, with ongoing review and assistance from the WQPP. Initial implementation of this plan has included establishment of farmer-led erosion and nitrate control projects in five watersheds. The effort has generated substantial additional funding from the U.S. Department of Agriculture, the NRCS, the University of California Cooperative Extension, and local RCDs, to bring on a team of experts to help carry out the plan and conduct technical outreach to farmers on conservation measures.

The plan consists of 24 strategies to protect and enhance the quality of water draining into the MBNMS while sustaining the economic viability of agriculture. Primary strategies include: establishing an industry-led regional network to address nonpoint source management; improving technical information and outreach, through increased technical support from the NRCS and RCDs; improving education and public relations; streamlining the regulatory system of permitting; facilitating funding and economic incentives for management practices; and improving planning and maintenance of rural roadways and public lands, by distributing information on BMPs.

The plan resulted in the formation of an Agriculture Water Quality Alliance (AWQA), composed of representatives from the MBNMS, the Coalition of Central Coast County Farm Bureaus, the NRCS, RCDs, and the University of

California Cooperative Extension. The AWQA directs facilitation and coordination of strategy implementation by initiating projects, attracting additional resources, promoting partnerships with local and regional groups, tracking progress of plan implementation, and defining and measuring implementation success.

4.3.4 Project Impacts

This section describes the CEQA impact analysis relating to water resources for the proposed 2007 General Plan. It lists the thresholds used to conclude whether an impact would be significant. The section then provides a discussion of impacts and presents measures to mitigate (avoid, minimize, rectify, reduce, eliminate, or compensate for) significant impacts.

4.3.4.1 Thresholds of Significance

Criteria for determining the significance of impacts related to water resources are based on criteria set forth in Appendix G of the State CEQA Guidelines (14 CCR 15000 et seq.). Implementation of the 2007 General Plan would result in a significant impact on water resources if it would:

- violate any water quality standards or waste discharge requirements;
- otherwise substantially degrade water quality;
- 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 and demand projected under the General Plan could not be met;
- exceed the capacity of existing water supplies and necessitate the acquisition of new supplies to meet expected demands;
- require new or expanded potable water facilities, or new or expanded water entitlements and resources;
- substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation onsite or offsite;
- substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding onsite or offsite;
- create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff;

- require or result in construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which would cause significant environmental effects;
- place housing within a 100-year flood hazard area as mapped on a federal Flood Boundary and Floodway Map or FIRM or other flood hazard delineation map;
- place within a 100-year flood hazard area structures that would impede or redirect flood flows; or
- expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding from the failure of a levee or dam.

Potential impacts of inundation by seiche, tsunami, or mudflow are discussed in Section 4.4, Geology, Soils, and Seismicity.

4.3.4.2 Impact Analysis

Potential impacts related to implementation of the proposed 2007 General Plan span a number of water resource–related issues and topical areas, including water quality and erosion, increased runoff and flooding, and various impacts resulting from groundwater overdraft.

Most of the growth associated with implementation of the 2007 General Plan would be centered in the Community Areas and Rural Centers. Therefore, the water resource impact analysis is focused in and around these areas. In addition, the *Carmel Valley Master Plan* area is analyzed because of the unique water-related constraints in that area.

Water Quality Degradation—Nonpoint Source Pollution from Urban Runoff

Impact WR-1: Residential, commercial, industrial, and public uses consistent with the 2007 General Plan would introduce additional nonpoint source pollutants to downstream surface waters, substantially degrading water quality. (Less-Than-Significant Impact.)

2030 Planning Horizon

Impact of Development with Policies

Many of the major streams in Monterey County have been characterized as impaired and, at times, in violation of water quality standards listed in the *Central Coast Basin Plan* for one or more pollutants—mainly sediment, nutrients (nitrates), pathogens, and, in some areas, pesticides. While many of the pollutants that have impaired the County's water bodies can be attributed

to historical agricultural practices and land use practices, runoff from urban development in the incorporated cities and unincorporated county areas also contributes to water quality degradation. Continued impairment of water quality would potentially threaten or exceed adopted water quality standards and the beneficial uses of water bodies, as defined by the *Central Coast Basin Plan*. For some pollutants (e.g., nitrate in groundwater), state and federal water quality standards are already exceeded in certain areas of the county, especially in the Salinas Valley and Pajaro Valley area.

Development of residential, commercial, and industrial land uses, as well as public facilities (e.g., roads, schools, maintenance and corporation yards, water supply, and wastewater facilities) create additional impervious surfaces and generate additional automobile use. Several different types of pollutants (including sediment, organic compounds, nutrients, trace metals, bacteria and viruses, and oil and grease compounds) are common in runoff from these types of land uses. Sediment sources include roads and parking lots, as well as destabilized landscape areas, streambanks, unprotected slopes, and denuded or disturbed areas. (Water quality impacts related to soil erosion and sedimentation are discussed under Impact WR-2.) Organic compounds are derived from automotive fluids, pesticides, and herbicides. Nutrients include nitrogen, phosphorus, and other organic compounds that can be found in organic litter, fertilizers, food waste, sewage, and sediment. Sources of trace metals include motor vehicles, roofing and construction materials, and household chemicals. Animal wastes, sanitary sewer overflow, and trash handling areas can contribute bacteria and viruses. Sources of oil and grease compounds include motor vehicles, food service establishments, and fueling stations.

Increased growth in the Community Areas and Rural Centers allowed by the 2007 General Plan would increase urbanization and the conversion of vacant open lands to areas with increased impervious surface area. Because the 2007 General Plan employs a primarily "existing community area"–centered growth strategy, with growth concentrated in areas surrounding existing incorporated cities and unincorporated town areas, its implementation would result in an increase in urban-type development in these areas. Proposed development of the Chualar Community Area (planned for later in the General Plan update period) would more than double the existing combined residential, commercial, and industrial land use acreage in the area. The Boronda and Pajaro Community Areas would see increases of more than 70% in combined commercial and industrial land use acreage. In addition to these Community Areas, growth allowed by the 2007 General Plan would result in some increase in residential, commercial, industrial, and public uses that would take place in more rural areas (Rural Centers) and on existing lots of record.

Such urban development would result in an increase in pollutants associated with runoff, as described above. Therefore, the water quality of streams and other surface features within or adjacent to the Community Areas would likely be further degraded by urban land use activities. In general, the coastal

communities and smaller isolated rural communities would be expected to experience the least amount of population increase. Therefore, the majority of coastal streams would experience relatively less adverse changes to water quality resulting from implementation of the 2007 General Plan. However, surface water features in the central, more urbanized Salinas Valley may experience continued loading of pollutants from urban runoff.

As described above under "Regulatory Setting," the NPDES Phase II stormwater permitting programs regulate MS4s, industrial facilities, and construction sites. Under the NPDES permitting program, preparation and implementation of SWPPPs are required for construction activities involving more than 1 acre. Project applicants (typically for larger commercial and industrial projects) also may be required to develop a long-term SWPPP or a long-term Stormwater Management Program (SWMP) to cover potential long-term stormwater pollution associated with site development after construction. Compliance with the NPDES program would minimize water quality degradation, particularly during construction activities.

2007 General Plan Policies

The 2007 General Plan policies summarized below establish comprehensive measures to avoid and minimize adverse impacts on water quality. The Conservation and Open Space, Safety, and Public Services Elements of the General Plan contain specific goals and policies addressing water quality issues related to land use.

Conservation and Open Space Element

Conservation and Open Space Element Goal OS-3 (soil conservation and water quality) outlines measures to prevent soil erosion in order to conserve soils and enhance water quality.

Conservation and Open Space Element Policy OS-3.1(BMPs) requires development and enforcement of BMPs to prevent and repair erosion damage.

Conservation and Open Space Element Policy OS-3.2 (restoration programs) requires that existing special district, state, and federal soil conservation and restoration programs be supported. In addition, voluntary restoration projects initiated by landholders, or stakeholder groups including all affected landowners, will be encouraged.

Conservation and Open Space Element Policy OS-3.3 (runoff studies) establishes criteria for hydrology studies to evaluate and address geologic and hydrologic constraints and hazards conditions associated with increased runoff from new development and changes in land use designations. These studies would evaluate geologic and hydrologic constraints such as slope and soil instability, erosion hazards, drainage, water quality, and stream stability problems

created by increased stormwater runoff for new development and changes in land use designations.

Conservation and Open Space Element Policy OS-3.4 (GIS mapping) requires that those areas where slopes pose severe constraints for development be mapped in the County's GIS system, and maps should be updated every five years. This will ensure that potential release of erosion to an impaired water body can be avoided through project design.

Conservation and Open Space Element Policy OS-3.5 (slope development) and OS-3.6 (clustering) prohibits development on slopes in excess of 30% and mandates that a permit process be established to address development on slopes greater than 25%. This new permit process would be established in part to identify development and design techniques for erosion control, slope stabilization, visual mitigation, drainage, and construction techniques.

Conservation and Open Space Element Policy OS-3.7 (coordinated resources management planning [CRMP]) encourages the voluntary preparation and implementation of a CRMP in watersheds that have state-designated impaired water bodies.

Conservation and Open Space Element Policy OS-3.8 (technical assistance) calls for the County to cooperate with appropriate federal, state, and local agencies to provide public education/outreach and technical assistance programs regarding erosion and sediment control, efficient water use, water conservation and re-use, and groundwater management. This cooperative effort shall be coordinated with MCWRA.

Conservation and Open Space Element Policy OS-3.9 (cumulative hydrologic impacts) requires the County to develop a program that would address the potential cumulative hydrologic impacts of the conversion of hillside rangeland areas to cultivated croplands. This program would be designed to address offsite soil erosion, increased runoff-related stream stability impacts, and/or potential violation of adopted water quality standards. The County would convene a committee comprised of County staff, technical experts, and stakeholders to develop the program, including implementation recommendations.

Conservation and Open Space Goal OS-4 (marine and river resources) establishes the protection and conservation of coastal, marine, and river environments (as applied in areas not in the coastal zone).

Conservation and Open Space Element Policy OS-4.2 (discharges) mandates that direct and indirect discharges of harmful substances into marine waters, rivers, or streams shall not exceed state or federal standards.

Safety Element

Safety Element Policy S-1.2 (geologic constraints GIS) requires that the County develop and maintain a Geologic Constraints and Hazards Database in the County GIS. The GIS would be used to identify areas containing hazards and constraints (see *Policy PS-2.6*) that could potentially impact the type or level of development allowed in these areas (see *Policy OS-3.5*). Maps maintained as part of the GIS include: Steep Slope Constraints (see *Policy OS-3.5*), Coastal Erosion, Moderate and High Erosion Hazards, and Highly Erodible Soils. This will ensure that potential release of erosion to an impaired water body can be avoided through project design.

Safety Element Policy S-3.2 (BMPs) require that BMPs be incorporated into all new development to protect surface water and groundwater quality.

Safety Element Policy S-3.6 (GIS inventory) requires that the County conduct an inventory of areas where there is a high probability of accelerated erosion, sedimentation, and/or chemical pollution. This inventory would be maintained as part of the County's GIS mapping database.

Public Services Element

Public Services Element Policy PS-2.5 (water quality testing) proposes regulations for water quality testing of new individual wells.

Public Services Element Policy PS-2.6 (GIS database) calls for a Hydrologic Resources Constraints and Hazards Database to be developed and maintained in the County GIS. The GIS shall be used to identify areas containing hazards and constraints (see Policy S-1.2) that could potentially impact the type or level of development allowed in these areas (see Policy OS-3.5). Maps maintained as part of the GIS would include: impaired water bodies on the State Water Resources Control Board 303d list, important groundwater recharge areas, 100-year flood hazards, hard rock areas with constrained groundwater, and areas of septic tank leachfield unsuitability.

Public Services Element Policy PS-2.7 (conservation strategy) states that, as part of an overall conservation strategy and to improve water quality, Area Plans may include incentive programs that encourage owners to voluntarily take cultivated lands on slopes with highly erosive soils out of production.

Area Plan Policies

The following Area Plan supplemental policies also support water quality protection related to residential, commercial, industrial, and public use development.

North County Area Plan

North County Area Plan Policy NC-5.3 states that cooperative soil conservation, water quality protection, and resource restoration programs within watershed basins shared with neighboring counties shall be pursued.

Greater Salinas Area Plan

Greater Salinas Area Plan Policy GS-1.5 (Salinas River corridor) permits development of commercial land uses near Highway 68 and the Salinas River only if they will not further deteriorate Salinas River water quality. In addition, where feasible, these projects should also enhance the riparian habitat along the Salinas River.

Greater Salinas Area Plan Policy GS-1.8 (Spreckels development) permits development of land near the town of Spreckels designated as industrial to also be developed as agricultural-related commercial uses. However, such agriculturally related development must not deteriorate water quality in the Salinas River or area groundwater. In addition, where feasible, it should be designed to protect and enhance the riparian corridor along the Salinas River.

Greater Salinas Area Plan Policy GS-3.1 (erosion) mandates that all vegetation on land exceeding 25% slope, particularly chaparral and broad leaf evergreen, should remain undisturbed to minimize erosion and retain important visual amenities.

Central Salinas Valley Area Plan

Central Salinas Valley Area Plan Policy CSV-1.2 (development plans) stipulates that all recreation and visitor-serving commercial land uses shall require a use permit. If such uses are on a 10-acre or greater parcel, a comprehensive development plan that addresses hydrology, water quantity and quality, sewage disposal, fire safety, access, drainage, soils, and geology shall be required.

Central Salinas Valley Area Plan Policy CSV-5.2 (recreation development) limits recreation and visitor-serving commercial uses to areas where they will not adversely affect groundwater supply, quality, or recharge.

Greater Monterey Peninsula Area Plan

The Greater Monterey Peninsula Area Plan does not contain any pertinent supplemental policies.

Carmel Valley Master Plan

Carmel Valley Master Plan CV-2.9 (slope development) prohibits roads crossing slopes steeper than 30% unless factors of erosion can be mitigated.

Carmel Valley Master Plan CV-5.6 (containment) requires containment structures or other measures to control the runoff of pollutants from commercial areas or other sites where chemical storage or accidental chemical spillage is possible.

Toro Area Plan

The Toro Area Plan does not contain any pertinent supplemental policies.

Cachagua Area Plan

The Cachagua Area Plan does not contain any pertinent supplemental policies.

South County Area Plan

South County Area Plan Policy SC-5.2 establishes that cooperative soil conservation, water quality protection, and resource restoration programs within watershed basins shared with neighboring counties shall be pursued.

Agricultural Winery Corridor Plan (AWCP)

The AWCP does not contain any pertinent supplemental policies.

Fort Ord Master Plan

Fort Ord Master Plan Hydrology and Water Quality Objective C mandates the control of nonpoint and point water pollution sources to protect the adopted beneficial uses of water.

Fort Ord Master Plan Hydrology and Water Quality Policy C-1 (water quality programs) requires the County to comply with all current mandated water quality programs and to establish new local programs, such as Program C-1.4, as needed. Program C-1.4 (water quality monitoring program) requires development of a surface- and groundwater water quality monitoring program.

Fort Ord Master Plan, Hydrology and Water Quality Policy C-2 (onsite drainage systems) requires all new development to demonstrate that onsite drainage systems are designed to capture and filter urban pollution to the maximum extent feasible. Biological Resources Policies A-5, A-8, and B-2 of the *Fort Ord Master Plan* require new development near habitat management areas (including the Frog Pond Natural Area) and other wetland areas to incorporate measures to protect these areas from water quality impacts.

Significance Determination

Adoption and implementation of the proposed policies and programs in the 2007 General Plan—combined with the current local, state, and federal stormwater, grading, and erosion control regulations described earlier—would ensure that water quality impacts resulting from nonpoint source pollution runoff related to residential, commercial, industrial, and public uses consistent with the 2007 General Plan would be reduced to a less-than-significant level.

Mitigation Measures

Implementation of the 2007 General Plan policies and Area Plan goals and policies would reduce impacts on water quality associated with nonpoint source runoff from increased development to a less-than-significant level. No mitigation is required.

Mitigation is proposed to adopt and implement a Stream Setback Ordinance. While not necessary to address significant water quality impacts, this measure will help to further reduce water quality impacts.

Mitigation Measure BIO-2.1: Stream Setback Ordinance

The County shall develop and adopt a county-wide Stream Setback Ordinance to establish minimum standards for the avoidance and setbacks for new development relative to streams. The ordinance shall identify standardized inventory methodologies and mapping requirements. A stream classification system shall be identified to distinguish between different stream types (based on hydrology, vegetation, and slope, etc.) and thus allow application of standard setbacks to different stream types. The ordinance shall identify specific setbacks relative to the following rivers and creeks so they can be implemented in the Area Plans: Salinas, Carmel River, Arroyo Seco, Pajaro River, Nacimiento, San Antonio, Gabilan Creek, and Toro Creek. The ordinance may identify specific setbacks for other creeks or may apply generic setbacks based on the stream classification developed for the ordinance. The purpose of the ordinance will be to preserve riparian habitat and reduce sediment and other water quality impacts of new development.

The Stream Setback Ordinance shall apply to all discretionary development within the county and to conversion of previously uncultivated agricultural land (as defined in the General Policy Glossary) on normal soil slopes over 15% or on highly erodible soils on slopes over 10%.

Significance Conclusion

The 2007 General Plan would have a less-than-significant impact.

Buildout

Impact of Development with Policies

Buildout would result in a more extensive development pattern than currently exists. Assuming that future development follows the basic spirit of the 2007 General Plan policies, most urban development would be focused in the cities, Community Areas, and Rural Centers. However, because the buildout scenario assumes that existing lots of record would be developed with a single-family residence, there would be substantial low-density development spread across the county. This would increase the potential for nonpoint source pollution resulting from scattered, individual development sites.

Significance Determination

The policies of the 2007 General Plan would be fully implemented by 2092, and it may be assumed that federal and state regulatory requirements would be at least as stringent as today. Federal regulations, including the state-administered TMDL program, have grown increasingly stringent since the enactment of the CWA and Porter-Cologne. Assuming that this trend continues, with most development centered on population centers, these policies and regulations will be effective in avoiding nonpoint source pollution from urban runoff. Development on individual lots presumably would be subject to the same or more stringent regulations than today. This would include future generations of the County's grading and erosion control ordinances, revised to meet more stringent federal and state water quality regulations.

Mitigation Measures

Implementation of the 2007 General Plan policies and Area Plan goals and policies, as well as future regulations, would reduce impacts on water quality associated with nonpoint source runoff from increased development to a less-than-significant level. No mitigation is required.

Significance Conclusion

Future urban runoff impacts would not be substantially greater than the impact associated with the 2030 planning horizon as a result of the

application of federal, state, and county water quality regulations. This impact would be less than significant, and no mitigation is required.

Water Quality Degradation—Construction-Related Soil Erosion and Sedimentation

Impact WR-2: Land uses and development consistent with the 2007 General Plan would result in increased soil erosion and sedimentation during construction activities, substantially degrading water quality in downstream waterways. (Less-Than-Significant Impact.)

2030 Planning Horizon

Impact of Development with Policies

Implementation of the 2007 General Plan would result in the construction of a wide range of uses, including residential, commercial, and industrial buildings; public facilities; and agricultural-related uses (e.g., processing, support, and visitor-serving uses) among others. Erosion and sedimentation resulting from construction activities in the unincorporated parts of Monterey County would represent a significant source of particulate pollution conveyed in stormwater runoff. Grading and other earthmoving activities would alter drainage patterns and therefore have the potential to accelerate soil erosion well above natural background rates. Vegetative cover, which acts to stabilize the soil, generally would be removed from areas where earthwork and grading activities would occur during construction.

Although the construction of most new development would occur on relatively gentle slopes surrounding Community Areas and Rural Centers, the 2007 General Plan allows development on hillside areas with moderate to high erosion hazards, especially in the Fort Ord Community Area. Slope limitations are imposed on hillside development and vary somewhat between planning areas and Community Areas. Generally, existing County development regulations require the preparation and implementation of erosion control plans for residential and commercial/industrial development in Community Areas and Rural Centers.

Even with the implementation of erosion control measures, development on moderate slopes (slopes between 15 and 25%) or on highly erosive soils is particularly susceptible to increased erosion and sedimentation, which has the potential to impair water quality. A high level of attention to the planning and implementation of erosion control measures would be required in these areas. Sediment also would accumulate at the inlets of downstream storm drain systems, reducing the system's capacity to convey stormwater. Soil loss from erosion would generate costs to the public associated with the cleanup and maintenance of storm drains, culverts, and open roadside ditches.

As previously discussed, Chapter 16.12 of the Monterey County Code provides erosion control measures, including prohibiting development on slopes greater than 30%, and requirements for erosion control plans, control of runoff, avoiding creek disturbance, land clearing, and wet-weather grading activities.

2007 General Plan Policies

Impacts resulting from development consistent with the 2007 General Plan would be reduced by compliance with the existing County grading and erosion control requirements and by the Phase II NPDES permitting requirements, mandating the preparation and implementation of SWPPPs. In addition, the Conservation and Open Space, Safety, and Public Services Elements of the 2007 General Plan contain goals and policies addressing water quality issues related to erosion and sedimentation.

Conservation and Open Space Element

Goal OS-3 and Policies OS-3.1 through OS-3.9 establish guidelines for erosion prevention.

Conservation and Open Space Element Policy OS-3.1 (erosion) states that Best Management Practices (s) to prevent and repair erosion damage shall be established and enforced.

Conservation and Open Space Element Policy OS-3.2 (erosion and public outreach) requires that existing special district, state, and federal soil conservation and restoration programs shall be supported. Voluntary restoration projects initiated by landholders, or stakeholder groups including all affected landowners, shall be encouraged.

Conservation and Open Space Element Policy OS-3.3 (erosion) ensures that criteria for studies to evaluate and address through appropriate designs and BMPs geologic and hydrologic constraints and hazards conditions such as slope and soil instability, moderate and high erosion hazards, and drainage, water quality and stream stability problems created by increased stormwater runoff shall be established for new development and changes in land use designations.

Conservation and Open Space Element Policy OS-3.4 (erosion and GIS) establishes that those areas where slopes pose severe constraints for development shall be mapped in the County's GIS. The information shall be updated at least every five (5) years.

Conservation and Open Space Element Policy OS-3.5 (erosion/slopes) requires that the County shall prohibit development

on slopes greater than 30%. It is the general policy of the County to require dedication of scenic easement on a slope of 30% or greater. Upon application, an exception to allow development on slopes of 30% or greater may be granted at a noticed public hearing by the approving authority for discretionary permits or by the Planning Commission for building and grading permits. The exception may be granted if one or both of the following findings are made, based upon substantial evidence:

A) there is no alternative which would allow development to occur on slopes of less than 30%; or,

B) the proposed development better achieves the resource protection objectives and policies contained in the Monterey County General Plan, accompanying Area Plans and Land Use Plans, and all applicable master plans.

A permit process will be established as follows:

1. A discretionary permit process for development on slopes greater than 25% or that contain geologic hazards and constraints shown on the County's GIS Geologic (*Policy S-1.2*) or Hydrologic (*Policy PS-2.7*) Hazard Databases shall be established. The process shall be designed to:

    a. Evaluate possible building site alternatives that better meet the goals and policies of the general plan.

    b. Identify development and design techniques for erosion control, slope stabilization, visual mitigation, drainage, and construction techniques.

    c. Minimize development in areas where potentially unstable slopes, soil and geologic conditions, or sewage disposal pose substantial risk to public health or safety.

    2. The County shall develop and implement an Agricultural Permit process for the conversion, for agricultural purposes, of previously uncultivated lands on slopes in excess of 25-percent (25%). An Agricultural Permit shall recognize unique grading criteria for agricultural purposes and the process shall include criteria when a discretionary permit is required. Projects that are subject to a State Agricultural Waiver Program, Agricultural Registration Program, or other similar program that regulates irrigation of agricultural land on steep slopes or projects where only a small portion of the affected area has slopes in conflict with this policy shall be allowed with a ministerial permit that requires compliance with the criteria developed for the following resource areas:

        a. Water Quality/Water Supply

        b. Biological Resources

        c. Cultural Resources

d. Erosion Control

e. Drainage

f. Flood Hazards

3. A ministerial permit process shall be developed and implemented for proposed development, including for purposes of this policy conversion of previously uncultivated lands, on slopes between 15- and 24-percent (15–24%), and 10- to 15-percent (10–15%) on highly erodible soils.

4. The permit processes shall be designed to require that an erosion control plan be developed and implemented that addresses slope stabilization, and drainage and flood hazards.

5. All Routine and Ongoing Agricultural Activities, except for conversion of previously uncultivated lands as described in this policy above, are exempt from the above permit requirements.

Conservation and Open Space Element Policy OS-3.6 (erosion) states that except in Community Areas where Community Plans or Specific Plans are adopted (Policy LU-10.4), areas designated as medium density residential or high density residential, or in areas designated as commercial or industrial where residential use may be allowed, a formula based on slope shall be established to calculate the maximum possible residential density for individual parcels. Clustering is encouraged as a technique to avoid development on slopes over 25%. Where an entire parcel would not be developable because of plan policies, an extremely low density of development or single-family home will be allowed, as appropriate.

Conservation and Open Space Element Policy OS-3.7 (water quality) ensures that voluntary preparation and implementation of a coordinated resources management plan shall be encouraged in watersheds of state-designated impaired waterways.

Conservation and Open Space Element Policy OS-3.8 (erosion and water quality public outreach) requires that the County shall cooperate with appropriate regional, state, and federal agencies to provide public education/outreach and technical assistance programs on erosion and sediment control, efficient water use, water conservation and re-use, and groundwater management. This cooperative effort shall be centered through the Monterey County Water Resources Agency.

Conservation and Open Space Element Policy OS-3.9 (erosion and water quality) establishes that the County will develop a program that will address the potential cumulative hydrologic impacts of the conversion of hillside rangeland areas to cultivated croplands. The

program will be designed to address offsite soil erosion, increased runoff-related stream stability impacts, and/or potential violation of adopted water quality standards. The County should convene a committee comprised of County staff, technical experts, and stakeholders to develop the Program, including implementation recommendations.

Safety Element

Safety Element Policy S-1.7 (erosion) requires development of a geologic constraints and hazards database in the County's GIS, including maps of erosion and sedimentation problem areas.

Safety Element Policy S-3.2 (groundwater and surface water quality and BMPs) states that Best Management Practices to protect groundwater and surface water quality shall be incorporated into all development.

Safety Element Policy S-3.7 (stormwater, erosion, and flood hazards) states that the Monterey County Water Resources Agency shall prepare a Flood Criteria or Drainage Design Manual that established flood plain management policies, drainage standards and criteria, stormwater detention, and erosion control and stormwater quality protection measures in order to prevent significant impacts from flooding and ensure that development does not increase flooding risk over present conditions. The manual will include, as appropriate, hydrologic and hydraulic analysis procedures, procedures to assess stream geomorphology and stability, potential development impacts on streams, and design guidelines for channel design, including biotechnical bank stabilization. Until the Drainage Design Manual is prepared, the County shall continue to apply existing policies and ordinances to manage floodplains and minimize flood risk, erosion control and water quality impacts.

Area Plan Policies

Several Area Plan supplemental policies support water quality protection related to construction impacts on soil erosion and sedimentation.

Central Salinas Valley Area Plan

Policies CSV-1.1 and CSV-1.2 in the Central Salinas Valley Area Plan require certain recreation and commercial land use development projects to complete development plans to address soil stability and water quality.

Greater Monterey Peninsula Area Plan

There are no policies related to construction-related soil erosion and sedimentation in the Greater Monterey Peninsula Area Plan.

Carmel Valley Master Plan

Carmel Valley Master Plan Policy CV-4.1 (erosion, construction, and stormwater runoff) explains that in order to reduce potential erosion or rapid runoff:

- The amount of land cleared at any one time shall be limited to the area that can be developed during one construction season.
- Motorized vehicles shall be prohibited on the banks or in the bed of the Carmel River, except by permit from the Water Management District or Monterey County.
- Native vegetative cover must be maintained on areas that have the following combination of soils and slope:
  - Santa Lucia shaly clay loam, 30–50% slope (SfF)
  - Santa Lucia-Reliz Association, 30–75% slope (Sg)
  - Cieneba fine gravelly sandy loam, 30–70% slope (CcG)
  - San Andreas fine sandy loam, 30–75% slope (ScG)
  - Sheridan coarse sandy loam, 30–75% slope (SoG)
  - Junipero-Sur complex, 50–85% slope (Jc)

Policy CV-3.4 of the Carmel Valley Master Plan includes requirements for minimizing grading, cutting, and filling for hillside development; and Policy CV-1.20 requires design review of new development to consider erosion and grading.

Toro Area Plan

Toro Area Plan Policy T-4.1 prohibits land uses that may contribute to siltation of Toro Creek.

Cachagua Area Plan

Policy CACH-4.1 requires design of commercial mining and timber resource production operations to protect against additional erosion and sedimentation.

South County Area Plan

There are no policies related to construction-related soil erosion and sedimentation in the South County Area Plan.

Agricultural Winery Corridor Plan

There are no policies related to construction-related soil erosion and sedimentation in the Agricultural Winery Corridor Plan.

Community Area Policies

Fort Ord Master Plan

Several policies in the Fort Ord Master Plan address erosion protection. Soils and Geology Policy A-1 requires the use of the NRCS soil survey of Monterey County to determine soil suitability for particular land uses (where more specific site information is unavailable). Soils and Geology Policy A-2 requires developers to prepare and implement erosion control and landscape plans, at a minimum meeting the requirements of SWPPPs required by the State Water Board; programs under this policy require the County to provide lists of erosion control measures by soil type, recommended native plant species for erosion control, and engineering/design techniques addressing Fort Ord soil limitations. Soils and Geology Policy A-3 requires the County to ensure implementation of developer erosion control measures through site monitoring, Soils and Geology Policy A-4 requires the County to continue to enforce the Uniform Building Code to minimize erosion and slope instability problems, and Soils and Geology Policy A-5 requires developers to prepare geotechnical reports in areas with slope and soil limitations. Soils and Geology Policy A-6 requires erosion control measures for development on slopes greater than 25%, with the County mapping areas with slope constraints and designating areas with extreme slope constraints for open space uses if adequate erosion control design measures cannot be implemented. In addition, Hydrology and Water Quality Policy C-4 requires the County to help prevent waterway siltation through developing BMPs for property owners near waterways. Finally, Biological Resources Policies A-4 and A-5 require erosion control measures to protect certain habitat areas.

Significance Determination

As discussed above, existing County, state, and federal requirements; proposed policies of the 2007 General Plan; and existing central coast RWQCB regulatory initiatives, such as the WMI, NPDES Phase II stormwater, and TMDL programs, would substantially reduce the extent of erosion and sedimentation from most construction activities on gentle slopes and where an erosion control plan is required. Additionally, establishment of permits for development on steeper slopes, including an agricultural conversion permit process, in part to identify development and design techniques for erosion control and slope stabilization, would further reduce potential erosion and sedimentation impacts from 2007 General Plan implementation.

Mitigation Measures

Implementation of the 2007 General Plan policies and Area Plan goals and policies would reduce impacts on water quality associated with erosion and sedimentation to a less-than-significant level. No mitigation is required.

Significance Conclusion

Full application of all of existing requirements and the 2007 General Plan policies would reduce this impact to a less-than-significant level.

Buildout

Impact of Development with Policies

Buildout would result in a more extensive development pattern than currently exists. Assuming that future development follows the basic spirit of the 2007 General Plan policies, most urban development would be focused in the cities, Community Areas, and Rural Centers. However, because the buildout scenario assumes that existing lots of record would be developed with a single-family residence, there would be substantial low-density development spread across the county. This would increase the potential for erosion and sedimentation resulting from construction at scattered, individual development sites.

Significance Determination

The policies of the 2007 General Plan would be fully implemented by 2092, and it may be assumed that federal and state regulatory requirements would be at least as stringent then as they are today. With most development centered around population centers, these policies and regulations will be effective in avoiding construction impacts. Federal and state requirements for control of erosion and sedimentation from construction, founded in the CWA and Porter-Cologne, continue to grow more stringent as time passes. Assuming that this trend continues, construction on individual lots by buildout in 2092 would presumably be subject to more stringent regulations than today, including new generation erosion control and grading ordinances. Therefore, although low-density development would be more expansive than is the case at this time, future construction-related impacts would not be substantially greater than the impact associated with the 2030 planning horizon.

Mitigation Measures

Implementation of the 2007 General Plan policies and Area Plan goals and policies would reduce impacts on water quality associated with construction-related erosion and sedimentation to a less-than-significant level. No mitigation is required.

Significance Conclusion

Impacts would be less-than-significant.

Impact WR-3: Agricultural and resource development (i.e., limited timber harvesting and mineral resources extraction) land uses consistent with the 2007 General Plan would increase sediment and nutrients in downstream waterways and violate water quality standards. (Less-Than-Significant Impact.)

2030 Planning Horizon

Impact of Development with Policies

Agricultural production and, to a lesser extent, commercial timber harvesting and mineral resources extraction are economically important land use activities in Monterey County. Some agricultural practices, resource development, and associated land uses historically have impaired water quality and, on occasion, have contributed to the violation of water quality standards in the county. Such practices and land use activities include hay farming and grazing, fruit and vegetable production, vineyard planting, some timber and hardwood harvesting (especially associated with land conversion), quarrying, and sand and gravel extraction.

Such agricultural land uses consistent with the 2007 General Plan would potentially be a significant source of soil erosion and sedimentation of downstream waterways, especially when such land use activities occur on moderate to steep slopes or on highly erodible soils. These land use activities also would be sources of nutrients and contaminants from the application of agro-chemicals used in agricultural operations (e.g., fertilizers and pesticides) containing nitrogen and phosphorous in agricultural runoff. In particular, vineyard planting in the South County area on slopes and possibly new cultivated crops on currently unfarmed sloping lands on the margins of the Salinas Valley, and in the North County and Elkhorn Slough watershed, may create water quality impairments. Expanding vineyards onto currently unfarmed steep slopes would potentially result in erosion because of the challenges in developing and implementing successful soil erosion and sediment control plans on these slopes.

Very few agricultural land uses require discretionary or ministerial permits from the County. The most common agricultural practices and land uses consistent with the 2007 General Plan that would contribute to sediment deposition and nutrient/pesticide contamination of surface water bodies likely would include hillside rangeland and timberland (including oak woodland) conversions to agricultural cultivation, such as vineyards, and conversion of pasture and hay lands to cultivated crops.

Hydrologic changes, such as increased runoff from agricultural land conversions (rangeland conversion) on moderate to steep slopes, also would

affect stream geomorphology and stream stability (e.g., accelerate streambank and streambed erosion or sediment accumulation), particularly if several large conversion projects occurred within the same watershed over a short period of time. Cumulative hydrologic changes would be greatest when large portions of forested, oak woodland, or brushland-dominated watersheds would be converted to cultivated crops or vineyards. Changes in peak runoff rates that modify the 2-year channel-shaping flow and changes in sediment supply (e.g., due to changes in land use activities) would further contribute to watershed instability. These hydrologic effects are often additive in watersheds with a prior history of disturbance from rural development and intensive agricultural land uses, especially in watersheds with a high percentage of hillside agricultural cultivation (e.g., the upland portions of south Monterey County).

Future vineyard plantings, which may be an indirect result of the AWCP, would potentially be a significant source of soil erosion and sedimentation of downstream waterways, especially when such land use activities occur on moderate to steep slopes or on highly erodible soils. These land use activities also would be sources of nutrients and contaminants from the application of agro-chemicals used in agricultural operations (e.g., fertilizers and pesticides) containing nitrogen and phosphorous in agricultural runoff. As discussed above, hydrologic changes, such as increased runoff from agricultural land conversions on moderate to steep slopes, would substantially affect stream geomorphology and stream stability (e.g., accelerate streambank and streambed erosion or sediment accumulation), particularly if several large conversion projects occurred in the same watershed over a short period.

2007 General Plan Policies

The County does not regulate agricultural cultivation in most areas; currently, uncultivated land conversion is regulated only in the Elkhorn Slough (North County coastal) area. However, new cultivation on slopes greater than 30% is subject to a grading permit with associated conditions, such as development and implementation of erosion control plans. The County also relies on the educational outreach programs of other agencies, such as the University of California Cooperative Extension and the Resource Conservation District for information and dissemination of agricultural BMPs, as well as on the programs administered by the U.S. Department of Agriculture (USDA) and the Central Coast RWQCB (e.g., the TMDL program and the conditional waiver for irrigated agriculture).

Agricultural Element

Goal AG-3 and its policies exempt routine and ongoing activities from many County permit requirements that would otherwise be interpreted as applicable, except for activities that create significant soil erosion impacts or violate adopted water quality standards.

Conservation and Open Space Element

Policy OS-3.5 mandates establishment of an agricultural conversion permit process, in part to identify development and design techniques for erosion control, slope stabilization, visual mitigation, drainage, and construction techniques.

Policy OS-3.8 directs the County to cooperate with regional, state, and federal agencies to provide public outreach on erosion and sediment control, efficient water use, water conservation and reuse, and groundwater management.

Safety Element

Safety Element Policy S-3.1 (flood hazards and stormwater) limits post-development, offsite peak flow drainage from the area being developed to not be greater than pre-development peak flow drainage. Onsite improvements or other methods for stormwater detention shall be required to maintain post-development, offsite, peak flows at predevelopment levels, where appropriate, as determined by the Monterey County Water Resources Agency.

Safety Element Policy S-3.2 (groundwater and surface water quality and BMPs) states that Best Management Practices to protect groundwater and surface water quality shall be incorporated into all development.

Safety Element Policy S-3.3 (stormwater and new development) establishes that drainage facilities to mitigate the post-development peak flow impact of new development shall be installed concurrent with new development.

Safety Element Policy S-3.6 (flood hazards, erosion, and GIS) requires that an inventory of areas where there is a high probability of accelerated erosion, sedimentation, and/or chemical pollution shall be maintained as part of the County's GIS mapping database.

Public Services Element

Policy PS-2.7 allows Area Plans to include incentive programs to take cultivated lands on slopes with highly erosive soils out of production voluntarily.

Area Plan Policies

The following Area Plan supplemental policies also support water quality protection related to agricultural and resource production development.

Carmel Valley Master Plan

Carmel Valley Master Plan Policy CV-6.2 also helps to mitigate water quality impacts associated with erosion by discouraging agricultural development on slopes greater than 25%.

Cachagua Area Plan

Policy CACH-4.1 in the Cachagua Area Plan addresses potential sedimentation impacts related to mining or commercial timber production.

Community Area Policies

Fort Ord Master Plan

In the Fort Ord Master Plan, Soils and Geology Policy B-1 requires identification and protection of valuable mineral resources in Fort Ord. Soils and Geology Policy B-3 requires the preparation of mining and reclamation plans prior to granting permits for mineral extraction operations, with a requirement for the County to develop a list of issues to be mitigated in these plans—including erosion control, protection of water quality, waste disposal, and reclamation.

Hydrology and Water Quality Program C-1.1 (coastal/marine and nonpoint source water pollution) establishes that the County shall comply with the nonpoint pollution control plan developed by the California Coastal Commission and the SWRCB, pursuant to Section 6217 of the Federal Coastal Zone Management Act Reauthorization Amendments of 1990, if any stormwater is discharged into the ocean.

Hydrology and Water Quality Program C-1.2 (nonpoint source water pollution) ensures that the County shall comply with the General Industrial Storm Water Permit adopted by the SWRCB in November 1991 that requires all storm drain outfalls classified as industrial to apply for a permit for discharge.

Hydrology and Water Quality Program C-1.5 (BMPs and new development) establishes that the County shall adopt and enforce a hazardous substance control ordinance that requires that hazardous substance control plans be prepared and implemented for construction activities involving the handling, storing, transport, or disposal of hazardous waste materials.

Biological Resources Program A-5.3 (stormwater drainage plans) requires that the County shall require stormwater drainage plans for all developments adjacent to the habitat management areas to

incorporate measures for minimizing the potential for erosion in the habitat management areas due to stormwater runoff.

State and Federal Regulations

To the extent that the 2007 General Plan would partially exempt certain kinds of agricultural uses from County permit requirements, state and federal water quality programs (such as the TMDL program and the Conditional Waiver for Irrigated Agriculture) would nonetheless apply to avoid agriculturally related water quality problems.

Timber operations are primarily addressed at the state level through the Timber Harvesting Program (THP) review program. Conservation and open space Element Policy OS-5.7 requires proposals for harvesting or converting commercially valuable timber to include the filing of a THP that contains provisions for erosion control. Monterey County has special rules for timber harvesting operations under the California Forest Practice Rules (Title 14, California Code of Regulations, Chapter 4, 4.5, and 10) enacted by the California Department of Forestry and Fire Protection. These include limits on the construction of new roads, restrictions on harvesting in the Big Sur area, and maintenance of erosion control structures (14 CCR Sections 965.4, 965.6, and 965.9). Monterey County has also supplemented the permit review process for THPs to address important local issues through its County code (e.g., Monterey County Code Section 21.64.260, Preservation of Oak and Other Protected Trees, provides certain planning area-specific requirements). The THP permit review process and the Forest Practices Rules are designed to adequately protect water quality and stream stability, in part through the oversight of the Central Coast RWQCB. As a result, timber harvesting activities consistent with the 2007 General Plan would not be expected to degrade water quality.

The regulatory framework for mineral resources extractions affords the County direct authority over such activities. These activities are regulated in Monterey County by the County's mining ordinance and at the state level by the Surface Mining and Reclamation Act (SMARA). Nearly all proposed mining activities require evaluation of the adequacy of project-specific soil erosion control and mine reclamation plans. Sediment and erosion control plans are an important element of the CEQA review and mine permit process. Therefore, project-specific and cumulative adverse changes to water quality resulting from mining activities are generally considered to be adequately addressed through the existing County ordinance, through the CEQA review process, and by Office of Mine Reclamation staff at the state level.

Significance Determination

In summary, while timber harvesting and mining impacts are adequately addressed on the state level and by the THP process, County ordinance

requirements, and the County's surface mining ordinance, the 2007 General Plan provides additional water quality protections specific to hillside agricultural cultivation and agricultural conversion impacts on moderate slopes. Establishment of an agricultural conversion permit process, in part to identify development and design techniques for erosion control and slope stabilization, would further reduce potential erosion and sedimentation impacts from implementation of the 2007 General Plan (Policy OS-3.5). Further, the Central Coast RWQCB Conditional Waiver for Irrigated Agriculture regulates farm runoff to prevent release of erosion sediment. Thus, overall impacts will be less than significant with implementation of 2007 General Plan policies. No mitigation is required.

Mitigation Measures

Mitigation is proposed to adopt and implement a Stream Setback Ordinance. While not necessary to address significant water quality impacts, this measure will help to further reduce water quality impacts.

Mitigation Measure BIO-2.1: Stream Setback Ordinance

This measure was described above under Impact WR-1.

Significance Conclusion

This impact would be less than significant in light of the policies proposed with the 2007 General Plan, County ordinances, the RWQCB agricultural waiver program, and other regulations now in place. Mitigation Measure BIO-2.1 would further reduce potential water quality impacts.

Buildout

Impact of Development with Policies

The percentage of the county dedicated to agriculture has remained relatively steady over time. Buildout would result in a more expansive distribution of low-density development than is found today. This would result in the conversion of some lands that are currently in agricultural use. At the same time, increasing the population would result in the conversion of level agricultural land surrounding the cities, Community Areas, and Rural Centers to urban uses accommodating the expected increase in population. A reasonable scenario is that by buildout in 2092, agriculture will continue to be a major part of the county's economy, substantial amounts of agricultural land will have been converted to urban use in the areas surrounding today's cities and communities, and agriculture will have continued to expand onto steeper lands. This assumes that today's high-value crops, such as wine grapes, that can be supported on steeper land will continue to have value in the future. The expansion of agricultural areas onto steeper lands increases the potential for soil erosion and sedimentation.

Significance Determination

The policies of the 2007 General Plan would be fully implemented by 2092, and it may be assumed that federal and state regulatory requirements would be at least as stringent as today. Assuming that agricultural land would continue to be worth conserving, particularly as population increases and food production retains its importance, it is likely that local regulations would become more stringent in order to accommodate the conversion of steeper slopes to agricultural use while conserving the soil resources.

Mitigation Measures

Mitigation is proposed to adopt and implement a Stream Setback Ordinance. While not necessary to address significant water quality impacts, this measure will help further reduce water quality impacts.

Mitigation Measure BIO-2.1: Stream Setback Ordinance

This measure was described above under Impact WR-1.

Significance Conclusion

This impact would be less than significant in light of the policies proposed with the 2007 General Plan, County ordinances, the RWQCB agricultural waiver program, and other regulations now in place. Mitigation Measure BIO-2.1 would further reduce potential water quality impacts.

Potable Water Supply

Impact WR-4: Land uses and development consistent with the 2007 General Plan would exceed the capacity of existing water supplies and necessitate the acquisition of new supplies to meet expected demands (Significant and Unavoidable Impact.)

This impact discusses the availability of water supply to serve existing and future demands. Impacts related to the secondary impacts of water supply infrastructure are discussed in Impact WR-5. Impacts on groundwater levels are discussed in Impact WR-6. Impacts on seawater intrusion are discussed in Impact WR-7.

2030 Planning Horizon

Impact of Development with Policies

Because sustainable potable water supply, even in times of drought, is critical for new development, the 2007 General Plan proposes several key new policies to address water supply. Although the 2007 General Plan proposes only limited development in the unincorporated areas, demand is still expected to increase and require new supply and/or reallocation of existing

supply and implementation of more rigorous conservation and recycling measures. General Plan policies influence the activities and practices of individual land uses, for instance by requiring water conservation (e.g., low flush toilets and xeriscape landscaping) and by encouraging recycling or reuse of treated wastewater. In general, policy measures are designed to maintain a long-term sustainable supply. This requires that new development demonstrate adequate allocation, transmission, and distribution of supply.

Development and maintenance of a long-term sustainable water supply for Monterey County is a vital element of the 2007 General Plan. New development in the proposed Community Areas and additional population growth as allowed by the 2007 General Plan (combined with ongoing and potentially increased agricultural water demand) would stress capabilities to provide adequate potable water supplies.

In addition to potable water, water is needed to sustain the agricultural sector and to meet industrial, commercial, and institutional needs, as well as those for fire protection. Agriculture accounts for most of the water demand within the county. For example, over 90% of groundwater pumping in the Salinas Valley in 1995 served agricultural uses (Monterey County Water Resources Agency 2001a). Sustainable water supply requires a comprehensive water budget, as well as planning and management contingencies, in the event that water supplies are interrupted from natural or manmade emergencies. Emergency water supply shortages may result from slow cumulative actions such as low rainfall and drought, or increased demand from progressive development outpacing supply; they would also be due to a sudden disruption in infrastructure from an earthquake, political injunction, or terrorist act.

The 2007 General Plan assumes there will be a 27% increase in population in the unincorporated areas of the county between 2006 and the 2030 planning horizon, from 106,279 in 2006 to 135,375 in 2030. According to the *California Water Plan Update 2005*, per capita water use on the Central Coast averaged 181 gallons per day per capita in 2000 (California Department of Water Resources 2005). Table 4.3-9 provides a summary of projected potable water demand, based on the 2007 General Plan planning horizon and buildout, assuming per capita use of 181 gallons per day.

Agriculture will also place demands on raw water supplies. Based on trends in agricultural employment (AMBAG 2004; AMBAG 2008), no net expansion in overall agricultural acreage is projected for 2030 as virtually no increase in agricultural employment is forecast by AMBAG to 2030 for the county in the most recent (2008) and the immediately prior (2004) economic forecasts. The Salinas Valley Water Project EIR forecast a slight decline in agricultural water demand in the Salinas Valley for 2030 (MCWRA 2001a). While agricultural land use is expected to remain essentially constant during the 2030 planning horizon overall, agriculture's demands on water supplies in some areas are anticipated to increase (North County, pursuant to the projections in the Rancho Roberto Final EIR, for example), while they are

expected to decrease in other areas (Salinas Valley, pursuant to the SVWP Final EIR, for example). Overall, agricultural water demand is expected to remain relatively stable, with a small decline.

Table 4.3-9. Monterey County 2007 GP Estimated New Water Demand from Urban Uses and New Wineries (2030 and Buildout)

Development Area	Water Management District	Water Basin	2030 New Population (1)	Buildout New Population (2)	2030 New Water Demand (AF) (3)	Buildout New Water Demand (AF) (3)
Community Areas						
Chualar CA	MCWRA	Salinas River	1,668	4,224	338	856
Fort Ord CA	MCWRA/ MPWMD	Salinas River/ Seaside Aquifer (4)	9,572	24,246	1,941	4,916
Boronda CA	MCWRA	Salinas River	807	2,044	164	414
Pajaro CA	PVWMA	Pajaro River	752	1,904	152	386
Castroville CA	MCWRA	Salinas River	1,814	4,596	368	932
Community Areas Subtotal			14,613	37,013	2,963	7,504
Rural Centers						
Pine Canyon RC	MCWRA	Salinas River	1,894	4,798	384	973
San Lucas RC	MCWRA	Salinas River	188	476	38	96
Bradley RC	MCWRA	Salinas River	889	2,253	180	457
Lockwood RC	MCWRA	Salinas River	246	622	50	126
Pleyto RC	MCWRA	Salinas River	178	451	36	91
San Ardo RC	MCWRA	Salinas River	534	1,352	108	274
River Road RC	MCWRA	Salinas River	432	1,095	88	222
Rural Centers Subtotal			4,361	11,047	884	2,240
AHOs						
Carmel Mid-Valley AHO	MPWMD	Carmel River	434	1,098	88	223
Hwy 68/Airport AHO	MPWMD	Seaside Aquifer	2,835	7,181	575	1,456
Hwy 68/Reservation AHO	MCWRA	Salinas River	1,034	2,619	210	531
AHOs Subtotal			4,302	10,898	872	2,209
Cachagua	MPWMD/ MCWRA	Carmel River/ Salinas River (4)	51	372	10	75
Carmel Valley	MPWMD	Carmel River	294	2,135	60	433
Central Salinas Valley	MCWRA	Salinas River	177	1,284	36	260

Development Area	Water Management District	Water Basin	2030 New Population (1)	Buildout New Population (2)	2030 New Water Demand (AF) (3)	Buildout New Water Demand (AF) (3)
Greater Monterey Peninsula	MPWMD	Carmel River/ Seaside Aquifer (4)	1,552	11,250	315	2,281
Greater Salinas	MCWRA	Salinas River	542	3,928	110	796
North County	MCWRA/ PVWMA	Salinas River/ Pajaro River (4)	1,266	9,180	257	1,861
South County	MCWRA	Salinas River	365	2,644	74	536
Toro	MCWRA	Salinas River	1,572	11,393	319	2,310
Outside of CA, RA, AHOs			5,819	42,186	1,180	8,553
Wineries in AWCP	MCWRA	Salinas River			224 (5)	224 (5)
INLAND AREA TOTAL			29,096	101,145	6,123	20,731
Subtotal	MCWRA	Salinas River			3,830	12,527
Subtotal	MPWMD	Carmel River			310	1,834
Subtotal	MPWMD	Seaside Aquifer			1,702	5,054
Subtotal	PVWMA	Pajaro River			281	1,317

Notes:

Assumes persons/housing unit = AMBAG 2030 average.

Assumes person/housing unit average from 2007 GP estimates.

Assumes per capita water use [urban applied water (including residential, commercial, industrial, and landscape uses) for Central Coast Region] of 181 gpd per California Water Plan Update 2005.

Assumes 50/50 split between sources/district; this may overestimate or underestimate the totals presented above

Based on calculations in table later in this section

As discussed elsewhere in this EIR, residents of the unincorporated area will make up about 25% of the county's total population in 2030. Therefore, water demand in the cities would be expected to be roughly three times that shown above for the unincorporated areas.

Community Areas

With implementation of the SVWP and CSIP, the Salinas Valley will have sufficient supplies to 2030, and seawater intrusion will be effectively halted in the Castroville area (Monterey County Water Resources Agency 2001a). Development in the Fort Ord and Pajaro Community areas will affect the already overdrafted Seaside Aquifer and Pajaro Valley groundwater basins.

Table 4.3-10, based primarily on information from Urban Water Management Plans (UWMPs) and the Municipal Service Reviews (MSRs) prepared by various water suppliers and Monterey County

LAFCO, summarizes water supply issues affecting Community Areas. Note that these reports generally cover a wider service area than the proposed Community Area boundaries, and therefore discuss groundwater basin concerns on a larger scale. More specific information about demand, supply, and overdraft conditions is found in Section 4.3.2.1, Regional Setting, above.

Table 4.3-10. Water Supply Issue Summary for Community Areas

Community Area	Groundwater Basin	Water Supplier	Potable Water Availability Issues
Pajaro	Pajaro Valley basin	Pajaro/Sunny Mesa Community Services District	Overdraft; seawater intrusion
Castroville	Salinas Valley basin (180-Foot/400-Foot Subarea)	Castroville Water District	Overdraft, seawater intrusion; conversion of agricultural land
Boronda	Salinas Valley basin (180-Foot/400-Foot Subarea)	California Water Service Company, Salinas District	Overdraft; seawater intrusion into 180-foot aquifer within 1 mile of Cal-Water's closest well (diverting production)
Chualar	Salinas Valley basin (180-Foot/400-Foot Subarea)	Cal-Am Water Company, Monterey District	Overall supply severely short, but Chualar wells are independent of larger basins and represent small fraction of District demand
Fort Ord	Salinas Valley basin (Seaside and Corral de Tierra Subareas)	Marina Coast Water District	Seawater intrusion; supply adequate unless Fort Ord Reuse Authority growth limits lifted (imbalance of 2,548 AFY).

Pajaro

The Pajaro Community Area of the Pajaro Valley groundwater basin is in severe overdraft condition, with seawater intrusion problems and groundwater levels in decline. Any substantial increase in water use would contribute to further depletion of water supplies, resulting in a net deficit in aquifer volume and further lowering of the groundwater table. Future growth in the Community Area cannot proceed without significant groundwater impacts unless new supplies are secured.

Castroville

Castroville is in the 180-Foot/400-Foot Subarea of the Salinas Valley basin, where any additional pumping from the local groundwater would result in further seawater intrusion. Some of Castroville's

future development would be through infill and intensification of already urbanized areas within the community.

The CSIP has helped maintain safe well yields, raising water levels up 20 to 40 feet, and slowing seawater intrusion in this area. Additional efforts through the SVWP are expected to halt seawater intrusion by 2030.

With operation of the SVWP, CSIP, and/or other measures, anticipated withdrawals from the 180-Foot/400-Foot subarea to meet water demands of the Castroville Community Area would avoid further lowering of water levels in the aquifer and further seawater intrusion.

Boronda

Boronda is located in the 180-Foot/400-Foot subarea of the Salinas Valley groundwater basin and currently obtains water through Cal-Water, the same distribution system as the City of Salinas. Increased groundwater extraction from these wells would contribute to further seawater intrusion.

According to the Cal-Water 2004 UWMP, the company has already begun shifting production further south and into the 400-foot aquifer (in response to seawater intrusion into the 180-foot aquifer within 1 mile of Cal-Water's closest well). However, completion of the SVWP is expected to accommodate future growth in Boronda to 2030 without further seawater intrusion or lowering of groundwater levels.

Chualar

Chualar is situated in a portion of the Salinas Valley groundwater basin that receives sufficient groundwater recharge and is not subject to seawater intrusion. Past and current agricultural practices have resulted in water quality degradation of the shallow aquifers (primarily high nitrate levels); however, potable water supply is available from deeper in the aquifer system. According to Cal-Am's 2005 UWMP, Chualar is one of the company's six Highway 68 corridor systems, which are managed independently of the larger basin systems and represent only 5% of Cal-Am's demand. Consequently, the area is not subject to Cal-Am's overall shortage conditions. The level of growth anticipated for the proposed Community Area would not incur significant water supply impacts.

Fort Ord

Seawater intrusion forced relocation of the former Fort Ord's wells from the Main Garrison to a more inland location. However, these

wells are also now at risk of seawater intrusion and therefore are not considered a sustainable source of supply to meet future water demands of the Fort Ord community. MCWD is currently drawing water from the non-sustainable Deep Zone, which, combined with the risk of further seawater intrusion from continued pumping in the 180- or 400- foot aquifers, rules out possibilities for meeting the Community Area's water demands from local groundwater sources. In response, MCWD recently (2007) constructed a reverse osmosis desalination plant to convert seawater to potable drinking water (Marina Coast Water District 2008). When operating, this facility can provide up to 300,000 gallons of potable water per day.

Potential water sources for these uses include development of a new well field in the vicinity of Spreckels (where sufficient recharge occurs to preclude significant impacts) with conveyance facilities to Fort Ord; and a desalination plant proposed by Cal-Am at Moss Landing. The Fort Ord Reuse Plan identified a need to augment available potable water supply by 2,400 AFY to accommodate future development. This projection assumed the availability of an additional 6,600 AFY under an agreement with MCWRA that includes Fort Ord as a beneficiary of the SVWP. Sources for both the 6,600 AFY and the additional 2,400 AFY remain uncertain, pending approval of Cal-Am's Coastal Water Project.

Until additional sources and transfer facilities are in place, future water supply to meet the demands of proposed land uses at Fort Ord is not readily obtainable without resulting in substantial depletion of groundwater supplies and further seawater intrusion.

Despite lack of certainty over supply, the MCWD's UWMP (2005) forecasts that the District's service area will have sufficient water available to meet expected demands through 2025 with surplus (unless the currently proposed Fort Ord Reuse Plan development land use limits are exceeded).

Affordable Housing Overlays (AHOs))

Development in the AHOs is included in the overall demand numbers for the various groundwater basins. The Highway 68/Airport AHO is in the Seaside aquifer and the Mid-Valley AHO is in Carmel River Basin; provision of water to new growth in these areas will be dependent on the Monterey Peninsula regional supply projects discussed above. The Highway 68/ Reservation Road AHO is the Salinas Valley, and adequate supply will be provided with completion of the SVWP.

Rural Centers and Development outside Focused Growth Areas

Development in the Rural Centers and on individual lots will contribute to growth in the unincorporated county to 2030. Demand from these future projects is included in the overall demand numbers for the various groundwater basins.

The Rural Centers are all in the Salinas Valley, and adequate supply will be provided with completion of the SVWP.

Legal lot development may occur outside the service areas of water districts, in which case it would be served by individual water wells. As noted in the setting discussion, the groundwater basins in the North County and the Seaside aquifer are overdrafted and future development there will exacerbate that significant effect.

Agricultural Winery Corridor Plan

The new wineries proposed to be constructed during the planning horizon under the ACWP will also generate a demand for water. The AWCP would authorize up to 40 new "artisan" wineries (producing from 2,000 to 50,000 cases of wine per year) and 10 new "full-scale" wineries (producing from 50,000 to over 1 million cases per year). The expected size range of the full-scale wineries is described in Chapter 3 of this EIR.

Following is an estimate of the water demand for typical wineries under the proposed 2007 General Plan AWCP. Assumptions for the analysis are as follows:

- One case of wine equals 2.4 gallons (Monterey County Health Department 2008a)
- A typical winery uses 7 gallons of water to produce one gallon of wine (West Yost 2005)
- Water demand would be 16.8 gallons of water per case
- 40 artisan wineries will be built by 2030, each averaging a production rate of 25,000 cases per year by that time
- The full-scale wineries will reflect the following numbers and production rates by 2030: 5 producing 75,000 cases per year; 2 producing 175,000 cases per year; and 1 each producing 375,000, 750,000, and 1.5 million cases yearly.

Table 4.3-11. Projected AWCP Winery Yearly Water Demand

Type of Winery	Number of Wineries	Water Demand per Winery (gallons)	Water Demand per Winery (acre-feet)	Total Demand (acre-feet)
Artisan (25K cases per year)	40	420,000	1.29	51.6
Full-scale (75K cases per year)	5	1.26 million	3.87	19.35
Full-scale (175K cases per year)	2	2.94 million	9.02	18.04
Full-scale (375K cases per year)	1	6.3 million	19.3	19.3
Full-scale (750K cases per year)	1	12.6 million	38.7	38.7
Full-scale (1.5M cases per year)	1	25.2 million	77.3	77.3
Total Water Demand—all wineries (acre-feet)				224.29

This estimate does not include other uses allowable in the AWCP. They would add to the demand, but would have less demand than the wineries.

The water supply needed to serve the wineries may include water that is currently being used for agricultural production. As described in Chapter 1, a typical artisan winery would occupy approximately 1.2 acres; a typical full-scale winery would occupy 9.4 acres. In total, the 50 new wineries envisioned under the 2007 General Plan AWCP would occupy approximately 142 acres. Because wineries are not "compatible uses" under the County's Williamson Act contracts and the County has traditionally been very reticent to cancel contracts, the new wineries are unlikely to be located on agricultural land that is contracted under the Williamson Act. Assuming conservatively that about 30% of the land available for new wineries in the proposed wine corridor is currently in agricultural use, approximately 43 acres would be converted. The Department of Water Resources estimates that on the Central Coast, average on-farm water application ranges from 1.4 to 2.0 acre-feet per acre (California Department of Water Resources 2005). At that rate, approximately 60–86 acre-feet of the water necessary for winery operations is part of the existing demand within the AWCP.

The AWCP is located in the Salinas River basin. With implementation of the SVWP, water supply is available to serve new uses in the corridor. As noted in Impact WR-5 below, new distribution pipelines will be necessary.

2007 General Plan Policies

The 2007 General Plan proposes a number of policies that (together with state law requiring large subdivisions to obtain written assurance of the ability to supply water) would help ensure that new or expanded potable water supplies and facilities would be provided for future growth.

The policies below are summarized for both water supply and water supply infrastructure for this impact (WR-4) and the following impact (WR-5).

Public Services Element

The Public Services Element of the 2007 General Plan contains goals and policies addressing water supply issues related to land use. As discussed under Impact PSU-1, Public Services Element Policies PS-1.1 through PS-1.6 set forth general standards for the provision of adequate public facilities. Public Services Element Policies 2.1 through 2.6 establish specific policies for potable water supply and quality.

Public Services Element Policy PS-2.1 promotes coordination between and consolidation with those public water service providers drawing from a common water table to ensure that the water table is not overdrawn.

Public Services Element Policy PS-2.2 requires MCWRA to ensure adequate monitoring of wells in those areas experiencing rapid growth.

Public Services Element Policy PS-2.3 requires new development to connect to existing water service providers where feasible, with an emphasis on connections to public utilities.

Public Services Element Policy PS-2.4 calls for the establishment of minimum regulations for installing any new domestic well located in consolidated materials (e.g., in hard rock areas).

Public Services Element Policy PS-2.5 addresses establishing water quality testing regulations for individual wells on lots of record. The regulations would identify testing parameters for a one-time required water quality test for individual wells at the time of well construction and a process that allows the required one-time water quality test results to be available to future owners of the well. The regulations would not establish criteria that would prevent the use of the well in the development of the property and would not apply to agricultural wells.

Public Services Element Policy PS-2.6 stipulates that a Hydrologic Resources Constraints and Hazards Database be developed and maintained in the County GIS. The GIS would be used to identify areas containing hazards and constraints that would potentially impact the type or level of development allowed in these areas (Policy OS-3.4).

Public Services Element Policy PS-2.7 promotes incentive programs that encourage owners to voluntarily take cultivated lands on slopes with highly erosive soils out of production.

Public Services Element Policy PS-2.8 requires that all projects be designed to maintain or increase the site's pre-development absorption of rainfall (minimize runoff) and to recharge groundwater where appropriate.

Public Services Element Policy PS-2.9 mandates that the County use discretionary permits to manage construction of impervious surfaces in important groundwater recharge areas.

Public Services Element Policies 3.1 through 3.15 establish specific policies for water supply.

Public Services Element Policy PS-3.1 prohibits approval of new development that does not have proof of sustainable water supply, both in quality and quantity, to serve the development. The first single-family dwelling and accessory uses on an existing lot of record are exempted from this policy.

Public Services Element Policy PS-3.2 allows credits to be issued for significant reduction in the historical water use on site that would allow for additional development.

Public Services Element Policy PS-3.3 stipulates that specific criteria for proof of a long-term sustainable water supply for new development be developed. Criteria may include, but would not be limited to, water quality; production capability; recovery rates; effect on wells in the immediate vicinity; existing groundwater conditions; and technical, managerial, and financial capability of the water purveyor.

Public Services Element Policy PS-3.4 requires that specific criteria be developed for use in the evaluation and approval of adequacy of all new wells. Criteria would assess both water quality and quantity including, but not limited to, water quality; production capability; recovery rates; effect on wells in the immediate vicinity; existing groundwater conditions; and technical, managerial, and financial capability of the water purveyor.

Public Services Element Policy PS-3.7 requires that a determination of a long-term sustainable water supply be made on a basin-by-basin basis and not based on hauled water.

Public Services Element Policy PS-3.8 promotes coordination between the County and all agencies responsible for the management of existing and new water resources.

Public Services Element Policy PS-3.9 requires that a program to eliminate overdraft of water basins be established as part of the CIFP of the 2007 General Plan. The program would use water banking, groundwater and aquifer recharge and recovery, desalination, pipelines to new supplies, and a variety of conjunctive use techniques.

Public Services Element Policy PS-3.10 encourages systems that use grey water and cisterns for residential and commercial landscaping, subject to a discretionary permit.

Public Services Element Policy PS-3.11 requires that a standard tentative subdivision map and/or vesting tentative and/or Preliminary Project Review Subdivision map application for either a standard or minor subdivision be approved only if the applicant provides evidence of an assured long-term water supply, in terms of yield and quality, for all lots to be created through subdivision. The policy includes detailed requirements for evidence of water supply.

Public Services Element Policy PS-3.12 promotes the use of water conservation and safe, beneficial re-use of water in meeting water supply needs.

Public Services Element Policy PS-3.13 mandates establishment of an ordinance identifying conservation measures that would reduce potable water demand.

Public Services Element Policy PS-3.14 establishes strategies for maximizing the use of recycled water as a potable water offset to manage water demands and meet regulatory requirements for wastewater discharge.

Public Services Element Policy PS-3.15 mandates development of guidelines and procedures for conducting water supply assessments and determining water availability for development approvals.

Area Plan Policies

The following Area Plan supplemental policies also address the potable water supply for future development proposed in the 2007 General Plan.

North County Area Plan

North County Area Plan Policies NC-5.1 and NC-5.2 prioritize the development of water projects that can offer a viable water supply to water-deficient areas in North County, while also protecting groundwater recharge areas.

Greater Salinas Area Plan

Greater Salinas Area Plan Policy GS-1.1 requires that future development within the Butterfly Village Special Treatment Area provide adequate infrastructure, including for potable water.

Central Salinas Valley Area Plan

Central Salinas Valley Area Plan Policy CSV-5.2 stipulates that recreation and visitor-serving commercial uses be allowed only if it can be proven that they would not interfere with prime groundwater recharge areas, would not overdraft existing groundwater supplies, would meet state water quality and quantity standards, and would not adversely impact groundwater quality. Other policies, such as CSV-5.1 and CSV-5.3, require protection of groundwater recharge areas to maintain both water quality and sufficient supply volume.

Carmel Valley Master Plan

The Carmel Valley Master Plan contains several supplemental policies related to water supply. Policy CV-5.1 requires pumping from the Carmel River aquifer to be managed in accordance with the Carmel River Management Program. This policy also requires that new development not cause sufficient drawdown of the aquifer to threaten natural vegetation. Water projects designed to address future growth in the Carmel Valley shall be supported (Policy CV-5.2). Conservation and reclamation projects should be incorporated into project design (Policy CV-5.3). Policies CV-5.4, CV-5.5, and CV-5.6 are designed to protect water quality.

Cachagua Area Plan

In the Cachagua Area Plan, Policy CACH-3.5 requires that watershed impacts due to mining, timber, or related industries be mitigated. CACH-5.1 states that the area should not be deprived of water reasonably required for the beneficial needs of its inhabitants and that water should not be exported outside the planning area boundaries.

South County Area Plan

South County Area Plan Policy SC-5.1 similarly protects groundwater recharge areas, while Policy SC-5.3 prohibits encroachment on the main river channels where there is major recharge to the underlying groundwater basins.

Community Area Policies

Fort Ord Master Plan

In the Fort Ord Master Plan, several supplemental policies and associated programs are included in the Hydrology and Water Quality Element. Policy A-1 requires project applicants to demonstrate that all measures would be taken to ensure that runoff is minimized and infiltration maximized in groundwater recharge areas. Programs developed under this policy also would promote water conservation, recycling, and reclamation efforts. Policy A-2 proposes a program to gauge stream flows and manage creek development such that groundwater recharge in these areas is maintained. Policy B-1 states that the County shall ensure additional water to critically deficient areas with programs combining various efforts of the applicable water agencies. Policy B-2 is similar, while Policy C-1 states that the County shall comply with all mandated water quality programs and establish local water quality programs as needed. Policy C-3 is specifically designed to mitigate seawater intrusion, based on the Salinas Valley Basin Management Plan and through cooperation between MCWRA, MPWMD, and the County. Program C-3.5 (groundwater wells) states that the County shall carry out all actions necessary to ensure that the installation of water supply wells comply with the State of California Water Well Standards and well standards established by the Monterey County Health Department. Program C-3.6 (infrastructure) establishes that the County shall carry out all actions necessary to ensure that the distribution and storage of potable and non-potable water comply with the State Health Department regulations through Title 22. Water supply for fighting fires is addressed under Fire, Flood, and Emergency Management Policy A-2, which requires the County to provide fire suppression water system guidelines and implementation plans for existing and acquired former Fort Ord lands that are equal to or greater than those recommended in the Fort Ord Infrastructure Study (FORIS Section Fort Ord Reuse Plan—Table 4.1.8) for fire protection water volumes, system distribution upgrades, and emergency water storage.

Significance Determination

Implementation of the 2007 General Plan will increase water demand for urban and other uses.

The above-listed 2007 General Plan and Area Plan policies, implemented in conjunction with existing County code and state and federal water laws, will reduce the need for additional water supplies.

The policies include comprehensive requirements to ensure that new discretionary development contemplated in the proposed 2007 General Plan has adequate potable water supplies before it can be built. Policy PS-2.8 requires projects be designed to maintain or increase the site's pre-development absorption of rainfall (minimize runoff) and to recharge groundwater where appropriate. Policy PS-3.1 prohibits approval of new development that lacks proof of sustainable water supply. Policy PS-3.3 requires the development of criteria for proof of sustainable water supply for new development, including water quality, production capacity, recovery rates, effect on nearby wells, existing groundwater conditions, and the capabilities of the water purveyor. In effect, these policies delay discretionary development when there is no sustainable water supply and would avoid significant impacts related to water supplies.

In the Salinas Valley, water supply projects are being built or are in the permitting stage that will meet demands to 2030 without resulting in overdraft. On the Monterey Peninsula and in the Pajaro Valley, while planning is underway for new supply to address current overdraft and seawater intrusion problems, this planning is not sufficiently developed to assure long-term water supplies for new development. Each of these areas is discussed separately in more detail below.

Salinas Valley

In the Salinas Valley, the SVWP will provide sufficient additional supplies from the system's reservoirs to meet 2030 projected demands and halt further seawater intrusion. The impacts of the 2007 General Plan would be less than significant within the Salinas Valley for water supply during the 2030 planning horizon.

Monterey Peninsula

Once in place, the Coastal Water Project desalination plant and the full implementation of the Aquifer Storage and Recovery project for the Seaside Aquifer would both reduce pumping in the impacted Seaside aquifer and reduce illegal diversions from the Carmel River. It will solve the existing supply problem and enable Fort Ord allotments to be met, but whether the CPUC will permit a desalination plant of sufficient capacity to serve additional growth is unknown at this time. A larger plant is among the alternatives being considered.

Similarly, if approved and installed, the Pajaro/Sunny Mesa Community Services District's desalination plant at Moss Landing would be a potential source of supply to the Pajaro Valley and possibly the Monterey Peninsula. However, it is not known at this time whether that

water would be devoted to the Pajaro River problems or if a portion would be available for distribution to the Monterey Peninsula. Supplies sent to the Monterey Peninsula would not be available to reduce overdraft and seawater intrusion in the Pajaro basin.

A regional supply program has been under discussion by the Water for Monterey County Coalition, which would provide additional water for growth to the Monterey Peninsula and North County. This program has been proposed to the CPUC as an alternative to the Cal-Am desalination proposal.

There are an estimated 1,134 vacant residential lots in the Carmel Valley Master Plan and the Greater Monterey Peninsula Plan areas. The development of these lots, albeit slowly because of the MPWMD's existing restrictions on new connections, will exacerbate the existing water shortfall until a regional solution providing water for new development is in place.

As noted above, the 2007 General Plan constrains discretionary development until long-term water supplies are secured. At present, none of the proposed projects to substantially address the existing water supply problems has reached the Draft EIR phase of CEQA compliance (other than the MPWMD ASR project). Thus, while potentially feasible, there is no assurance that comprehensive solutions will be implemented in time to provide water for new development. Discretionary development that results in new water demands will be delayed until this happens, but single-family residential development will not. Thus, development on existing legal lots in the Carmel Valley Master Plan and Greater Monterey Peninsula Plan areas would result in a significant impact, unless such development has no net increase in water demand and/or new supply sources are developed.

Pajaro Valley

The PVWMA's Basin Management Plan includes the following water supply efforts; water conservation program (5,000 acre-feet), Harkins Slough project (1,100 acre-feet), Murphy Crossing project (1,600 acre-feet), and the Watsonville Area Water Recycling Project (4,000 acre feet) and related distribution system. These projects will relieve pumping pressure by providing recycled water supplies to replace groundwater used for farmland irrigation. However, these efforts will not be sufficient to prevent continued overdraft as result of urban and agricultural demands without importation of water from the Central Valley.

There are no plans to import additional water supplies from outside the county in order to meet future demand. Although the PVWMA has long contemplated obtaining water from the State Water Project, that now appears to be infeasible because of the lack of necessary funding (and

lack of local support for funding), and court-ordered reductions in state and federal project water deliveries relating to the impacts of Delta pumping on Endangered Species Act-listed fish species. In December 2007, Federal District Judge Oliver Wanger imposed new rules on state and federal agencies that may reduce water deliveries south of the Delta by as much as 30% in 2008, in order to protect the threatened Delta smelt. In April 2008, Judge Wanger invalidated the biological opinion on salmon and steelhead trout under which DWR and the U.S. Bureau of Reclamation operate their water delivery systems. This is expected to result in continued reductions in water deliveries (San Francisco Baykeeper 2008a, 2008b). These reductions occur in the face of continued population growth in the areas currently supplied by the state and federal aqueducts. The fragility of the state and federal water delivery projects in the face of growing demand greatly reduces the possibility that the PVWMA would obtain water from those sources.

Reduction in coastal pumping proposed by PVWMA will increase the sustainable yield of the groundwater basin; however, new supply is necessary to achieve this reduction. PVWMA estimates that it needs 21,000 acre-feet of new supply to meet existing demands and address overdraft. Of this, the existing feasible projects noted above can supply up to 11,700 acre-feet. PVWMA also estimates that it needs 30,000 acre-feet for 2040 conditions to account for growth (PVWMA 2001). Thus, without additional supply, the overdraft condition will remain and get worse if additional water demands occur within the Pajaro Valley.

The proposed Pajaro-Sunny Mesa desalination plant at Moss Landing would provide up to 21,000 acre-feet of new supply for agricultural use, as well as maintenance of the hydraulic barrier to seawater intrusion. The proposed plant is in the initial stages of permitting, so its date of availability is unknown and cannot be assured to provide water for new growth.

There are an estimated 577 vacant residential lots in the North County Plan area. The 2007 General Plan limits development in these areas to a single residence on each such lot, but also relieves such development of the requirement to demonstrate a sustainable water supply prior to development under Policy PS-3.1. Development of a portion of these existing lots of record by 2030 would exacerbate current problems.

While current PVWMA efforts will help to provide a portion of supply to address current conditions, there is no assurance that solutions will be implemented in time to provide water for new development. Discretionary development that results in new water demands will be delayed until this happens, but single-family residential development will not. Thus, development on existing legal lots in the portion of the North County area within the Pajaro Valley would result in a significant impact, unless such development has no net increase in water demand and/or new supply sources are developed.

Mitigation Measures

The following measure is intended to reduce impacts on the Monterey Peninsula during the 2030 planning horizon to below a level of significance. However, for the reasons discussed above, there are no feasible measures that would reduce the impacts of development on existing lots of record in the North County and the Pajaro River below a level of significance.

WR-1: Support a Regional Solution for the Monterey Peninsula in addition to the Coastal Water Project

The County will revise the draft 2007 General Plan to include the following new policy:

PS-3.16. The County will participate in the Water for Monterey County Coalition, or similar regional group, for the purpose of identifying and supporting a variety of new water supply projects, water management programs, and multiple agency agreements that will provide additional domestic water supplies for the Monterey Peninsula and Seaside basin, while continuing to protect the Salinas and Pajaro River groundwater basins from saltwater intrusion. The County's general objective, while recognizing that timeframes will be dependent upon the dynamics of the regional group, will be to complete the cooperative planning of these water supply alternatives within five years of adoption of the General Plan and to implement the selected alternatives within five years after that time.

Significance Conclusion

Implementation of the 2007 General Plan would increase demand for water in portions of the county beyond available supply.

Within the Salinas Valley, the SVWP will provide sufficient supply to reverse existing overdraft and seawater intrusion problems and to provide water for new development. No new or expanded water entitlements are contemplated to meet demand to 2030, and thus this is considered a less-than-significant water supply impact (see separate discussion below under Impact WR-5 regarding water supply infrastructure).

On the Monterey Peninsula and in the Pajaro Valley, while current planning is underway to address current problems and provide water for new development, none of the major supply projects is sufficiently developed (i.e., none are at the Draft EIR phase) to conclude that they will provide adequate water to address current problems and future needs. Mitigation Measure WR-1 puts the County on record as supporting a regional solution (but not necessarily those currently proposed). 2007 General Plan policies will constrain development until long-term water supplies are assured. Until then, non-discretionary development on legal lots of record will exacerbate existing water supply problems, and this is considered a significant and

unavoidable water supply impact (see separate discussion under Impact WR-5 below regarding water supply infrastructure).

Buildout

Impact of Development with Policies

Buildout under the 2007 General Plan would result in demand that exceeds available water supplies in all parts of the county. There are no specific water supply projects identified beyond the 2030 horizon. Typical projects to support the greater population at buildout could include desalination, surface water diversion, new groundwater wells, water recycling, aquifer storage and recovery, conservation, and importation from outside the local area. Water transfers within the county would be feasible only if new surface water or desalination supplies become available.

Significance Determination

At buildout in 2092, there would be nearly 36,000 more dwellings within the unincorporated county than existed in 2006. The specific locations of these future dwellings, their design, their relationship to other development and land uses, and the character of their surroundings cannot be accurately determined that far into the future. While it would therefore be speculative to evaluate the specific level of potential water resources impacts related to buildout of all residential lots in the county, general conclusions can be made.

Buildout of the proposed 2007 General Plan would increase water demand within the county. Barring new technology that would make desalination less expensive or some other new source of water not currently known that is both economical and highly productive, this additional development would further stress both water supply and groundwater quality.

The SVWP has the capacity to provide additional water to the Salinas Valley with expansion of the distribution system, capture of additional flows through changes in operational management of the dams, and continued trends of per capita conservation. The MCWRA estimates this to be as much as 10,000 AFY, which would be slightly more than estimated as needed for new post-2030 demand (~9,000 acre-feet; see Table 4.3-9).

Given that current water supply planning for the Monterey Peninsula and for the Pajaro Valley to address existing problems and to provide future supplies for 2030 is at a preliminary level, there is no conceptual planning for the period after 2030.

The county's primary rivers, the Salinas, the Carmel, and the Pajaro, have substantial annual flows that could provide additional supplies by diverting winter high flows into storage systems. However, there is no new storage and related distribution systems being proposed on any of these rivers (other

than the dam modifications included in the SVWP and the conceptual post-2030 improvements noted above), portions of these annual flows are already supporting groundwater levels and thereby supplying existing wells, and reduction in flows could adversely affect protected salmonid species (salmon and steelhead) and other aquatic species. Substantial hydrogeological study, infrastructure planning, public or private financing, and federal and state agency permitting would need to be completed before these flows could be tapped. Planning and permitting would need to include consideration of impacts on biological and other resources. There would also have to be community support for changing reliance on groundwater to surface water supplies.

More extensive conservation or conjunctive use programs alone would not avoid this impact. Most water use in the county is attributable to agriculture. As supplies become restricted, they will become more expensive. This has traditionally moved farmers to abandon marginal farmlands (e.g., those with little potential to yield profitable crops), switch to less thirsty crops, or undertake more economical water regimes (e.g., sprinklers, drip irrigation, cropping patterns) to the extent practical given crop needs, weather, soil type, markets, and other factors. Given the importance of agriculture to the county and state economy, as well as its place in the food supply, assuming significant reductions in agriculture is not reasonable. While farms will reduce their water use through a variety of means in the face of the future shortfall, agriculture will remain a major water user and contributor to this significant effect,

The County is required by state housing element law to provide sufficient land that is planned and zoned to accommodate future population growth (Government Code Section 65583). While urban water conservation measures mandated by the 2007 General Plan, local ordinances, and the Urban Water Management Planning Act (Water Code Section 10610, et seq.) will reduce per capita water use in the future, the increase in population will result in a net increase in demand.

Global climate change will have some effect on future precipitation patterns in this part of California in the future. That might in turn affect available water supplies in the reservoirs at the upper end of the Salinas River. What that effect will be is unknown. The California Department of Water Resources reports that California's precipitation is on an upward trend since the 1960s, but that the yearly amount of precipitation is increasingly variable (i.e., wet years can be followed by dry years; California Department of Water Resources 2006). Present climate models do not have the precision to determine with any certainty what will be the case in Monterey County. If global climate change does adversely affect the county's water storage, the county's water supply from groundwater and surface water sources will be reduced. Additional development would result in a significant and unavoidable impact should that occur.

Sea level rise from global climate change is expected to increase seawater intrusion, thereby reducing freshwater yields from the groundwater aquifers. (California Department of Water Resources 2006) The California Department of Water Resources suggests that the threat posed by sea level rise can be lessened by controls on well construction and groundwater production, and the operation of hydraulic barrier projects (California Department of Water Resources 2006). All of these approaches would be undertaken in Monterey County through the policies of the 2007 General Plan, local ordinances, and the seawater intrusion projects underway in the Pajaro Valley, Castroville area, Monterey Peninsula, and Salinas Valley. Despite these current and future activities, there is a reasonable possibility that seawater intrusion would continue to be a significant effect because of the further pressure created by sea level rise. Ultimate buildout, by increasing water demand, would exacerbate that effect on groundwater.

Future sources of water in 2092 are unknown, and cannot be known at this time. Given the expected demands on the state and federal water systems as a result of California's projected growth, those systems are unlikely to be able to supply Monterey County's needs at buildout. Similarly, there is no information available about the locations of any other water supply facilities needed to meet 2092 demands, their physical characteristics, and their uses. Therefore, a discussion of their potential environmental impacts would be speculative.

Mitigation Measures

Implementation of the proposed 2007 General Plan policies and existing regulations would reduce potential impacts from increased water demand. The following mitigation measures would reduce impacts in the Salinas Valley and Monterey Peninsula. However, as described above, there are no feasible mitigation measures in the Pajaro River basin. The mitigation measures would not reduce the impact below a level of significance.

WR-1: Support a Regional Solution for the Monterey Peninsula in addition to the Coastal Water Project

This measure is described above.

WR-2: Initiate Planning for Additional Supplies to the Salinas Valley

The County will revise the draft 2007 General Plan to include the following new policies:

PS-3.17. The County will pursue expansion of the SVWP by initiating investigations of the capacity for the Salinas River water storage and distribution system to be further expanded. This shall also include investigations of expanded conjunctive use, use of recycled water for groundwater recharge and seawater intrusion barrier, and changes in

operations of the reservoirs. The County's overall objective is to have an expansion planned and in service by 2030.

PS-3.18. The County will convene and coordinate a working group made up of the Salinas Valley cities, the MCWRA, and other affected entities for the purpose of identifying new water supply projects, water management programs, and multiple agency agreements that will provide additional domestic water supplies for the Salinas Valley. These may include, but not be limited to, expanded conjunctive use programs, further improvements to the upriver reservoirs, additional pipelines to provide more efficient distribution, and expanded use of recycled water to reinforce the hydraulic barrier against seawater intrusion. The County's objective will be to complete the cooperative planning of these water supply alternatives by 2020 and have projects online by 2030.

Mitigation Measure BIO-2.3: Add Considerations regarding Riparian Habitat and Stream Flows to Criteria for Long-Term Water Supply and Well Assessment

Public Services Policies PS-3.3 and PS-3.4 establish the criteria for proof of a long-term water supply and for evaluation and approval of new wells. The following criteria shall be added to these policies:

- Policy PS-3.3.i—Effects on instream flows necessary to support riparian vegetation, wetlands, fish, and other aquatic life including migration potential for steelhead.
- Policy PS-3.4.g—Effects on instream flows necessary to support riparian vegetation, wetlands, fish, and other aquatic life including migration potential for steelhead.

Significance Conclusion

A second phase of the Salinas Valley Water Project is feasible, according to MCWRA. From a water supply point of view, implementation of Mitigation Measures WR-2 would mitigate the water supply impact in the Salinas Valley of 2007 General Plan buildout to a less-than-significant level (see separate discussion of water supply infrastructure under Impact WR-5 below).

There are no current plans for acquiring new water supplies to meet the post-2030 long-term demand for the Monterey Peninsula or the Pajaro Valley. While discretionary development would be delayed until long-term water supplies are assured, non-discretionary development would exacerbate existing water supply problems. In theory, extension of the currently proposed desalination, aquifer storage and recovery, water recycling, river diversion, and conservation projects would provide water for these areas, but conceptual proposals for after 2030 are not even under consideration at this time. Thus, this would be a significant and unavoidable water supply impact on the Monterey Peninsula and in the Pajaro Valley portion of the North

County Plan area (see separate discussion of water supply infrastructure impacts under WR-5 below).

Impact WR-5: Land uses and development consistent with the 2007 General Plan would increase the demand for water storage, treatment, and conveyance facilities that would have significant secondary impacts on the environment (Significant and Unavoidable Impact.)

2030 Planning Horizon

Impact of Development with Policies

The increased demand for water described under Impact WR-4 also creates a need for additional water storage, treatment capacity, and conveyance facilities. These facilities might include desalination plants, water treatment facilities, water recycling facilities, reservoirs, pipelines, pump stations, and new wells.

There will be secondary environmental impacts related to water infrastructure. New potable supplies are more likely to come from seawater desalination plants and from wastewater recycling in the short term but could also come from surface water diversions in the long-term.

Typically, water supply facilities would consist of treatment facilities, wells, wellhead facilities, intakes, pipelines, and storage reservoirs/tanks. The impacts of these facilities would vary greatly depending upon their size and location. Impacts may be related to, but not be limited to the following: loss or disturbance of biological resources, disturbance of cultural resources, visual impacts, operational noise, impacts related to geology and soils, flooding and water quality effects, and construction impacts (e.g., short-term traffic disruption, air quality emissions from equipment, noise, erosion/sedimentation, and utility disruption).

When specific facilities are proposed, they would be subject to CEQA review, and mitigation of any identified significant impacts would be required where feasible (Public Resources Code Section 21002).

Impacts of Regional Supply Projects

Salinas Valley

Salinas Valley Water Project—The SVWP (MCWRA and U.S. Army Corps of Engineers 2001) includes the following elements:

- Modification of the Nacimiento spillway to increase the spillway capacity and allow the reservoir to store a higher volume of water throughout the wet season.

- Reoperation of Nacimiento and San Antonio Reservoirs to allow for a greater level of groundwater recharge and to allow diversion of water at the lower Salinas River for direct delivery.
- Surface Diversion/Impoundment. A seasonal diversion structure would be constructed on the northern reach of the Salinas River to divert an average of 9,700 AFY for irrigation from April through October.
- Delivery. The diversion structure would be constructed near the current point where the CSIP pipeline crosses the Salinas River. The pipeline has sufficient capacity to deliver project water to the CSIP area also. Hydrologic modeling shows that the project may not halt seawater intrusion in the long-term future (year 2030). If this were to occur, additional distribution capacity will be created in a new pipeline and water would be delivered outside the CSIP area to ensure project objectives are met and seawater intrusion is halted.
- Pumping Limitations. In areas where project water is delivered, groundwater pumping would be limited to peaking capacity and deliveries during drought.

According to the SVWP Draft EIS/EIR (MCWRA and U.S. Army Corps of Engineers 2001), the project will result in the following significant and unavoidable impacts: Nacimiento Reservoir water level changes, which would affect sport fish reproduction and habitat; effects on aesthetic conditions at San Antonio and Nacimiento Reservoirs, as surface levels change substantially over the course of an average year; reduction in lake levels at Nacimiento and San Antonio Reservoirs (short and long term) to the degree that recreational opportunities are substantially affected during the peak recreation season; and short-term air quality (fugitive dust or PM_{10}) effects during construction of the spillway modifications (North Central Coast Air Basin) and project facilities (South Central Coast Air Basin).

Granite Ridge Distribution Facilities—The County of Monterey and the MCWRA are assessing potential solutions including new delivery infrastructure and financing options to provide additional water to the Granite Ridge area. Other agencies are also assessing the situation, including the Pajaro-Sunny Mesa Community Services District and the Pajaro Valley Water Management Agency. Pipeline construction would result in impacts on traffic, air quality, noise, soils and geology, and biological resources.

Monterey Peninsula/Seaside Aquifer

Coastal Water Project (Desalination)—An EIR is currently being prepared for the project under the auspices of the CPUC. The "Proponent's Environmental Assessment" (PEA) submitted to the

CPUC (RBF Consulting 2008) identified the following potential effects: potential for use of cooling water from the Moss Landing Power Plant to contaminate potable supplies; potential for the aquifer storage component to contaminate groundwater; visual impacts, including new sources of light and glare; potential to disturb undiscovered archaeological sites; air quality impacts from construction and operation; temporary and permanent impacts on biological resources; potential impacts from geologic and seismic hazards; potential release of hazardous materials; potential impacts from erosion and noise during construction; traffic impacts during construction; and potential to interrupt public utilities and services during construction. The PEA concluded that all potentially significant impacts would be reduced to a less-than-significant level with mitigation. However, the Draft EIR for this project has not yet been released. It is possible but not known if the EIR will ultimately conclude that there are significant and unavoidable impacts from this project.

Water for Monterey County's Regional Water Supply Program—The Monterey Regional Water Supply Program is proposed to provide up to 26,500 AFY to serve the water needs of northern Monterey County, including the Monterey Peninsula, the former Fort Ord, Marina, Castroville, and North Monterey County, including Moss Landing.

The components of the Project (RMC 2008) include the following:

- Expanded recycled water use, including expansion of existing recycled water agricultural irrigation project, groundwater replenishment, and urban recycled water use
- Stormwater collection and treatment
- Conservation
- Salinas River diversion and surface water treatment plant
- Brackish water desalination

A detailed program description was submitted for consideration by the CPUC in June 2008; the CPUC is analyzing the Coastal Water Project and may decide to analyze this program as an alternative to the CWP.

No environmental analysis has been completed for this program. Potentially significant impacts of the program may include, but are not limited to: water quality impacts of expanded recycled water use; impacts of new diversion on biological resources; physical impacts of new facilities on biological resources, cultural resources, soils and geology; direct and indirect impacts on agriculture due to water diversions, withdrawals, and treatment; construction impacts related to noise, air, and traffic; and other impacts.

Seaside Aquifer Storage Program—MPWMD is proposing to construct and operate an ASR project that would allow diversion of a limited amount of excess flow from the Carmel River for storage in, and later recovery from, the Seaside Groundwater Basin. The ASR project would divert up to 2,426 AFY from the Carmel River. Diversions would occur between December and May. The ASR would utilize new and existing water collection and conveyance facilities. New facilities include an MPWMD-owned injection/extraction well located on land currently owned and managed by the U.S. Army on the former Fort Ord and an MPWMD-owned pipeline connecting the injection/extraction well with the Cal-Am temporary pipeline located west of General Jim Moore Boulevard. No other new facilities would be constructed because the project would utilize the existing Cal-Am wells, pipelines, and pumping facilities that currently divert and transport water from the Carmel River.

A joint draft environmental impact report/environmental assessment (EIR/EA) was prepared in compliance with CEQA and NEPA, respectively (Jones & Stokes 2006). The final EIR/EA concluded that all potentially significant impacts of well and pipeline construction would be less than significant with mitigation (MPWMD 2006).

Pajaro Valley

Pajaro-Sunny Mesa Desalination Plant—The proposed Pajaro-Sunny Mesa desalination plant at Moss Landing would provide up to 21,000 AFY for agricultural use, as well as maintenance of the hydraulic barrier to seawater intrusion. The proposed plant is in the initial stages of permitting, so its date of availability is unknown. No environmental analysis has been completed for this project. Potentially significant impacts of the program are likely to be similar to the Coastal Water Project (but may be greater due to greater size) and may include, but are not limited to: potential for use of cooling water from the Moss Landing Power Plant to contaminate potable supplies; visual impacts; potential to disturb undiscovered archaeological sites; air quality impacts from construction and operation; temporary and permanent impacts on biological resources; potential impacts from geologic and seismic hazards; potential release of hazardous materials; potential impacts from erosion and noise during construction; traffic impacts during construction; and potential to interrupt public utilities and services during construction.

PVWMA's Basin Management Plan—The PVMWA Basin Management Plan calls for a series of strategies and projects to address current and future supply deficiencies including water conservation, water recycling, importation of water and groundwater

banking, associated coastal and inland distribution systems, and the already completed Harkins Slough and Murphy Crossing projects.

Additional water conservation measures are proposed for both urban and agricultural conservation and would not result in significant environmental impacts (PVWMA 2001).

The recycling component would involve construction of tertiary treatment facilities at the Watsonville Wastewater Treatment Facility (WWTF) and pumping, blending, storage, and distribution facilities. The recycled water would be used to offset a portion of the irrigation demands in the coastal area during the irrigation season. A 4,200-foot 24-inch-diameter pipeline to connect the Recycled Water Facility to the San Andreas and Springfield laterals of the Coastal Distribution System would also be required (PVWMA 2001).

The importation and groundwater banking component of the Basin Management Plan 2000 Alternative involves importing surface water from the Central Valley and using it in lieu of groundwater whenever it is available, allowing for natural recharge of the groundwater basin. During droughts and dry periods when little or no surface water may be available, Pajaro Valley would then pump the groundwater that was "saved" or "banked" during wet periods. This component includes construction of an inland distribution system and a pipeline (the Import Pipeline) to link the Pajaro Valley with the Santa Clara Conduit of the San Felipe Division facilities. The facilities associated with this component include the Import Pipeline, supplemental wells, and Inland Distribution System (PVWMA 2001). Importation of water from the Central Valley depends upon contracting with the U.S. Bureau of Reclamation and resolution of Central Valley water supply issues related to the Sacramento–San Joaquin Delta.

The EIR for the Basin Management Plan program identified significant impacts related to flooding, sedimentation and water quality during construction, biological resources, cultural resources, geological conditions, construction-period traffic, air quality, noise, visual aesthetics, and growth inducement. The significant impacts were found to be reduced to a less-than-significant level with identified mitigation except for the following significant and unavoidable impacts: loss of prime farmland, construction across active fault traces, construction criteria pollutant emissions, and secondary impacts due to growth (PVWMA 2001).

However, the EIR did not make any conclusions regarding the potential effects of additional diversions from the Sacramento–San Joaquin Delta. The EIR for the Basin Management Plan described that environmental evaluation of whether authorization of a contract between PVWMA and the U.S. Bureau of Reclamation for

importation of water would affect diversions from the Delta has to be deferred until PVWMA is able to pursue the contract (PVWMA 2001).

Impacts of Community Area Water Infrastructure

Table 4.3-12 summarizes water supply infrastructure issues affecting Community Areas. Note that these reports generally cover a wider service area than the proposed Community Area boundaries.

Table 4.3-12. Water Supply Infrastructure Summary for Community Areas

Community Area	Groundwater Basin	Water Supplier	General Facility/ Infrastructure Issues
Pajaro	Pajaro Valley basin	Pajaro/Sunny Mesa Community Services District	Upgrades needed (connection of Pajaro and Sunny Mesa systems for emergency backup; aging water mains and lateral lines; new tank and well planned).
Castroville	Salinas Valley basin (180-Foot/400-Foot Subarea)	Castroville Water District	Upgrades needed and planned (new tank and well replacement in 10 years). Applied to Local Agency Formation Commission to increase service boundary; if denied, growth will need to be served by private provider.
Boronda	Salinas Valley basin (180-Foot/400-Foot Subarea)	California Water Service Company, Salinas District	Upgrades needed and planned (treatment and well replacement due to nitrate, other contaminants, and aging). Adequate short-term supply; long-term supply likely to require additional water project.
Chualar	Salinas Valley basin (180-Foot/400-Foot Subarea)	Cal-Am Water Company, Monterey District	Current facilities reported as adequate.
Fort Ord	Salinas Valley basin (Seaside and Corral de Tierra Subareas)	Marina Coast Water District	Planned infrastructure capacity adequate.

New treatment, storage, and conveyance facilities and services would serve the Community Areas (where demand is expected to be greatest) and likely would be located in those areas. The impacts of these facilities would vary greatly depending upon their size and location. Impacts may include visual impacts, noise impacts, and construction impacts (e.g., short-term traffic disruption, air quality emissions from equipment, and noise). Site-specific and facility-specific information is not available; the significance of these impacts cannot be determined with certainty.

Pajaro—Planned growth in Pajaro would necessitate extension and/or upgrades of the community's water distribution system. According to the Pajaro/Sunny Mesa Community Service District MSR prepared in February 2006, infrastructure improvements are already needed for emergency contingency supply. The separate Pajaro and Sunny Mesa water systems need to be joined in order for either system to be able to rely on the other in the event of an emergency. A new tank and new well are also planned for the Pajaro Community Area to meet the demand for new growth, in addition to the replacement of aging water lines.

Castroville—Growth in Castroville would necessitate extension of existing water distribution facilities. According to the North County MSR, prepared in February 2006, seawater contamination has led the Castroville Water District to seal one of its wells in the upper screened area to extract solely from the lower aquifers. The Castroville Water District has planned to replace one well and add a new tank in the near future to meet 2007 General Plan growth demands. Potential impacts of these extensions would be identified in the environmental documents prepared for that work. As indicated in the North County MSR, the District has applied to LAFCO to increase its service boundaries. If denied, the District has indicated that additional growth would need to be served by a private water supplier.

Boronda—Redevelopment in the Boronda Community Area also would require new water distribution facilities. Cal-Water's UWMP indicates that, while short-term supply can be met from its central Salinas wells, long-term supply will require identification of a new water source from a yet-to-be-determined water project. District-wide, the company has planned treatment system improvements and 12 well replacements (due to nitrate contamination and aging) over the next 5 years. Cal-Water is also in the process of preparing a master plan to further identify capital improvements needed for future growth. Potential impacts of infrastructure improvements would be addressed within a Community Plan EIR or other public agency environmental analysis.

Chualar—Current facilities are reported as adequate.

Fort Ord—Planned infrastructure capacity is reported as adequate.

Impacts of Water Infrastructure for Rural Centers and Other Development

New treatment, storage, and conveyance facilities and services would also be needed for Rural Centers and likely would be located in or near those areas.

Water infrastructure for development on legal lots outside of the focused growth area would typically be onsite wells and treatment facilities but could also be distribution pipelines from the regional water systems. The

size and type of new facilities would depend on the size and location of the new development, and the availability of existing water supplies. Typically, water supply facilities consist of wells, wellhead facilities, pipelines, and storage reservoirs/tanks. The impacts of these facilities would vary greatly depending upon their size and location. Impacts may include visual impacts from large tank reservoirs, noise impacts if pumps are not located within a solid building, and construction impacts (e.g., short-term traffic disruption, air quality emissions from equipment, and noise). Site- and facility-specific information is not available; the significance of these impacts cannot be determined with certainty.

Impacts of Water Facilities for the AWCP and Agriculture

New water supply facilities would be needed to support the artisan and full-scale wineries and to support agriculture. These would typically be onsite wells and treatment facilities.

A portion of the water demand from these wineries would be met by existing water supply. The size and type of new facilities would depend on the size and location of the specific winery and the availability of existing water supplies. Where agriculture expands into new areas, new infrastructure would also be required to provide water supply.

Typically, water supply facilities for new wineries or expanded agricultural activity would consist of wells, wellhead facilities, pipelines, and storage reservoirs/tanks. The impacts of these facilities would vary greatly depending upon their size and location. Impacts may include visual impacts from large tank reservoirs, noise impacts if pumps are not located within a solid building, and construction impacts (e.g., short-term traffic disruption, air quality emissions from equipment, and noise). Site- and facility-specific information is not available; the significance of these impacts cannot be determined with certainty.

2007 General Plan Policies, Area Plan Policies, and Community Area Policies

The General Plan, Area Plan, and Community Area policies relative to water supply and water supply infrastructure are summarized above under Impact WR-4. Policies relative to secondary impacts on the physical environment (such as biological resources, prime farmland, cultural resources, or water quality) are discussed in the separate portions of the EIR concerning those resources.

Significance Determination

Implementation of the 2007 General Plan would increase demand for new or expanded water treatment, storage, and conveyance facilities.

New potable supplies for growth up to the 2030 planning horizon will come from the SVWP for the Salinas Valley and are likely to come from a combination of desalination plants, water recycling, water conservation, and aquifer storage and recovery in the Monterey Peninsula and Pajaro Valley. Proposed water supply projects (other than SVWP and the ASR) are in the planning and permitting stages. The environmental impacts of proposed supply infrastructure are being analyzed by the CPUC, MPWMD, and PVWMA and will be disclosed and mitigated as part of those CEQA processes. While mitigation can likely address most of the significant impacts identified for these projects and associated distribution facilities, not all significant impacts of large-scale water supply projects are likely to be mitigated to a less-than-significant level, and unavoidable impacts may occur.

New treatment, storage, and conveyance facilities and services would serve the Community Areas and Rural Centers, legal lot development, and agricultural and other uses. While mitigation can likely address most of the significant impacts identified for these facilities, it is possible that some significant impacts may not be feasibly mitigated to a less-than-significant level, and unavoidable impacts may occur.

Salinas Valley

The impacts of the SVWP have been disclosed and mitigated with adoption of the EIR/EIS prepared for that project by the MCWRA in 2002. As noted above, there will be certain significant and unavoidable impacts.

Extension of distribution lines from SVWP supplies to new residential, commercial, industrial, and agricultural uses will also result in environmental impacts due primarily due to construction. Extension of distribution pipelines to the Granite Ridge area will also have construction period impacts. Impacts of their construction will need to be assessed under CEQA at the point of their proposal and mitigated where feasible mitigation is available. It is possible, though unlikely, that the physical impacts of new distribution lines cannot be always mitigated to a less-than-significant level in all locations.

Monterey Peninsula

The impacts of the MPWMD ASR project were analyzed and found to be mitigable to a less-than-significant level.

The potential impacts of the Cal-Am Coastal Water Project facilities are being analyzed in the CEQA document being prepared under direction of the CPUC as part of the permitting process. The regional water supply program of the Water for Monterey Coalition may also be evaluated as part of the CEQA document. The same will be true of the desalination plant proposed by the Pajaro/Sunny Mesa Community Services District

if it is advanced. Feasible mitigation measures will be imposed on the projects that are selected and permitted.

At this point, the specific environmental impacts of all new water supply and distribution facilities on the Monterey Peninsula have not been fully analyzed. While many significant impacts can likely be mitigated to a less-than-significant level, it is possible that certain significant and unavoidable impacts may occur with their implementation.

Pajaro Valley

The Harkins Slough project and Murphy Crossing project have been completed. The Watsonville Water Recycling Project is currently in construction and mitigation was identified in the project EIR that would reduce most impacts to a less-than-significant level with the exception of impacts on prime farmland and secondary effects due to growth, which would be significant and unavoidable.

Although the PVWMA has long contemplated obtaining water from the State Water Project, as discussed above, that now appears to be infeasible. Were delivery to occur, it may result in unavoidable impacts on ESA-listed fish species. The PVWMA also identified significant and unavoidable impacts for the importation pipeline/groundwater banking project related to prime farmland, construction across active fault traces, construction air quality, and growth inducement.

If advanced, the desalination plant proposed by the Pajaro/Sunny Mesa Community Services District would need to be analyzed under CEQA for potential significant impacts and feasible mitigation measures imposed for significant impacts identified. While many significant impacts can likely be mitigated to a less-than-significant level, it is possible that certain significant and unavoidable impacts may occur with implementation.

Mitigation Measures

There are a numerous policies in the General Plan that address impacts from construction and operation of new infrastructure, including policies related to air quality, noise, geology, hydrology, cultural resources, biological resources, farmland, and traffic, among other subjects. Relevant mitigation in other sections of this EIR, such as for biological resources (BIO-1.1 through 1.5, 2.1, 2.2, 2.3, 3.1, and 3.2), air quality (AQ-1, 2, 3, 5, and 6), climate change (CC-1, 2, 5, and 13), and other resource impacts would also apply to new water supply infrastructure and would reduce further impacts. In many cases, the application of 2007 General Plan policies and the mitigation in this EIR would reduce secondary impacts of water supply infrastructure to a less-than-significant level.

A comprehensive list of applicable 2007 General Plan policies and applicable mitigation is not included here, but can be found in the 2007 General Plan and in the other EIR sections.

Significance Conclusion

Expanding or building new treatment, storage, and conveyance facilities will result in significant impacts on physical resources as discussed above. 2007 General Plan policies and resource mitigation identified in this EIR would reduce many of these impacts to a less-than-significant level. When specific facilities are proposed, they would be subject to CEQA review, and mitigation of any significant impacts that may be identified would be required where feasible (Public Resources Code Section 21002).

However, as shown in the completed CEQA evaluations for large-scale water supply and distribution projects (such as the SVWP or the PVWMA BMP), feasible mitigation is not always available to reduce all impacts to a less-than-significant level and thus this impact is disclosed as a significant and unavoidable impact.

Buildout

Impact of Development with Policies

Buildout under the 2007 General Plan would require substantial numbers of additional water supply facilities. There are no specific water supply projects identified beyond the 2030 horizon. New infrastructure could include new desalination plants, water treatment plants, water recycling, facilities pipelines, reservoirs, tanks, and other elements. Impacts related to such facilities were discussed above for the 2030 planning horizon.

Significance Determination

At buildout in 2092, there would be nearly 36,000 more dwellings within the unincorporated county than existed in 2006. The specific locations of these future dwellings, their design, their relationship to other development and land uses, and the character of their surroundings cannot be accurately determined that far into the future. Future sources of water in 2092 are unknown and cannot be known at this time. Similarly, there is no information available about the locations of any other water supply facilities needed to meet 2092 demands, their physical characteristics, and their uses. Therefore, a discussion of their potential environmental impacts would be speculative, although their impacts are likely to be of a similar character as for currently proposed projects.

Mitigation Measures

The implementation of the proposed 2007 General Plan policies and existing regulations would reduce potential secondary impacts from new water supply facilities. Relevant mitigation in other sections of this EIR,

such as for biological resources, agriculture, and other resource impacts, would apply to new water supply mitigation and would, in many cases, reduce impacts to a less-than-significant level. Those measures are not listed in this section due to their length, but would apply.

Significance Conclusion

A second phase of the Salinas Valley Water Project is feasible, according to MCWRA. The secondary impacts of new infrastructure on biological resources and other subjects remains to be evaluated. The significance of secondary impacts due to construction and operation of this second phase is unknown, and they are thus considered significant and unavoidable for this EIR.

There are no current plans for acquiring new water supplies to meet the post-2030 long-term demand for the Monterey Peninsula or the Pajaro Valley. In theory, expansion of the currently proposed desalination, aquifer storage, water recycling, river diversion, and conservation projects could provide water for these areas, but conceptual proposals for after 2030 are not even under consideration at this time. Thus secondary impacts of infrastructure are unknown, and for this EIR, it is concluded that there would be significant and unavoidable secondary impacts related to water supply infrastructure on the Monterey Peninsula and in the Pajaro Valley portion of the North County Plan area.

New water supply facilities would be subject to review and mitigation under CEQA, and in many cases impacts can likely feasibly be mitigated to a less-than-significant level. However, as with many large-scale water supply projects, impacts cannot always be mitigated to a less-than-significant level. Therefore, this is disclosed as a significant and unavoidable impact.

Substantially Deplete Groundwater Supplies or Interfere with Recharge—Groundwater Level Decline and Overdraft

Impact WR-6: Land uses and development consistent with the 2007 General Plan would increase demand on groundwater supplies in some areas; the associated increased well pumping would result in the continued decline of groundwater levels and accelerated overdraft. (Significant and Unavoidable Impact.)

2030 Planning Horizon

Impact of Development with Policies

Groundwater is the primary water supply source for most of the county, including the Community Areas and Rural Centers, and most agricultural water uses. Ultimately, the sustainability of groundwater supplies requires

that the volume of water cumulatively drawn from an aquifer not exceed the volume of groundwater recharge. Typically, this balance needs to occur over a period of years, recognizing that periodic drought conditions and years of abundant rainfall are a part of the normal California weather pattern. As mentioned previously, there has been substantial historical overdraft of most of the county's major aquifers. If a water balance is not achieved and maintained over the long term, groundwater levels will continue to drop, resulting in the need to lower pumps, deepen wells, or drill new wells. Over time, groundwater supplies would be further depleted and local aquifers may no longer be a dependable source of water. Existing and future land uses (including development on lots of record in many of the unincorporated areas outside of the Community Areas and Rural Centers) are and will continue to be highly dependent on individual groundwater wells, as are small mutual or independent water companies relying on this resource as their primary source of water supply.

Once groundwater resources have been adversely affected (i.e., lowering of groundwater levels and intrusion of seawater), recovery is more difficult. Significant groundwater declines already have occurred in many areas of the county, resulting in seawater intrusion into coastal aquifers—including both of the productive 180- and 400-foot aquifers. Some groundwater level declines have occurred in the Deep Zone, and serious groundwater declines have occurred in the coastal zone of the North County area.

A further consequence of groundwater overdraft is the effect on aquatic habitats and CEQA-defined special-status species, such as steelhead, California red-legged frog, the Santa Cruz long-toed salamander, and California tiger salamander, among other species. Groundwater overdraft can dry creek channels, ponds, and wetlands where such water features are groundwater-supported, which can disrupt wildlife migration, movement, reproduction and foraging or can result in mortality in the case of fish. It can also result in saltwater intrusion, which is discussed below under Impact WR-7.

As discussed in the Setting section, many of the county's aquifers are in overdraft. All of the County's water management agencies are acutely aware of the need to reverse the serious overdraft trend and have developed groundwater management programs that, over time, will move toward sustainability. These include capital programs for better storage, treatment, and transportation of water; water conservation recycling and reuse; and development of new water supplies, including potential out-of-basin imports.

A major groundwater resource issue in Monterey County is the problem of seawater or saltwater intrusion. Heavy pumping of freshwater for irrigation has resulted in landward intrusion of brackish or saline water into formerly freshwater aquifers, especially where there are permeable sands and dune deposits next to the coast such as in the Pajaro, Castroville, and Seaside areas. Seawater intrusion was first observed in the coastal aquifers in the mid-1930s.

The protection of major groundwater recharge areas, for both recharge ability and water quality, is an important management tool for the sustainability of groundwater resources. Some areas of the county contain soils with high clay content that have poor infiltration and recharge characteristics or are underlain by hard bedrock formations that do not contain sizable groundwater bodies. In such areas, the majority of groundwater recharge occurs along streams. However, significant portions of major recharge areas consist of permeable soils overlying important regional aquifers. Major recharge areas typically are located along valley floors; some are located in the Community Areas where urban and suburban growth would occur. Urban development and the resultant increase in impervious cover over these recharge areas historically have reduced natural recharge opportunities in some areas. Implementation of the 2007 General Plan would result in construction of additional impervious surfaces, further reducing groundwater recharge.

Other important tools in groundwater management to achieve a long-term sustainable system and basin balance include significant reductions in demand due to increased water conservation and replacement of some groundwater usage with an increased groundwater management program focus on using treated, recycled water and desalinized seawater.

Although Monterey County has mandatory programs (water conservation ordinances) for urban water conservation—for instance, its low-flush toilet requirement for new development and retrofit program for certain types of remodeling projects—community education, outreach, and program enforcement have not been adequately funded. Clearly, more can be done to reduce urban water demand in many unincorporated parts of the county. Desalinization and use of recycled water are currently being explored at both the local and regional level by a number of water supply entities in the county. Although a well-coordinated and largely voluntary program for agricultural water conservation exists throughout most of the county, more also can be done to achieve increased agricultural water conservation through increased outreach, education, and coordination efforts by the County and by increased enforcement of existing agricultural water conservation regulations. This would require fully funding a water conservation program and providing adequate staff resources.

The SVWP will substantially reduce summer demand on groundwater resources in the Salinas Valley. This is expected to reduce or halt the seawater intrusion at its current line in the Castroville area. The SVWP, in conjunction with the Monterey County Water Recycling Projects, is expected to meet both urban and agricultural water needs in the Salinas Valley to 2030. (Monterey County Water Resources Agency 2001.)

Both Cal-Am and the MPWMD are working on obtaining new water supplies for the Monterey Peninsula, while at the same time reducing reliance on the Carmel River to levels authorized by the State Water Board. Their desalination projects are in the planning stage. These projects are designed

to reduce reliance on water from the Carmel River and the Seaside aquifer. When implemented, they are expected to avoid overdraft of the Seaside basin. Additionally, the CSIP is injecting recycled water into its underlying aquifer in order to halt seawater intrusion in the Castroville area. This also counteracts overdraft at the mouth of the Salinas River.

The Pajaro River IRWMP has identified a program for water supply and salt management. This includes the Watsonville Recycled Water Treatment Facility and Coastal Distribution System pipeline that are being installed in Santa Cruz County. These facilities will treat and distribute up to 4,000 AFYof recycled water to agricultural lands directly north of the Pajaro River. The PVWMA estimates that this new supply, combined with other sources, will provide almost one-quarter of the water needed to halt seawater intrusion in the Pajaro River basin. (Pajaro Valley Water Management Agency 2008c) Further, as discussed above, the Pajaro/Sunny Mesa Community Services District is pursuing a desalination plant at Moss Landing that would provide up to 21,000 AFY for groundwater recharge and maintenance of a hydrologic seawater intrusion barrier. Obtaining the outside supplies needed to halt overdraft in the Pajaro basin is not feasible, as discussed under Impact WR-4. Therefore, overdraft will continue during the 2030 planning horizon and beyond.

2007 General Plan Policies

The 2007 General Plan contains various policies addressing groundwater supply issues.

Public Services Element

Public Services Element Policy PS-2.2 (groundwater quality and groundwater monitoring) states that the Water Resources Agency shall assure adequate monitoring of wells in those areas experiencing rapid growth provided adequate funding mechanisms for monitoring are established.

Public Services Element Policy PS-2.6 requires the hydrologic resources constraints and hazards database to include identification and mapping of both prime groundwater recharge areas and hard rock areas with constrained groundwater in the County GIS.

Public Services Element Policy PS-2.8 requires that all projects be designed to maintain or increase the site's pre-development absorption of rainfall (minimize runoff) and to recharge groundwater where appropriate.

Public Services Element Policy PS-2.9 mandates that the County use discretionary permits to manage the construction of impervious surfaces in important groundwater recharge areas.

Public Services Element Policy PS-3.1 requires a long-term, sustainable water supply, both in quality and quantity, to serve development beyond the first single-family residence on any lot. This encourages efforts to improve sustainability by reducing overdraft.

Public Services Element Policy PS-3.3 (new development, surface water and groundwater supply) requires that specific criteria for proof of a long-term sustainable water supply for new residential or commercial subdivisions shall be developed. Criteria shall include but are not limited to:

a. Water quality

b. Production capability

c. Recovery rates

d. Effect on wells in the immediate vicinity

e. Existing groundwater conditions

f. Technical, managerial, and financial capability of the water purveyor of the water system

g. Cumulative impacts and planned growth in the area

h. Status and surety of planned new water supply projects including design, financing mechanism, and environmental review of the project

Public Services Element Policy PS-3.4 requires the County to develop criteria for the evaluation of all new wells, including capacity, recovery rate, effect on nearby wells, and existing groundwater conditions.

Public Services Element Policy PS-3.5 (groundwater wells, groundwater quality and groundwater quality) requires that pump tests or hydrogeologic studies be conducted for new high-capacity wells, including high-capacity urban and agricultural production wells, where there may be a potential to affect existing adjacent domestic or water system wells adversely as determined by the Monterey County Water Resource Agency. In the case of new high-capacity wells for which pump tests or hydrogeologic studies show the potential for significant adverse well interference, the County shall require that the well be relocated or otherwise mitigated to avoid significant well interference.

Public Services Element Policy PS-3.7 (groundwater supply and surface water supply) states that a determination of a long-term sustainable water supply

a. Shall not be based on hauled water

b. Should be determined on a basin-by-basin basis

Public Services Element Policy PS-3.9 requires an overdraft elimination program to be developed as part of the CIFP, to be evaluated every 5 years.

Public Services Element Policy PS-3.11 (new development, surface water supply and groundwater supply) states that a tentative subdivision map and/or vesting tentative subdivision map application for either a standard or minor subdivision shall not be approved until:

a. The applicant provides evidence of an assured long-term water supply in terms of yield and quality for all lots which are to be created through subdivision. A recommendation on the water supply shall be made to the decision making body by the Director of Health Services and the General Manager of the Monterey County Water Resources Agency, or their respective designees.

b. The applicant provides proof that the water supply to serve the lots meets both the water quality and quantity standards as set forth in Title 22 of the California Code of Regulations and County water systems and well regulations (Chapters 15.04 and 15.08 of the Monterey County Code, as may be periodically amended), subject to the review and recommendation by the Director of Health Services to the decision making body.

Public Services Element Policy PS-3.12 requires the County to establish an ordinance identifying conservation measures that reduce agricultural water demand.

Public Services Element Policy PS-3.13 mandates establishment of an ordinance identifying urban conservation measures that reduce potable water demand.

Public Services Element Policy PS-3.14 establishes strategies for maximizing the use of recycled water as a potable water offset to manage water demands and meet regulatory requirements for wastewater discharge.

Public Services Element Policy PS-4.4 encourages the use of reclaimed wastewater for groundwater recharge.

Public Services Element Policies PS-4.7 and PS-4.8 include groundwater recharge in criteria for assessing wastewater treatment facilities and septic systems, respectively.

Public Services Element Policy S-3.5 requires development of runoff performance standards for site planning and design techniques to capture runoff for use in groundwater recharge.

Area Plan Policies

Several Area Plan supplemental policies protect groundwater supply.

North County Area Plan

The North County Area Plan Policy NC-5.1 requires new development to maximize groundwater recharge capabilities. North County Area Plan Policy NC-5.2 (surface and groundwater water supply) states that water development projects that can offer a viable water supply to water-deficient areas in North County shall be a high priority.

Central Salinas Valley Area Plan

Policies CSV-1.1 and CSV-1.2 require comprehensive development plans for certain recreation and commercial land use projects to address water quantity and quality. Policy CSV-5.1 also protects groundwater recharge through preservation of riparian habitats and flood flow capacity along the main channels of the Arroyo Seco and Salinas Rivers. Policy CSV-5.2 requires identification and protection of areas valuable for both natural and artificial groundwater recharge, and requires that recreation and visitor-serving commercial uses prove no negative impact on groundwater quality.

Carmel Valley Area Plan

Policy CV-5.1 in the Carmel Valley Master Plan requires consideration of all beneficial uses of water resources in managing pumping from the Carmel River aquifer. Policy CV-5.3 requires incorporation of water reclamation and conservation development designs to create additional water for the area, and Policy CV-5.4 allows use of reclaimed water for some water sources as long as groundwater quality is not degraded.

Cachagua Area Plan

Cachagua Area Plan Policy CACH-5.1 protects the existing water supply by prohibiting export of groundwater outside the planning area.

South County Area Plan

South County Area Plan SC-5.1 and SC-5.3 each require new development to maximize groundwater recharge capabilities.

Community Area Policies

Fort Ord Master Plan

Fort Ord Master Plan Hydrology and Water Quality Policy A-1 requires new development to demonstrate measures to minimize runoff and maximize infiltration in groundwater recharge areas, including programs requiring the County to develop site drainage design and stormwater infiltration BMPs; to adopt and enforce a stormwater detention plan with design and implementation measures for all new development; and to prepare, adopt, and enforce a master drainage plan for the area based on the approved reuse plan. Hydrology and Water Quality Policy A-2 requires the County to protect groundwater recharge by ensuring that land use does not decrease flow magnitude and duration; corresponding Program A-2.1 requires the County to implement a stream-gauging program for creeks in the eastern part of the former Fort Ord. Hydrology and Water Quality Policy B-1 protects overall water supply by requiring the County to encourage and investigate additional water supply sources for critically deficient areas, including water importation, desalination, and reclaimed or recycled water sources. Hydrology and Water Quality Program C-3.1 (groundwater supply) establishes that the County shall continue to work with the MCWRA and the MPWMD to estimate the current safe yield within the context of the Salinas Valley Water Management Plan for those portions of the former Fort Ord overlying the Salinas Valley and Seaside groundwater basins to determine available water supplies. Hydrology and Water Quality Program C-3.5 (groundwater wells) states that the County shall carry out all actions necessary to ensure that the installation of water supply wells comply with the State of California Water Well Standards and well standards established by the Monterey County Health Department.

Significance Determination

Several 2007 General Plan and Area Plan policies seek to protect groundwater levels, with a special focus on protection of the deep productive aquifers in the Salinas Valley and Pajaro or North County area. Most notably, policies PS-3.1 and PS-3.3 will restrict development within the Community Areas, Rural Centers, and areas outside the Area Plans that restrict development to the first residential unit on existing lots of record until sustainable water supplies are available.

The SVWP is expected to halt further groundwater overdraft to 2030. The EIR/EIS prepared for the SVWP concluded in its analysis of the availability of urban and agricultural water supplies to 2030 that agricultural water demand will decrease with time as a result of changes in crops (with an assumption that vineyards will replace row crops) and management practices (better water conservation; Monterey County Water Resources Agency

2001). Implementation of the AWCP would depend on individual groundwater wells for its water; however, it would not substantially change the assumptions supporting the conclusions of the SVWP EIR/EIS. AWCP projects would be subject to regulation under 2007 General Plan Policies PS-3.1 (requiring proof of a long-term water supply), PS-3.4 (criteria for new wells), PS-3.5 (testing of new high-capacity wells), and PS-3.12 (conservation ordinance for agricultural use), among others. This would avoid groundwater overdraft as a result of new wineries and related facilities in the Salinas Valley during the planning period to 2030.

Separately, the activities of Cal-Am and the MPWMA on the Monterey Peninsula, and the SVWP and the Pajaro River IRWMP's projects in the Salinas River and Pajaro River basins would increase the supply available for domestic use, increase the supply of water available for summer recharge, and reduce demand for groundwater during those periods.

With implementation of mitigation measure MM WR-1, the Monterey Peninsula would maintain this impact at a less-than-significant level.

However, areas in North County in the Pajaro Valley watershed would not avoid significant and unavoidable groundwater impacts. Policies PS-3.1 and 3.3 would act to limit development within the Pajaro Community Area until a sustainable water supply can be assured. However, they would not apply to the many existing lots of record in those areas. As described above, no comprehensive solution to provide adequate water to avoid overdraft has been established in the Pajaro Valley.

Mitigation Measures

In addition to implementation of the 2007 General Plan policies and Area Plan policies, as well as ongoing programs that address groundwater overdraft within the County, the following mitigation measure would mitigate the impacts of new development, but not to a less-than-significant level in all parts of the county.

WR-1: Support a Regional Solution for the Monterey Peninsula in addition to the Coastal Water Project

This measure is described above.

Significance Conclusion

Within the Pajaro River basin, this impact would remain significant and unavoidable during the planning period.

Buildout

Impact of Development with Policies

Under 2092 buildout conditions, overall water demand would probably increase.

Although the SVWP EIR/EIS concluded that water demand would decrease over time within the Salinas River basin, that projection is limited to 2030 (Monterey County Water Resources Agency 2001). Beyond that time, assuming substantial population growth in the county's cities and urbanized communities, urban demand also would be expected to increase substantially, while agricultural demand may remain the same as projected for 2030, may increase, or may decrease. Current SVWP planning only extends to 2030; additional water supplies would be necessary to meet increased urban demand after 2030, or groundwater overdraft will return at that time.

Water demand will increase on the Monterey Peninsula beyond 2030 as well. The currently horizon for regional water supply is only up to 2030, and no planning extends beyond that point. Thus, even if regional solutions are found to Seaside Aquifer and Carmel River overdraft for 2030, overdraft conditions could return after that period without new supplies.

Water demand will increase in the Pajaro Valley beyond 2030 as well. Current planning is inadequate to reverse existing overdraft or projected demands to 2040. Thus overdraft conditions after 2030 will worsen compared to the period before 2030.

Significance Determination

The policies of the 2007 General Plan would be fully implemented by 2092, as would the programs currently in various stages of planning by other agencies. It may be assumed that federal and state regulatory requirements would be at least as stringent as they are today. However, the very long-term future availability of surface water supplies in sufficient quantities to avoid groundwater overdraft is uncertain. Acquisition of additional supplies from outside the county is highly unlikely. The state and federal water projects are oversubscribed and, with continuing population growth statewide, that condition is unlikely to change by 2092. In addition, global climate change may have two future effects on the county's overdraft condition: sea level rise would exacerbate the seawater intrusion, making any groundwater withdrawals more critical to maintaining equilibrium; and variable rainfall may result in less water available to the Salinas, Pajaro, and Carmel Rivers, and other county streams and river systems in some years.

The MCWRA has opined that further actions can extend the supply available from the Salinas River system by 10,000 AFY. This would avoid increased overdraft.

The Seaside Aquifer is currently in overdraft. Current projects described above would address overdraft to 2030 but would not address water demands beyond 2030.

The Pajaro basin would be subject to development of the existing lots of record, as well as continued agricultural demand. Current planning is inadequate to address existing overdraft. With the Pajaro/Sunny Mesa Community Services District desalination plant in operation and dedicated entirely to the Pajaro Valley it might be possible to avoid overdraft up to around 2040, but beyond that overdraft conditions would return. Given the uncertainty about the desalination project, it is likely that overdraft conditions will only worsen after 2030, until a feasible new supply is found.

Mitigation Measures

Implementation of the 2007 General Plan policies and Area Plan policies, as well as the following mitigation measures, would mitigate the impacts of new development, but not to a less-than-significant level county-wide.

WR-1: Support a Regional Solution for the Monterey Peninsula in addition to the Coastal Water Project

This measure is described above.

WR-2: Initiate Planning for additional Supplies to the Salinas Valley

This measure is described above.

Significance Conclusion

A second phase of the Salinas Valley Water Project is feasible, according to MCWRA. From a groundwater point of view, implementation of Mitigation Measure WR-2 would mitigate the impacts of the 2007 General Plan buildout on overdraft to a less-than-significant level.

There are no current plans for acquiring new water supplies to meet the post-2030 long-term demand for the Monterey Peninsula or the Pajaro Valley. While discretionary development would be delayed until long-term water supplies are assured, non-discretionary development would exacerbate existing groundwater overdraft conditions. In theory, expansion of the currently proposed desalination, aquifer storage and recovery, water recycling, river diversion, and conservation projects could provide water for these areas to avoid overdraft, but conceptual proposals for after 2030 are not even under consideration at this time. Thus, this would be a significant and unavoidable groundwater overdraft impact on the Monterey Peninsula and in the Pajaro Valley portion of the North County Plan area.

Substantially Deplete Groundwater Supplies or Interfere with Recharge—Saltwater Intrusion

Impact WR-7: Land uses and development consistent with the 2007 General Plan would increase demand on groundwater supplies in areas currently experiencing or susceptible to saltwater intrusion. Increased groundwater pumping in certain coastal areas would result in increased saltwater intrusion. (Significant and Unavoidable Impact.)

2030 Planning Horizon

Impact of Development with Policies

Seawater intrusion is an existing and ongoing problem, as well as an increasing threat to groundwater quality, with implementation of the 2007 General Plan and continued reliance on groundwater as the primary water source. It is already one of the most significant groundwater management issues in the coastal part of Salinas Valley and the Pajaro Valley/North County area. Seawater intrusion can disrupt water supply to urban uses and agriculture, compromise water quality and result in the demand for additional treatment facilities which can have secondary physical impacts of their own.

A further consequence of seawater intrusion is the effect on freshwater aquatic habitats and CEQA-defined special-status species, such as California red-legged frog, the Santa Cruz long-toed salamander, and California tiger salamander, among other species. Many freshwater amphibians, including these three species, cannot tolerate increased salinity levels and thus seawater intrusion can completely prevent reproduction of these species in affected wetlands, creeks, or ponds. Such breeding disruption for the Santa Cruz long-toed salamander has been reported by the U.S. Fish and Wildlife Service in aquatic areas near Elkhorn Slough (USFWS 2006). Further, most freshwater riparian and wetland vegetation cannot tolerate increased salinity; loss of such vegetation would affect an even wider range of CEQA-defined special-status species and common species dependent on riparian and wetland habitats.

Seawater intrusion occurs in areas where groundwater wells pump from aquifers that are hydraulically connected to the Pacific Ocean, inducing gradients that cause the migration of saltwater toward the wells and inland up the valley aquifers, contaminating groundwater supplies. Activities that reduce reliance on groundwater (thereby reducing groundwater pumping) or that provide for groundwater recharge, particularly adjacent to the seawater intrusion line also retard the advance of seawater intrusion.

The 2007 General Plan would allow development in Community Areas, in Rural Centers, and on legal lots of record in these affected areas—with associated groundwater pumpage contributing to the ongoing, cumulative

saltwater intrusion problem. Outside the PVWMA jurisdictional area, new agricultural wells also can be brought into production with few restrictions on groundwater pumpage (other than on well construction standards and usage reporting requirements). Larger development projects on individual or new small community system wells would be subject to issuance of discretionary permits and thus CEQA review, which would provide a means for addressing the potential for saltwater intrusion and the application of appropriate use restrictions. However, smaller projects in conformance with the land use plan and zoning code would likely not require discretionary review and approval.

As discussed in the last section, both Cal-Am and the MPWMD are working on projects to reduce reliance on groundwater in the Seaside basin, thereby halting seawater intrusion. The Pajaro River IRWMP is undertaking a collaborative and comprehensive program to address intrusion within the Pajaro River basin. The SVWP currently under construction would provide additional seasonal water that would halt seawater intrusion in the Salinas River basin.

2007 General Plan Policies

Seawater intrusion is caused by using groundwater in excess of the recharge capacity of the groundwater basin. The following proposed 2007 General Plan policies would improve recharge capacity during the planning horizon.

Public Services Element

Public Services Element Policy PS-2.6 requires the hydrologic resources constraints and hazards database to include identification and mapping of both prime groundwater recharge areas and hard rock areas with constrained groundwater in the County GIS.

Public Services Element Policy PS-2.8 requires that all projects be designed to maintain or increase the site's predevelopment absorption of rainfall (minimize runoff) and to recharge groundwater where appropriate.

Public Services Element Policy PS-2.9 mandates that the County use discretionary permits to manage construction of impervious surfaces in important groundwater recharge areas.

Public Services Element Policy PS-3.3 requires the County to establish criteria to ensure long-term sustainable water supply for new residential and commercial subdivisions. These criteria are to include production capability, recovery rates, well effects, and groundwater conditions for new development.

Public Services Element Policy PS-3.4 requires the County to develop criteria for the evaluation of all new wells, including capacity, recovery rate, effect on nearby wells, and existing groundwater conditions.

Public Services Element Policy S-3.5 requires the development of runoff performance standards for site planning and design techniques to capture runoff for use in groundwater recharge.

Public Services Element Policy PS-3.6 requires that the County and all applicable water management agencies shall not allow the drilling or operation of any new wells in known areas of saltwater intrusion as identified by the MCWRA until such time as a program has been approved and funded that would minimize or avoid expansion of saltwater intrusion into useable groundwater supplies in that area.

Public Services Element Policy PS-3.9 requires an overdraft elimination program to be developed as part of the CIFP, to be evaluated every 5 years.

Public Services Element Policy PS-3.12 requires the County to establish an ordinance identifying conservation measures that reduce agricultural water demand

Public Services Element Policy PS-3.13 mandates establishment of an ordinance identifying urban conservation measures that reduce potable water demand.

Public Services Element Policy PS-3.14 establishes strategies for maximizing the use of recycled water as a potable water offset to manage water demands and meet regulatory requirements for wastewater discharge.

Public Services Element Policy PS-4.4 encourages the use of reclaimed wastewater for groundwater recharge.

Public Services Element Policies PS-4.7 and PS-4.8 include groundwater recharge in criteria for assessing wastewater treatment facilities and septic systems, respectively.

Area Plan Policies

While no Area Plans specifically address saltwater intrusion, supplemental policies related to groundwater would also help to mitigate this impact.

Greater Salinas Area Plan

Greater Salinas Area Plan Policy GS-1.8 (water quality, groundwater quality, new development, Salinas River, riparian corridor) allows for the land near the town of Spreckels designated as industrial to be developed partially or wholly as agriculturally related commercial uses provided said agriculturally related development complies with, among others, the following conditions:

a. Development shall be designed to protect and, where feasible, enhance the riparian corridor along the Salinas River.

b. Proposed development would not deteriorate water quality in the Salinas River or area ground water.

Greater Salinas Area Plan Policy GS-5.1 (Gabilan Creek, riparian corridor, flood hazard) calls for portions of Gabilan Creek to be evaluated for a linear park as defined by the County's Parkland Classification System at such time when the County can support another regional park. Until such time, Gabilan Creek shall be:

a. maintained in a natural riparian state;

b. kept in a free-flow state devoid of dams;

c. allowed its natural flood capacity through required setbacks conforming to the 100-year-flood plain; and

d. kept free from urban encroachment by residential development through required dedication of land in the floodplain corridor.

Central Salinas Valley Area Plan

Central Salinas Valley Area Plan Policy CSV-5.2 (a. groundwater recharge, b. new development, c. floodways, d. new development, groundwater quality/quantity, e. septic, f. stormwater, erosion) requires that recreation and visitor-serving commercial uses shall only be allowed if it can be proven that:

a. areas identified by the Water Resources Agency as prime-groundwater recharge areas can be preserved and protected from sources of pollution as determined by the Director of Environmental Health and the Water Resources Agency;

b. proposed development can be phased to ensure that existing groundwater supplies are not committed beyond their safe, long-term yields where such yields can be determined;

c. floodways associated with the main channels of either the Arroyo Seco River or the Salinas River will not be encroached on by development because of the necessity to protect and maintain these areas for groundwater recharge, preservation of riparian habitats, and flood flow capacity as determined by the Water Resources Agency;

d. the proposed development meets both water quality and quantity standards expressed in Title 22 of the California Code of Regulations and Title 15.04 of the Monterey County Code as determined by the Director of Environmental Health;

e. the proposed development meets the minimum standards of the Regional Water Quality Control Basin Plan when septic systems are proposed and also will not adversely affect groundwater quality, as determined by the Director of Environmental Health; and

f. the proposed development will not generate levels of runoff which will either cause erosion or adversely affect surface water resources as determined by the Water Resources Agency.

Central Salinas Valley Area Plan Policy CSV-5.3 (Drainage Management Plan) explains that prior to new development, other than those consistent with the underlying land use designation, in the Spence/Potter Road study area, a drainage management plan to mitigate runoff to adjoining farmlands for the entire study area must be developed.

Carmel Valley Area Plan

Carmel Valley Master Plan Policy CV-5.4 (water reclamation, conservation) ensures that the County shall establish regulations for Carmel Valley that limit development to vacant lots of record and already approved projects, unless additional supplies are identified. Reclaimed water may be used as an additional water source to replace domestic water supply in landscape irrigation and other approved uses provided the project shows conclusively that it would not create any adverse environmental impacts such as groundwater degradation.

South County Area Plan

South County Area Plan Policy SC-5.1 (new development and groundwater recharge) establishes that new development shall not diminish the groundwater recharge capabilities in the South County Planning Area where the following resources have been identified:

a. Valuable natural groundwater recharge areas, or

b. Artificial groundwater recharge projects.

Areas that are highly susceptible to water quality degradation because of either high water tables or rapid percolation rates shall require more strict enforcement of this policy. Agricultural land uses in such areas should be maintained to preserve groundwater quality.

Community Area Policies

Fort Ord Master Plan

The Fort Ord Master Plan contains a policy and programs specifically addressing seawater intrusion. Hydrology and Water Quality Program A-1.2 (stormwater detention and groundwater recharge) requires that the County shall prepare, adopt, and enforce a stormwater detention plan that identifies potential stormwater detention design and implementation measures to be considered in all new development, in order to increase groundwater recharge and thereby reduce potential for further seawater intrusion and provide for an augmentation of future water supplies.

Hydrology and Water Quality Policy C-3 requires County cooperation with the MCWRA and MPWMD to mitigate further seawater intrusion (based on the Salinas Valley Basin Management Plan), including programs to estimate current safe yield, determine the extent of seawater intrusion, implement mitigation measures, develop additional water supply sources, adopt and enforce a water conservation ordinance, ensure that installation of supply wells comply with the State of California Water Well Standards, and ensure that water distribution and storage comply with State Health Department regulations through Title 22. Hydrology and Water Quality Program C-3.2 (seawater intrusion) specifically calls for the County to work with the MCWRA and MPWMD to determine the extent of seawater intrusion into the Salinas Valley and Seaside groundwater basin within the context of the Salinas Valley Water Management Plan and requires that the County shall participate by implementing measures to prevent further intrusion.

Significance Determination

New and existing nondiscretionary land use and development entitlements would result in increased seawater intrusion associated with agricultural well development, low-density development, and urban development within the Pajaro basin and North County. Limited development potential in the Seaside basin (due to current restrictions on new water connections) would avoid this impact in the short run, and new desalination projects in the planning stages by Cal-Am and the MPWMD would halt any potential intrusion during the 2030 planning horizon, avoiding this impact. However, other areas face challenges in halting seawater intrusion. Seawater intrusion will be controlled in the Salinas Valley through the SVWP to 2030. Mitigation Measure WR-1, in conjunction with the Coastal Water Project, would avoid a significant impact from seawater intrusion on the Monterey Peninsula.

A solution for the Pajaro basin is not available. Although several 2007 General Plan policies would assist in managing wells in areas where seawater

has intruded into groundwater, a feasible comprehensive solution to the Pajaro Valley seawater intrusion has not been advanced at this time.

Mitigation Measures

New and existing non-discretionary land use and development entitlements would contribute to the ongoing, cumulative saltwater intrusion problem in Monterey County. Implementation of the 2007 General Plan goals and policies and supplemental Area Plans would reduce this impact, but not to a less-than-significant level in all parts of the county.

WR-1: Support a Regional Solution for the Monterey Peninsula in addition to the Coastal Water Project

This measure is described above.

Significance Conclusion

The SVWP and CISP appear to be sufficient to halt seawater intrusion in the Salinas River basin during the planning horizon. Similarly, the desalination projects will avoid future intrusion in the Seaside basin. In those areas, the impact of the project would be less than significant.

In the Pajaro Valley, this impact is considered significant and unavoidable due to the lack of an established feasible comprehensive solution to address existing sweater intrusion as well as future water demands.

Buildout

Impact of Development with Policies

Buildout would result in additional development within the planning area beyond that projected for the 2030 planning horizon. Further development in Community Areas, Rural Centers, and affordable housing overlay areas would increase water demands that would not be met by current water supply planning, which only has a horizon of 2030; thus new demands may exacerbate seawater intrusion.

The addition of dispersed low-density development on the existing lots of record would result in additional water wells throughout the county. Despite 2007 General Plan policies limiting new wells and encouraging groundwater recharge, the potential for overdraft and the resultant seawater intrusion would increase.

Significance Determination

The policies of the 2007 General Plan would be fully implemented by 2092, as would the programs currently in various stages of planning by other agencies. These policies would act to reduce the potential impact of new

water wells. However, the very long-term future availability of surface water supplies in sufficient quantities to avoid seawater intrusion is uncertain. Acquisition of additional supplies from outside the county is unlikely, barring some unforeseen new source of water. The state and federal water aqueducts are oversubscribed and, with continuing population growth statewide, that condition is unlikely to change by 2092. In addition, sea level rise as a result of global climate change would exacerbate the seawater intrusion, making any groundwater withdrawals more critical to maintaining equilibrium. In addition, unpredictable year-to-year variations in rainfall may result in less surface water available to the Salinas and Pajaro Rivers to recharge groundwater and keep seawater out of the aquifers. If that is the case, the impact will be significant and unavoidable.

Mitigation Measures

Implementation of the 2007 General Plan policies and Area Plan policies, ongoing programs that address groundwater overdraft within the County, and the following mitigation measures would mitigate the impacts of new development on seawater intrusion, but not to a less-than-significant level.

WR-1: Support a Regional Solution for the Monterey Peninsula in addition to the Coastal Water Project

This measure is described above.

WR-2: Initiate Planning for additional Supplies to the Salinas Valley

This measure is described above.

Significance Conclusion

A second phase of the Salinas Valley Water Project is feasible, according to MCWRA. From a seawater intrusion point of view, implementation of Mitigation Measure WR-2 would mitigate the impacts of the 2007 General Plan buildout to a less-than-significant level.

There are no current plans for acquiring new water supplies to meet the post-2030 long-term demand for the Monterey Peninsula or the Pajaro Valley. While discretionary development would be delayed until long-term water supplies are assured, non-discretionary development would exacerbate existing seawater intrusion conditions. In theory, expansion of the currently proposed desalination, aquifer storage and recovery, water recycling, river diversion, and conservation projects could provide water for these areas to avoid seawater intrusion, but conceptual proposals for after 2030 are not even under consideration at this time. Thus, this would be a significant and unavoidable seawater intrusion impact on the Monterey Peninsula and in the Pajaro Valley portion of the North County Plan area.

Violate Water Quality Standards—Wastewater Disposal

Impact WR-8: Land uses and development consistent with the 2007 General Plan would result in sewer- and septic-related water quality impacts, including those associated with reuse of treated water and migration of septic tank leachfield wastewater effluent to groundwater that would violate water quality standards. (Less-Than-Significant Impact.)

2030 Planning Horizon

Impact of Development with Policies

Conventional wastewater treatment plant discharges, package treatment plant discharges, and failing septic systems would violate water quality standards or WDRs, or both. All of Monterey County's treatment plants, including those operated by municipalities or wastewater management districts, are regulated under a WDR permit issued by the Central Coast RWQCB. The County would be responsible for the water quality of wastewater discharges associated with the plants it operates. In cases where the plants are not directly operated by the County, the County's role would be one of cooperation and coordination with the plants. Water quality problems associated with point source discharges from wastewater treatment plants historically (over the last 10 years) have been infrequent.

The regulation of privately operated package wastewater treatment plants in the county would be more difficult because the financial responsibility for plant operation, maintenance, and potential Central Coast RWQCB penalties would be in the hands of private districts or property owners, such as homeowners associations. Private owners may lack the financial resources to address water quality and maintenance problems when they arise.

Water quality also would be affected by the reuse of treated wastewater from sewer plants for agriculture and landscaping, and as a replacement for other non-potable water demands. Such reuse is a major focus of the County's long-term effort to bring water usage more in line with sustainable water supply. Depending on the extent of treatment that is applied to the wastewater, over-application would result in excessive runoff entering waterways, or leaching of constituents contained in the wastewater (such as salts, nutrients, estrogenic substances, and pharmaceuticals) to the groundwater.

Individual septic systems (i.e., Onsite Wastewater Treatment Systems) serving individual residences also would degrade water quality. This is of particular concern in areas where historical development on small lots has resulted in a high concentration of older septic systems that may not have been designed and constructed using current standards or that are not regularly maintained or upgraded. Nitrate contamination of groundwater is a

concern in these areas (such as the North County), especially in areas of permeable soils and relatively shallow groundwater.

2007 General Plan Policies

The 2007 General Plan contains goals and policies addressing water quality issues related to wastewater disposal. A number of these policies discourage the use of individual septic systems in favor of community systems that are subject to a higher level of regulatory supervision.

Public Services Element

Public Services Element Policy PS-2.6 includes mapping of areas with severe septic tank leachfield suitability constraints via a Hydrologic Resources Constraints and Hazards Database .

Public Services Element Policy PS-4.1 (wastewater treatment) ensures that adequate wastewater treatment facilities shall be assured concurrent with new development.

Public Services Element Policy PS-4.2 (new development and wastewater treatment) requires that developers shall construct or contribute their fair share to the funding of new or expanded wastewater treatment facilities needed to serve their development.

Public Services Element Policy PS-4.3 (new development and wastewater treatment) establishes that all available public and private financing sources and techniques to fund wastewater treatment facilities shall be pursued.

Public Services Element Policy PS-4.4 (groundwater recharge and wastewater treatment) encourages groundwater recharge through the use of reclaimed wastewater, not including primary treated wastewater, in accordance with federal, state, and local laws, regulations and ordinances. This prohibits unregulated discharges.

Public Services Element Policy PS-4.5 (new development and wastewater treatment) ensures that new development proposed in the service area of existing wastewater collection, treatment and disposal facilities should seek service from those facilities unless it is clearly demonstrated that the connection to the existing facility is not feasible.

Public Services Element Policy PS-4.6 (new development and wastewater treatment) requires that new independent wastewater treatment facilities should not be allowed unless it is clearly demonstrated that connection to a regional facility is not feasible.

Public Services Element Policy PS-4.7 requires development of water quality criteria for new wastewater treatment facilities.

Public Services Element Policy PS-4.8 requires development of several criteria for septic disposal systems to protect water quality.

Public Services Element Policy PS-4.9 (new development, wastewater treatment and agency coordination) ensures that the adequate provision of new or expanded wastewater treatment facilities that meet RWQCB waste discharge requirements shall be assured to the satisfaction of the County and RWQCB prior to the approval of new residential subdivision maps or zone changes.

Public Services Element Policy PS-4.10 requires County development of an alternative wastewater system management program, consistent with the regulations pursuant to AB 885, to administer and monitor the use of alternative wastewater systems.

Public Services Element Policy PS-4.11 encourages all new wastewater treatment facilities to use tertiary treatment standards to minimize water quality impacts.

Public Services Element Policy PS-4.12 (North County, Carmel Valley, wastewater treatment, and new development) states that the County Health Department, Environmental Health Division, shall develop On-site Wastewater Management Plans (OWMP) for areas with high concentrations of development that are served primarily by individual sewage systems such as North County and Carmel Valley. Wastewater treatment and disposal for community areas and rural centers shall be through the consolidation of services into regional or subregional facilities. Subdivisions shall be required to consolidate wastewater collection, treatment, and disposal systems of services, connecting to existing systems where feasible. The County shall not allow the use of package plants when connection to a regional facility is feasible.

Area Plan Policies

Some of the Area Plans include policies that specifically address wastewater and water quality issues.

Greater Salinas Area Plan

Greater Salinas Area Plan Policy GS-1.1 (drainage ponds and wastewater facilities) establishes that in the Butterfly Village Special Treatment Area approximately 671 acres located north of San Juan Grade Road and east of Harrison Road (113-271-014-000, 113-212-043-000, 113-212-044-000, 113-212-004-000, 113-212-003-000, 113-212-055-000, 113-212-056-000, 113-212-057-000 and 113-212-

058-000) shall be designated as a "Special Treatment Area" to permit a planned development including the following:

- Public park including trails, public parking, and a series of drainage ponds.
- Public facilities, including fire/sheriff substation, maintenance yard, wastewater treatment facility, and an elementary school site with athletic fields.

Central Salinas Valley Area Plan

Policy CSV-5.2 requires any recreation and visitor-serving commercial development to meet minimum basin plan standards where septic systems are proposed.

Carmel Valley Master Plan

Carmel Valley Master Plan Policy CV-5.5 requires completion of geologic and soil investigations for development projects using onsite septic systems, as well as overall review in accordance with standards of the Carmel Valley Wastewater Study. Policy CV-1.8 requires clustered development to be consistent with the Carmel Valley Wastewater Study by limiting development to five units or less on a minimum of 5 acres of land.

Toro Area Plan

Policy T-5.1 of the Toro Area Plan encourages development in areas that can be served by wastewater treatment facilities to ensure adequate wastewater treatment.

Community Area Policies

Fort Ord Master Plan

Fort Ord Master Plan Hydrology and Water Quality Policy C-5 requires the County to support all actions necessary to ensure that sewage treatment facilities comply with Central Coast RWQCB WDRs, and Policy C-7 requires all development plans to verify adequate wastewater treatment capacity.

Significance Determination

Implementation of the 2007 General Plan policies would promote the use of wastewater collection and treatment systems, as well as establish comprehensive standards for septic and alternative wastewater systems (including recycling of treated wastewater). These requirements would apply to individual lots of record, major and minor subdivisions, Community Areas, and Rural Centers. In addition, the County approval process for

discretionary projects, which include proposed new or expanded community water supply and wastewater disposal systems, would require preparation and submittal of a technical, managerial, and financial (TMF) capacity analysis, demonstrating that such proposed systems have not only available capacity, but also the institutional capability to provide the services on a long-term, sustainable basis. Further, Policy PS-4.10 requires County development of an alternative wastewater system management program, consistent with the regulations pursuant to AB 885 and Central Coast RWQCB requirements.

New wineries and related facilities under the AWCP generally would use septic systems for wastewater disposal. However, the AWCP boundary primarily encompasses agricultural lands in the Salinas Valley, where nitrate contamination from septic systems is not a problem because these systems tend to be dispersed widely and not concentrated in any one area. Policy PS-4.10 would ensure that new septic systems do not exacerbate nitrate pollution in groundwater sources. In addition, disposal systems would be subject to permit by the Central Coast RWQCB, which would regulate their discharges to protect water quality.

Mitigation Measures

Implementation of the 2007 General Plan policies and Area Plan goals and policies would reduce impacts on water quality associated with wastewater systems to a less-than-significant level. No mitigation is required.

Significance Conclusion

The water quality impacts from wastewater systems would be less than significant.

Buildout

Impact of Development with Policies

Buildout would result in a more extensive development pattern than currently exists. Assuming that future development follows the basic spirit of the 2007 General Plan policies, most urban development would be focused in the cities, Community Areas, and Rural Centers. However, because the buildout scenario assumes that existing lots of record would be developed with a single-family residence, there would be substantial low-density development spread across the county. This would increase the potential for water quality impacts resulting from the failure of individual onsite wastewater treatment systems.

Significance Determination

The policies of the 2007 General Plan would be fully implemented by 2092, and it may be assumed that federal and state regulatory requirements would

be at least as stringent then as they are today. With most development centered around population centers and served by wastewater treatment plants, these policies and regulations would be effective in avoiding water quality impacts. Individual systems would presumably be built at a higher standard than today, given the steady evolution of regulatory stringency. As an example of evolving stringency, note that the State Water Board is currently in the process of considering new regulations for the permitting and operation of onsite wastewater treatment systems. This would ensure consistent standards and oversight. Given the time span until buildout, none of today's individual systems would remain in operation through 2092. Therefore, future water quality impacts from wastewater systems would be less than significant.

Mitigation Measures

Implementation of the 2007 General Plan policies and Area Plan goals and policies, along with continued implementation and evolution of federal and state standards, would reduce impacts on water quality associated with wastewater systems to a less-than-significant level. No mitigation is required.

Significance Conclusion

Future water quality impacts from wastewater systems would be less than significant.

Substantially Deplete Groundwater Supplies or Interfere with Recharge—Well Competition and Adverse Well Interference

Impact WR-9: Land uses and development consistent with the 2007 General Plan would result in an increase in the number of private wells in unincorporated areas of the county. Approval of wells in these areas would result in well interference impacts. (Less-Than-Significant Impact.)

2030 Planning Horizon

Impact of Development with Policies

Groundwater wells close or adjacent to each other can be thought of as competing for the same groundwater resource, especially in areas where the availability of groundwater is limited; in areas of declining groundwater and overdraft conditions; and in areas of poorly producing aquifer materials, such as hard-rock aquifers. When a well is pumped, a portion of the aquifer around it is dewatered or lowered, creating what is known as a cone of depression. Adjacent wells with overlapping cones of depression may have problems getting water if water levels are lower than the well pumps. Where

such competition is significant, it may affect the performance and delivery of water to the adjacent wells. This condition is referred to as well interference. Most well interference problems are localized and of short duration, but being without water is a major inconvenience and can damage well pumps. In some instances, individual landowners are forced to deepen their wells or lower the pumps to accommodate the localized lowering of groundwater levels due to well interference. Over the long term, high-capacity wells can substantially lower groundwater levels locally, essentially extending the time duration of the cone of depression and enlarging its outward extent.

Potential adverse well interference effects often can be anticipated by a review of adjacent well logs and local hydrogeologic data. Where such interference is thought to be a potential concern, pump tests can be conducted on test wells located in the vicinity of the proposed well. Water levels in the pumping well and nearby wells are monitored and mathematically analyzed using well hydraulic principles to verify and determine the probable extent and significance of the effect and to develop appropriate mitigation and management strategies.

The current County well ordinance (Chapter 15.08 of the Monterey County Code) does not require the completion of hydrogeologic studies for all groundwater wells. Hydrogeologic studies and pump tests of potential well interference impacts may be required by the MCHD in areas with known groundwater supply and quality problems, and the Environmental Health Division often will consult with the appropriate water agencies (MCWMA, MPWMD, PVWMA) in association with the discretionary review of development projects. Generally, however, development of individual parcels on lots of record, including small businesses and residences, if consistent with the General Plan and Zoning Code, do not require discretionary approval and typically would not be required to conduct pump tests or hydrogeologic studies.

2007 General Plan Policies

In addition to the general groundwater supply policies discussed under Impact WR-6, the 2007 General Plan contains policies specifically addressing well competition.

Public Services Element

Public Services Element Policies PS-3.1 and PS-3.3 require a long-term, sustainable water supply, both in quality and quantity, to serve development beyond the first single-family residence on any lot and commit the County to developing specific criteria for proof of a long-term sustainable water supply for new residential or commercial subdivisions. The criteria will include production rate, recovery ability, effects on nearby wells, and existing groundwater conditions.

Public Services Element Policy PS-3.4 further requires that the County develop new criteria for the evaluation of all new wells, including production rate, recovery ability, effects on nearby wells, and existing groundwater conditions.

Public Services Element Policy PS-3.5 requires preparation of pump tests or hydrogeologic studies for new high-capacity urban and agricultural wells with the potential to affect existing adjacent domestic or water system wells. Where pump tests or hydrogeologic studies show the potential for significant adverse well interference, the County shall require that the well be relocated or otherwise mitigated to avoid significant well interference.

Area Plan Policies

No Area Plans specifically address well competition and interference. The previously discussed supplemental policies related to groundwater levels (see the discussion under Impact WR-6) would help to mitigate this impact by ensuring an adequate water supply in general.

Community Area Policies

Fort Ord Master Plan

Hydrology and Water Quality Program C-3.5 (groundwater wells) states that the County shall carry out all actions necessary to ensure that the installation of water supply wells comply with the State of California Water Well Standards and well standards established by the Monterey County Health Department.

Significance Determination

As described above, the proposed 2007 General Plan includes substantive policies addressing potential well interference, establishing and implementing well setback requirements and standardized evaluation criteria for evaluating wells in order to adequately address these impacts.

Mitigation Measures

Implementation of the 2007 General Plan policies, along with continued implementation of state well standards, would reduce new impacts from well interference to a less-than-significant level. No mitigation is required.

Significance Conclusion

This impact would be less than significant.

Buildout

Impact of Development with Policies

Buildout would see a substantial increase in the county's population, particularly within its cities and communities. This would increase the potential for well competition and adverse interference.

Significance Determination

The policies of the 2007 General Plan would be fully implemented by 2092. Although these policies avoid competition and interference under currently projected conditions, the very long-term future availability of surface water supplies or conjunctive supplies in sufficient quantities to avoid competition for groundwater is uncertain. Global climate change is resulting in sea level rise, which in turn impedes efforts to stem seawater intrusion. Increased rainfall variability may result in less surface water available to the Salinas River and Pajaro River watersheds to recharge groundwater and keep seawater out of the aquifers. This would make competition for groundwater unavoidable whenever new wells were drilled.

Mitigation Measures

Implementation of the 2007 General Plan policies and Area Plan policies, as well as ongoing programs that address groundwater competition within the county, would mitigate the impacts of new development, but not to a less-than-significant level.

Significance Conclusion

Conservatively viewed, based on expectations for future sea level rise, the very long-term impact would be significant and unavoidable.

Substantially Alter Existing Drainage Patterns—Increased Runoff and Streambank Erosion

Impact WR-10: Land use and development consistent with the 2007 General Plan would result in alterations to existing drainage patterns. Such changes would increase erosion, both in overland flow paths and in drainage swales and creeks. (Less-Than-Significant Impact.)

2030 Planning Horizon

Impact of Development with Policies

Alterations to drainage patterns during and following construction have the potential to result in construction-related increased runoff and erosion problems (see Impact WR-2).

Land uses and development consistent with the 2007 General Plan would result in a gradual increase in impervious cover, especially in developing Community Areas and in some of the Rural Centers, but also from the development of individual lots. Typically, increases in impervious cover result in an increase in stormwater runoff, higher peak stream discharges, and decreased groundwater recharge. Agricultural land use practices also can alter the infiltration properties of surface soils (sometimes beneficially) and can result in similar, but more often smaller, effects on the hydrologic cycle. Increased peak discharges resulting from changes in land use have the potential to degrade water quality by creating erosive velocities and higher bank shear stress, which ultimately can cause bank and bed erosion and sedimentation in drainages and streams. Minor increases in tributary flows also can exacerbate creek bank erosion and cause destabilizing channel incision by altering the so-called 2-year or channel-forming flow, to which most creeks adjust by processes such as channel widening and deepening. Bank instability and bank failure often result in urban drainage systems where the channel-forming flow has been substantially altered.

The magnitude of these effects depends on the size, shape, and nature of the project watershed; the total impervious surface in the watershed; the nature of the storm drain system; the natural geologic stability of the creek system; and the extent that the drainage system incorporates peak flow reduction methodologies (e.g., porous pavement, onsite stormwater detention, or in-pipe detention). Typically, upland watersheds with short, steep drainage pathways and watersheds with brushland and forest covers are more susceptible to adverse effects from changed runoff patterns due to urbanization than are more gently sloping areas with grassland cover. In addition to watershed hydrologic changes from urbanization, the widespread conversion of forested and brushland hillside areas to cultivated crops can significantly alter runoff and erosion (drainage patterns), damaging watershed processes—especially in watersheds with unstable geology.

Conversion of softwood forest would be subject to regulation by the Department of Forestry and Fire Protection under its timberland conversion rules. This would include consideration of drainage. Conversion of hardwood forests (oak woodlands, for example) is not subject to the Department's regulations. Instead, County regulations would apply. Additionally, any agricultural operation would be subject to the Central Coast RWQCB's Conditional Waiver for Irrigated Agriculture, which requires actions to avoid release of sediment into waterways. That would strongly discourage altering runoff patterns.

As required by Monterey County Code Chapter 16.16.040, all development proposals for five parcels or more must ensure that the flood discharge exiting the development after construction is equal to or less than the flood discharge at the location prior to development. Title 19, the subdivision ordinance, includes a requirement for a discussion of how stormwater drainage caused by a proposed project's impervious surfaces will be controlled. The Carmel River setback requirements under Chapter 21.64.130

would avoid erosion along the Carmel River. The MCWRA typically reviews potential increased stormwater runoff and enforces a "no net increase in runoff" policy associated with its review of discretionary development proposals, as well as in its lead role in administering the NPDES Phase II stormwater regulations.

The NPDES program establishes regulations that will be followed during construction activities. It requires preparation of a SWPPP to minimize erosion. This will ensure that construction will not begin a cycle of erosion by damaging streambanks or other sensitive areas.

2007 General Plan Policies

In addition to current NPDES requirements discussed under Regulatory Framework, the Conservation and Open Space and Safety Elements of the 2007 General Plan contain several drainage and stormwater management policies that would help to mitigate the potential drainage and bank erosion channel stability secondary impacts associated with new development. In general, the policies would encourage better land use planning through the use of appropriate hydrologic and hydraulic analysis in the discretionary project approval process with respect to site design, building location, and drainage infrastructure design.

Conservation and Open Space Element

Conservation and Open Space Element Policy OS-3.3 requires the establishment of evaluation criteria for development and land use changes in areas with hydrologic/geologic constraints or hazards, including drainage, water quality, and stream stability problems due to increased stormwater runoff.

Conservation and Open Space Element Policy OS-3.4 (erosion and GIS) establishes that those areas where slopes pose severe constraints for development shall be mapped in the County's GIS. The information shall be updated at least every 5 years.

Conservation and Open Space Element Policy OS 3.5 (erosion/slopes) requires that the County shall prohibit development on slopes greater than 30%. It is the general policy of the County to require dedication of scenic easement on a slope of 30% or greater. Upon application, an exception to allow development on slopes of 30% or greater may be granted at a noticed public hearing by the approving authority for discretionary permits or by the Planning Commission for building and grading permits. Criteria include consideration of erosion control and drainage. This policy is described in detail in Impact WR-2.

Conservation and Open Space Element Policy OS-3.8 (erosion and water quality public outreach) requires that the County shall

cooperate with appropriate regional, state, and federal agencies to provide public education/outreach and technical assistance programs on erosion and sediment control, efficient water use, water conservation and re-use, and groundwater management. This cooperative effort shall be centered through the Monterey County Water Resources Agency.

Conservation and Open Space Element Policy OS-3.9 (erosion and water quality) establishes that the County will develop a Program that will address the potential cumulative hydrologic impacts of the conversion of hillside rangeland areas to cultivated croplands. The Program will be designed to address offsite soil erosion, increased runoff-related stream stability impacts, and/or potential violation of adopted water quality standards. The County should convene a committee comprised of County staff, technical experts, and stakeholders to develop the Program, including implementation recommendations.

Safety Element

Safety Element Policy S-1.2 (GIS, erosion, marine/coastal) calls for a Geologic Constraints and Hazards Database to be developed and maintained in the County GIS. The GIS shall be used to identify areas containing hazards and constraints (see Policy PS-2.6) that could potentially impact the type or level of development allowed in these areas (Policy OS-3.5). Maps maintained as part of the GIS include:

a. Coastal Erosion

b. Moderate and High Erosion Hazards

c. Highly Erodible Soils

Safety Element Policy S-3.1 requires that post-development, offsite peak flow drainage not be greater than pre-development conditions. Onsite improvements or other methods for stormwater detention shall be required to maintain post-development, offsite, peak flows at predevelopment levels.

Safety Element Policy S-3.3 provides for installation of mitigation drainage facilities concurrent with new development.

Safety Element Policy S-3.5 requires the MCWRA to develop and implement runoff performance standards for site planning and to design techniques that would reduce storm flows and capture runoff for groundwater recharge.

Safety Element Policy S-3.6 requires the County to prepare an inventory of areas where there is a high probability of accelerated erosion, sedimentation, and/or chemical pollution. This inventory

shall be maintained as part of the County's GIS mapping database. This information will be used in analyzing project impacts and requiring mitigation.

Safety Element Policy S-3.7 requires the MCWRA to prepare a flood criteria or drainage design manual establishing floodplain management policies, drainage standards and criteria, stormwater detention, and erosion control and stormwater quality protection measures.

Area Plan Policies

In addition to previously discussed Area Plan policies addressing erosion control (see Impact WR-2), supplemental policies related to drainage and runoff issues also would incorporate erosion control measures.

Greater Salinas Area Plan

Greater Salinas Area Plan Policy GS-1.2 (Drainage Management Plan) states that in the Spence/Potter/Encinal Road Special Treatment Area, subdivision of land shall be approved only under certain conditions including that a Drainage Management Plan to mitigate runoff to adjoining farmlands must be prepared for the entire Special Treatment Area.

Greater Salinas Area Plan Policy GS-3.1 (erosion) states that all vegetation on land exceeding 25% slope, particularly chaparral and broad leaf evergreen, should remain undisturbed to minimize erosion and retain important visual amenities.

Central Salinas Valley Area Plan

Central Salinas Valley Area Plan Policies CSV-1.3 and CSV-5.3, include provisions to mitigate runoff impacts on agricultural operations. Central Salinas Valley Area Plan Policies CSV-1.1 and CSV-1.2 require comprehensive development plans for certain recreation and commercial land use projects to address drainage.

Central Salinas Valley Area Plan Policy CSV-5.1 (groundwater recharge, riparian habitat, flood hazards, Arroyo Seco River, and Salinas River) ensures that development shall be designed to maintain groundwater recharge capabilities on the property. To protect and maintain areas for groundwater recharge, preservation of riparian habitats, and flood flow capacity, the main channels of the Arroyo Seco and Salinas Rivers shall not be encroached on by development.

Central Salinas Valley Area Plan Policy CSV-5.2 requires recreation and visitor-serving commercial development to prove that excessive

runoff with erosion potential will not be produced (as determined by the WRA).

Carmel Valley Area Plan

Carmel Valley Master Plan Policy CV-2.9 (erosion and construction) states that no roads should cross slopes steeper than 30% unless factors of erosion and visible scarring can be mitigated.

Carmel Valley Master Plan Policy CV-3.8 (Carmel River, erosion, and riparian) ensures that development shall be sited to protect riparian vegetation, minimize erosion, and preserve the visual aspects of the Carmel River. In places where the riparian vegetation no longer exists, it should be planted to a width of 150 feet from the river bank, or the face of adjacent bluffs, whichever is less. Density may be transferred from this area to other areas within a lot.

Carmel Valley Master Plan Policy CV-3.9 (riparian vegetation) establishes that willow cover along the banks and bed of the Carmel River shall be maintained in a natural state for erosion control. Constructing levees, altering the course of the river, or dredging the river shall only be allowed by permit from the Monterey Peninsula Water Management District or Monterey County.

Policy CV-4.1 in the Carmel Valley Master Plan protects against rapid runoff or erosion impacts by requiring that vegetation be maintained on specified slope and soil combination areas. Carmel Valley Master Plan Policy CV-4.2 requires establishment of a subbasin or valley-wide drainage maintenance program that also would incorporate erosion control mitigation measures.

Cachagua Area Plan

Cachagua Area Plan Policy CACH-3.7 (riparian vegetation and fisheries) requires that new development shall be sited to protect riparian vegetation and threatened fish species, minimize erosion, and preserve the visual aspects of the Carmel and Arroyo Seco Rivers. Private property owners are encouraged to preserve the Carmel River in its natural state, to prevent erosion and protect fishery habitat. Fishery habitats located above the Los Padres and San Clemente Dams shall be maintained in a productive state accessible to fish populations, especially steelhead.

Cachagua Area Plan Policies CACH-3.5 and CACH-4.1 require commercial mining and timber production to include drainage mitigation measures.

South County Area Plan

South County Area Plan Policy SC-5.3 (new development and flood hazards) establishes that new development may not encroach on the main channels and associated floodways of the Nacimiento, San Antonio, and Salinas Rivers in order to conserve groundwater recharge, preserve riparian habitats, and protect flood flow capacity.

South County Area Plan Policy SC-5.4 includes provisions to mitigate runoff impacts on agricultural operations.

Community Area Policies

Fort Ord Master Plan

In addition to Fort Ord Master Plan Soils and Geology policies previously discussed for erosion control (see Impact WR-2), Fort Ord Master Plan Hydrology and Water Quality Policies A-1 and A-2 incorporate stormwater runoff minimization measures for new development. These measures include programs requiring the County to develop site drainage design and stormwater infiltration BMPs; to adopt and enforce a stormwater detention plan for all new development; to prepare, adopt, and enforce a master drainage plan for the area; and to develop a stream-gauging program for creeks in the eastern part of the former Fort Ord.

Soils and Geology Program A-6.2 (erosion and slope limitation) explains that the County shall designate areas with extreme slope limitations for open space or similar use if adequate erosion control measures and engineering and design techniques cannot be implemented.

Hydrology and Water Quality Policy C-4 (erosion and siltation) calls for the County to prevent siltation of waterways, to the extent feasible. Hydrology and Water Quality Program C-4.1 (erosion, siltation and agency coordination) requires that the County, in consultation with the Natural Resources Conservation Service, develop a program that will provide, to owners of property near waterways and other appropriate entities, information concerning vegetation preservation and other best management practices that would prevent siltation of waterways in or downstream of the former Fort Ord.

Biological Resources Program A-5.3 (stormwater drainage plans) states that the County shall require stormwater drainage plans for all developments adjacent to the habitat management areas to incorporate measures for minimizing the potential for erosion in the habitat management areas due to stormwater runoff.

Significance Determination

Current ordinance requirements and practices utilized in the review of flood control, drainage, grading permits, and stormwater runoff controls under the NPDES programs, as administered by the MCWRA—as well as policies contained in the proposed 2007 General Plan (including the new drainage design manual)—would mitigate new impacts associated with increased runoff and other surface drainage modifications, including potential impacts on channel stability, and streambank erosion due to changes in drainage patterns. As described above, these planning and regulatory measures will apply to development within the planning areas, individual lots, and activities on rural lands.

Mitigation Measures

Implementation of the 2007 General Plan policies and Area Plan goals and policies would reduce potential impacts on water quality associated with increased erosion from alterations to drainage patterns to a less-than-significant level. In addition, Mitigation Measure BIO-2.1: Stream Setback Ordinance will require the County to develop and adopt a county-wide Stream Setback Ordinance to establish minimum standards for the avoidance and setbacks for new development relative to streams. This will reduce the potential for erosion along streams that might otherwise occur as a result of new development. No additional mitigation is required.

Significance Conclusion

Preparing new flood control and drainage criteria as required by Policy S-3.7 (the new drainage design manual), including a section detailing erosion control and biotechnical bank stabilization to more specifically address these factors, would reduce these impacts to a less-than-significant level.

Buildout

Impact of Development with Policies

Buildout will result in a more extensive development pattern than currently exists or than is projected to exist under the 2030 planning horizon. Development of existing lots of record will add substantial low-density residential development by 2092.

Significance Determination

The policies of the 2007 General Plan will be fully implemented by 2092, and it can be assumed that federal and state regulatory requirements at that time would be at least as stringent as today. Federal and state regulations, including the NPDES program, have grown increasingly stringent since the enactment of the Clean Water Act and Porter Cologne Act. Assuming that this trend continues, with most development centered around population

centers, these policies and regulations will be effective in avoiding streambank erosion from increased runoff. Development on individual lots would presumably be subject to the same or more stringent regulations than today. Therefore, future runoff impacts would not be substantially greater than the impact associated with the 2030 planning horizon.

Mitigation Measures

Implementation of the 2007 General Plan policies would reduce stream erosion impacts associated with runoff from increased development to a less-than-significant level. No mitigation is required.

Significance Conclusion

This impact would be less than significant.

Substantially Alter Existing Drainage Patterns—Resulting in Increased Flood Risk

Impact WR-11: Land uses and development consistent with the 2007 General Plan would result in increases in stormwater runoff and peak discharge. Existing storm drain systems, including urban creeks and rivers, may be incapable of accommodating increased flows, potentially resulting in increased onsite or offsite flooding. (Less-Than-Significant Impact.)

2030 Planning Horizon

Impact of Development with Policies

Land uses and development consistent with the 2007 General Plan would increase runoff and result in adverse modifications to local and regional hydrology. While the majority of future development would be concentrated in the cities, Community Areas, and Rural Centers, potential future development in presently less-developed rural areas of the county may necessitate the construction of new drainage facilities for stormwater conveyance and management. In areas where drainage infrastructure already exists, drainage systems may need to be enlarged or expanded to accommodate future growth. Stormwater management practices commonly used to mitigate increases in peak flows (e.g., detention, retention, and infiltration) also can be implemented throughout the county and can serve to mitigate drainage impacts.

Unless properly planned and engineered, local storm drainage modifications, stream channel alterations, and structural bank stabilization measures would create significant localized flooding impacts, in some cases by moving the existing flooding and channel instability problems cross channel or

downstream, or by changing the timing of peak flows and point of discharge of runoff.

The existing County floodplain management ordinance (Chapter 16.16 of the Monterey County code) and the MCWRA's drainage review practices currently address drainage and flooding issues as part of both discretionary and, occasionally, ministerial projects. New development is prohibited within floodplains unless it meets the requirements of the County floodplain ordinance and can show that it will not adversely affect the flow within the floodplain.

2007 General Plan Policies

The 2007 General Plan contains policies for drainage and flood control.

Safety Element

Safety Element Policy S-3.1 requires that post-development, offsite peak flow drainage not be greater than predevelopment conditions. Onsite improvements or other methods for stormwater detention will be required to maintain post-development, offsite, peak flows at predevelopment levels.

Safety Element Policy S-3.3 requires the installation of mitigation drainage facilities concurrent with new development.

Safety Element Policy S-3.4 (flood hazards) requires that a County Flood Management Program that helps reduce flood risks shall be established consistent with FEMA requirements at a minimum. The program will consider both structural and non-structural solutions to address flooding.

Safety Element Policy S-3.5 requires the MCWRA to develop and implement runoff performance standards for site planning and to design techniques that would reduce storm flows and capture runoff for groundwater recharge.

Safety Element Policy S-3.7 requires the MCWRA to prepare a flood criteria or drainage design manual establishing floodplain management policies, drainage standards and criteria, stormwater detention, and erosion control and stormwater quality protection measures.

Safety Element Policy S-3.8 (flood hazards [mapping]) establishes that, to assist planners in determining potential inundation hazards for existing and future development, the County shall coordinate the periodic review, completion, and filing (with appropriate state and County Offices of Emergency Services) of inundation maps for all dams and levees whose failure could cause loss of life or personal

injury within Monterey County. Where inundation maps indicate dam or levee failure could cause loss of life or property or personal injury, the corresponding responsible party shall investigate levee or dam stability and management, identifying emergency alert, evacuation, rehabilitation, and maintenance needs as appropriate.

Policies providing for water quality and stormwater pollution controls would also reduce the rate of surface water runoff and potential downstream drainage and flooding problems.

Area Plan Policies

In addition to previously discussed Area Plan policies addressing drainage management (see Impact WR-9), there are supplemental policies specific to drainage issues and flood risk.

Greater Salinas Area Plan

Greater Salinas Area Plan Policy GS-1.2 (Drainage Management Plan) states that in the Spence/Potter/Encinal Road Special Treatment Area subdivision of land shall be approved only under certain conditions including that a Drainage Management Plan to mitigate runoff to adjoining farmlands must be prepared for the entire Special Treatment Area.

Greater Salinas Area Plan Policy GS-1.7 (Drainage Management Plan) ensures that in the Spence/Potter/Encinal Road Study Area (see Policies CSV-1.3 and GS-1.2) prior to new development, a drainage management plan to mitigate runoff to adjoining farmlands for the entire study area must be completed.

Greater Salinas Area Plan Policy GS-1.10 (Drainage Management Plan) establishes that in the Natividad/Rogge Road Special Treatment Area subdivision of land shall be approved only under three conditions, one of which is that a drainage management plan to mitigate runoff to adjoining farmlands is prepared for the entire special treatment area.

Greater Salinas Area Plan Policy GS-5.1 (Gabilan Creek, riparian corridor, flood hazard) calls for portions of Gabilan Creek to be evaluated for a linear park as defined by the County's Parkland Classification System at such time when the County can support another regional park. Until such time, Gabilan Creek shall be:

a. maintained in a natural riparian state;

b. kept in a free-flow state devoid of dams;

c. allowed its natural flood capacity through required setbacks conforming to the 100 year flood plain; and

d. kept free from urban encroachment by residential development through required dedication of land in the floodplain corridor.

Central Salinas Valley Area Plan

Central Salinas Valley Area Plan Policy CSV-5.1 (groundwater recharge, riparian habitat, flood hazards, Arroyo Seco River, Salinas River) ensures that development shall be designed to maintain groundwater recharge capabilities on the property. To protect and maintain areas for groundwater recharge, preservation of riparian habitats, and flood flow capacity, the main channels of the Arroyo Seco River and the Salinas River shall not be encroached on by development.

Central Salinas Valley Area Plan Policy CSV-5.2 (a. groundwater recharge, b. new development, c. floodways, d. new development, groundwater quality/quantity, e. septic, f. stormwater, erosion) states that recreation and visitor-serving commercial uses shall only be allowed if it can be proven that:

a. areas identified by the Water Resources Agency as prime-groundwater recharge areas can be preserved and protected from sources of pollution as determined by the Director of Environmental Health and the Water Resources Agency;

b. proposed development can be phased to ensure that existing groundwater supplies are not committed beyond their safe, long-term yields where such yields can be determined;

c. floodways associated with the main channels of either the Arroyo Seco or Salinas Rivers will not be encroached on by development because of the necessity to protect and maintain these areas for groundwater recharge, preservation of riparian habitats, and flood flow capacity as determined by the Water Resources Agency;

d. the proposed development meets both water quality and quantity standards expressed in Title 22 of the California Code of Regulations and Title 15.04 of the Monterey County Code as determined by the Director of Environmental Health;

e. the proposed development meets the minimum standards of the Regional Water Quality Control Basin Plan when septic systems are proposed and also will not adversely affect groundwater quality, as determined by the Director of Environmental Health; and

f. the proposed development will not generate levels of runoff that will either cause erosion or adversely affect surface water resources as determined by the Water Resources Agency.

South County Area Plan

South County Area Plan Policy SC-4.1 (flood hazards) identifies that channelization or realignment work on the Salinas River shall not be permitted without an assessment by the Monterey County Water Resources Agency that such work will not increase the flood hazard downstream.

South County Area Plan Policy SC-5.3 (new development and flood hazards) establishes that new development may not encroach on the main channels and associated floodways of the Nacimiento, San Antonio, and Salinas Rivers in order to conserve groundwater recharge, preserve riparian habitats, and protect flood flow capacity.

South County Area Plan Policy SC-5.4 (stormwater) states that stormwater facilities in new urban development shall be designed to mitigate impacts on agricultural lands located downstream.

Community Area Policies

Fort Ord Master Plan

Hydrology and Water Quality Program A- 1.3 (drainage master plan) states that the County shall prepare, adopt, and enforce a Master Drainage Plan to assess the existing natural and man-made drainage facilities, recommend area-wide improvements based on the approved Reuse Plan, and develop plans for control of stormwater runoff from future development. Such plans for control of stormwater runoff shall consider and minimize any potential for groundwater degradation and provide for the long-term monitoring and maintenance of all stormwater retention ponds.

Hydrology and Water Quality Program A-2.1 (flood hazards) establishes that the County shall implement a stream-gauging program for creeks in the eastern part of the former Fort Ord if proposals are submitted for development in that area. The gauging program should be partially or entirely funded by development fees. This program would provide information about potential flood hazards from these creeks.

Biological Resources Program A-8.1 (stormwater) establishes that the County shall prohibit the direct discharge of stormwater or other drainage from new impervious surfaces created by development of the Office Park parcel into the ephemeral drainage in the natural area expansion (NAE) parcel. No increase in the rate of flow of stormwater runoff beyond pre-development background levels will be allowed. Stormwater runoff from developed areas in excess of background quantities shall be managed on site through the use of basins, percolation wells, pits, infiltration galleries, or any other

technical or engineering methods that are appropriate to accomplish these requirements. Indirect sub-surface discharge is acceptable. These stormwater management requirements will be used for development on Polygon 31b (in Reuse Plan).

Significance Determination

Adoption and implementation of the policies and programs contained in the 2007 General Plan and County regulations discussed above would ensure that potential impacts of future development of on- and offsite drainage infrastructure would be reduced to a less-than-significant level. Although flooding would continue to occur in flood-prone areas, this is considered an existing condition for the purposes of CEQA review, and the policies and programs of the 2007 General Plan would ensure that flooding in these areas would not increase.

Mitigation Measures

Implementation of the 2007 General Plan policies and County regulations would reduce potential impacts on water quality associated with increased flood risk caused by increased runoff to a less-than-significant level. No additional mitigation is required.

Significance Conclusion

This impact would be less than significant.

Buildout

Impact of Development with Policies

Buildout would result in more extensive low-density residential development outside of cities and established communities than would occur within the 2030 planning horizon. This would increase the potential for future residences to affect flood risk.

Significance Determination

The policies of the 2007 General Plan would be fully implemented by 2092, and it may be assumed that federal and state regulatory requirements would be at least as stringent as they are today. Federal regulations, including the locally administered NFIP floodplain ordinance, have grown increasingly stringent since catastrophic flooding occurred in the Midwest in the 1990s, particularly with regard to assessing flood risk. Assuming that this trend continues, with most development centered around population centers, these policies and regulations would be effective in avoiding flood hazard from increased runoff. Development on individual lots would presumably be subject to the same or more stringent regulations than today. Therefore, future development impacts on flooding patterns would not be substantially greater than the impact associated with the 2030 planning horizon.

Mitigation Measures

Implementation of the 2007 General Plan policies would reduce flood impacts associated with runoff from increased development to a less-than-significant level. No mitigation is required.

Significance Conclusion

This impact would be less than significant.

Place Housing within an Area Subject to Flooding—Development in 100-Year Flood Hazard Areas

Impact WR-12: Land uses and development consistent with the 2007 General Plan would allow continued development in 100-year flood hazard areas. (Less-Than-Significant Impact.)

2030 Planning Horizon

Impact of Development with Policies

The 2007 General Plan generally would restrict new development and redevelopment within Community Areas, within Rural Centers, and on legal lots of record within unincorporated areas designated by FEMA as flood hazard areas, consistent with the County floodplain management ordinance and the Code of Federal Regulations for the NFIP. Pursuant to the ordinances, any new development would be required to either build outside the flood hazard areas or to elevate new structures above the anticipated flood depth. In addition, the 2007 General Plan would provide policies to mitigate the potential consequences of such development by means of appropriate siting and design criteria to protect both proposed structures and existing structures downstream.

The current Monterey County Code requires residential structures built within flood hazard areas to be elevated at least 1 foot above the elevation of the 100-year flood level to protect these structures from flood damage. Monterey County and FEMA federal floodplain management guidelines and regulations allow placement of fill within the floodway fringe to raise building pads above the 100-year flood level. New nonresidential buildings must either meet this criterion or provide an alternate method of flood proofing that is certified by a registered engineer and approved by the MCWRA.

Recent flooding on the Pajaro River has highlighted the risk of developing within its floodplain. The multijurisdictional Pajaro River Watershed Flood Prevention Authority has completed its study of potential flooding solutions (Pajaro River Watershed Flood Prevention Authority 2008). The USACE is now preparing an environmental analysis of the preferred project for

improving levees and flood protection along the river. As with many such projects, the proposal has engendered opposition over the type and location of improvements being proposed. Actual construction and improved flood protection are therefore expected to be several years into the future.

2007 General Plan Policies

The 2007 General Plan contains several policies and implementation programs to mitigate potential impacts arising from development in 100-year flood hazard zones. Some of the policies discussed for Impact WR-10 apply to general flood issues as well as issues associated with development in 100-year flood hazard areas. The policies described below are specific to development within 100-year flood hazard zones.

Conservation and Open Space Element

Conservation and Open Space Element Policy OS-3.5 requires a ministerial permit process for development in floodplain hazard areas.

Safety Element

Safety Element Policies S-2.1 through S-2.12 seek to reduce floodplain development and minimize the flood risk of such development through land use planning, the Community Plan process, consultation with the MCWRA, determination of mitigation measures prior to the approval of development, consideration of alternative project designs, compliance with NFIP guidelines, and discretionary permitting.

Safety Element Policy S-3.4 requires the establishment of a County flood management program to reduce flood risks through structural and nonstructural solutions.

Safety Element Policy S-3.7 requires the MCWRA to prepare a flood criteria or drainage design manual that establishes floodplain management policies, drainage standards and criteria, stormwater detention, and erosion control and stormwater quality protection measures in order to prevent significant impacts from flooding and ensure that development does not increase flooding risk over present conditions.

Public Services Element

Public Services Element Policy PS-2.6 includes GIS mapping (and flood map updates) of areas within the 100-year floodplain via the hydrologic resources constraints and hazards database. This will help avoid developing in these areas.

Area Plan Policies

Greater Salinas Area Plan

Greater Salinas Area Plan Policy GS-5.1 specifically mentions 100-year flood hazard areas in requiring conformity to 100-year floodplain setback compliance for Gabilan Creek.

Community Area Policies

Fort Ord Master Plan

Fort Ord Master Plan Fire, Flood, and Emergency Management Policy B-1 requires the County to identify and restrict construction in 100-year-flood-prone areas in the former Fort Ord, especially in the Salinas River Bluffs area.

Significance Determination

Development consistent with the 2007 General Plan within designated 100-year flood hazard zones in unincorporated areas is discouraged by existing County ordinance and proposed 2007 General Plan policies. Any such development would be subject to development standards aimed at minimizing on- and offsite flood damage. Implementation of the above policies and their corresponding implementation programs, along with the County's existing Floodplain Management Ordinance, would reduce potential impacts associated with development within flood hazard areas to a less-than-significant level. Flooding along the Pajaro River is an existing risk. The proposed 2007 General Plan policies would minimize new development within the river's floodplain.

Mitigation Measures

Implementation of the 2007 General Plan policies and County regulations would reduce potential impacts associated with development within Special Flood Hazard Areas (SFHAs) to a less-than-significant level. No additional mitigation is required.

Significance Conclusion

This impact would be less than significant.

Buildout

Impact of Development with Policies

Buildout would result in more extensive low-density residential development outside of cities and established communities than would occur within the 2030 planning horizon. This would potentially expose more residences to flood risk.

Significance Determination

The policies of the 2007 General Plan would be fully implemented by 2092, and it may be assumed that federal and state regulatory requirements would be at least as stringent as they are today. In particular, information gathered in the County's GIS under Policy PS-2.6 would identify those properties subject to flood risk, helping to avoid flood hazards from new development. Federal regulations, including the locally administered NFIP floodplain ordinance, have grown increasingly stringent since catastrophic flooding occurred in the Midwest in the 1990s, particularly with regard to assessing flood risk. Assuming that this trend continues, with most development centered around population centers, these policies and regulations would be effective in avoiding flood hazard related to new development. Development on individual lots would presumably be subject to the same or more stringent regulations than today. Therefore, future development impacts on flooding patterns would not be substantially greater than the impact associated with the 2030 planning horizon.

Global climate change is expected to result in variable weather patterns in the future. This may result in more rain or less than the current average in any given year. If rain levels exceed the assumptions made in preparing the floodplain delineations, then existing floodplain delineations would not accurately identify areas of flood risk and existing flood protection structures may not be sufficient to handle peak flood flows. Flood damage would result.

Mitigation Measures

Implementation of the 2007 General Plan policies would reduce flood impacts associated with runoff from increased development to a less-than-significant level. Specific information for Monterey County regarding future weather patterns and their effect on 100-year floodplain delineations does not exist. Therefore, no mitigation is feasible.

Significance Conclusion

Based on the uncertainty over future weather patterns by 2092, this impact is conservatively considered to be significant and unavoidable.

Placement of Structures in 100-Year Flood Hazard Areas—Leading to Downstream Flood Damage

Impact WR-13: The placement of land uses and structures within Special Flood Hazard Areas would impede or redirect flood flows, resulting in secondary downstream flood damage, including bank failure. (Less-Than-Significant Impact.)

2030 Planning Horizon

Impact of Development with Policies

The 2007 General Plan would continue to allow new development and redevelopment within unincorporated areas designated by FEMA as Special Flood Hazard Areas (SFHAs). Policies and programs included in the 2007 General Plan, however, would seek to mitigate the potential consequences of such development regarding exposure of proposed structures to flood hazards, as well as increased flood risk to existing structures located upstream and downstream. As discussed under Impact WR-10, the County has a flood management ordinance that meets the requirements of the NFIP.

The development of currently vacant land areas within floodplains, especially in rural areas without drainage improvements, may involve modification of minor surface waterways and tributary stream courses. Where development occurs within the floodplain of a larger stream course, sometimes channel modification is required, such as new storm drainage outfalls, local stream realignment, or structural bank stabilization. The practice of lining channel banks with rock riprap and other hard structures can cause cross-bank and downstream channel instability problems. Encroachment of the toe or face of the structures into the stream channel can redirect flow, constrict channels (causing backwater flooding effects), or increase local turbulence and flow velocities (causing bank erosion).

Such local storm drainage modifications, stream channel alterations, and structural bank stabilization measures can create significant flooding impacts. In some cases, these include redirecting or moving existing flooding and channel instability problems cross channel or downstream, or changing the timing of peak flows and the point of discharge of runoff.

2007 General Plan Policies

The 2007 General Plan contains several policies that would reduce the potential for the placement of inappropriate land uses and development in flood hazard areas. These policies are listed above for Impacts WR-10 and WR-11. The flood criteria or drainage design manual, as required by Policy S-3.7, includes floodplain management policies.

In addition to these policies, the current standards of the County Zoning Code prohibit the placement of permanent structures in the floodways, with some exception for properly designed and placed bank stabilization projects. Structures placed in the floodway fringe are allowed. Generally, a use permit, CEQA review, and special review by the MCWRA would be required for placement of any structure within the floodplain. The existing Provisions for Flood Hazard Reduction (Monterey County Code 16.16.050) also consider the secondary upstream and downstream flooding hydraulic impacts of a development or channel modification project by requiring that proposed new development prove that it "will not cause flow-related hazards or otherwise aggravate flow-related erosion hazards."

Area Plan Policies

Previously discussed Area Plan supplemental policies related to flood protection (discussed for Impacts WR-10 and WR-11) would help to mitigate this impact.

Toro Area Plan

Toro Area Plan Policy T-4.1 prohibits practices that may increase the siltation and flooding of Toro Creek. This will maintain its capacity to carry high flows and reduce the frequency of flooding.

Significance Determination

Adoption and implementation of the policies and programs contained in the 2007 General Plan, combined with existing County and NFIP regulations, would ensure that potential impacts of future development on secondary flood hazards are avoided and the impact is less than significant.

Mitigation Measures

No mitigation is required.

Significance Conclusion

This would be a less-than-significant impact.

Buildout

Impact of Development with Policies

Buildout would result in more extensive low-density residential development outside cities and established communities than would occur within the 2030 planning horizon. This would increase the potential for future residences to affect flood risk.

Significance Determination

The policies of the 2007 General Plan would be fully implemented by 2092, and it may be assumed that federal and state regulatory requirements would be at least as stringent as they are today. Federal regulations, including the locally administered NFIP floodplain ordinance, have grown increasingly stringent since catastrophic flooding occurred in the Midwest in the 1990s, particularly with regard to assessing flood risk. Assuming that this trend continues, with most development centered around population centers, these policies and regulations will be effective in avoiding flood hazard related to new development. Development on individual lots would presumably be subject to the same, or more stringent, regulations as today. Therefore, future development impacts on flooding patterns would not be substantially greater than the impact associated with the 2030 planning horizon.

Global climate change is expected to result in variable weather patterns in the future. This may result in more rain or less than the current average in any given year. If rain levels exceed the assumptions made in preparing the floodplain delineations, then existing floodplain delineations would not accurately identify areas of flood risk and existing flood protection structures may not be sufficient to handle peak flood flows. Flood damage would result.

Mitigation Measures

Implementation of the 2007 General Plan policies would reduce flood impacts associated with runoff from increased development to a less-than-significant level. Specific information for Monterey County regarding future weather patterns and 100-year floodplain limits does not exist. Therefore, no mitigation is feasible.

Significance Conclusion

Based on the uncertainty over future weather patterns and their effect on flood zones, this impact is conservatively considered to be significant and unavoidable.

Expose Persons or Structures to Risk from Failure of Levees or Dams

Impact WR-14: Potential failure of levees or dams would expose people and structures to inundation and result in the loss of property, increased risk, injury, or death. (Less-Than-Significant Impact.)

2030 Planning Horizon

Impact of Development with Policies

The County has several large regulated dams within its boundaries whose potential failure would cause severe inundation, including Nacimiento and San Antonio Dams in the Salinas River Valley, and Los Padres and San Clemente Dams in the Carmel Valley. Although the county has not experienced dam failure in the last quarter century, the sudden failure of any one of these facilities—in response to a large magnitude earthquake, for instance—would potentially cause significant flooding downstream of the dams.

Specific requirements with respect to most non-federal dam designs and operations are established by the DSOD and are administered by the County. California Water Code Section 6000, et seq. and 23 CCR 301, et seq. establish the authority and responsibility of the DSOD, including periodic safety inspections of dams; completion of studies that predict the flood zones created by sudden dam failure; and development of emergency response plans in the advent of pending dam failure, including a program for emergency warning and evacuation prepared by the Monterey County Office of Emergency Services (MCOES). The contingency plans are updated every two years and submitted to the Governor's Office of Emergency Services for review and comment. Incorporated cities are responsible for developing contingency plans for state-designated dams affecting incorporated areas. The County is responsible for developing emergency plans for state-designated dams affecting unincorporated areas. As a result of these requirements, the water level in San Clemente Dam has been drawn down by order of DSOD to prevent its potential failure. At this writing, the Coastal Conservancy is leading efforts to fund the eventual removal of the dam.

Monterey County does not have an extensive system of levees providing urban flood protection for areas susceptible to catastrophic levee failure, although there are levees along portions of the Salinas, Arroyo Seco, Carmel, and Pajaro Rivers that are potentially subject to failure or overtopping. Levees and floodwalls that are constructed as part of USACE or U.S. Department of Agriculture flood control projects, or by local city or flood control district programs administered jointly by the MCWMA, also are required to undergo periodic inspections for safety and performance as part of routine maintenance plans. Such plans are completed as elements of project design and operational planning. Levee and floodwall assessment

also typically is completed as part of a FEMA flood insurance study, including floodplain-mapping updates.

The Pajaro River Watershed Flood Prevention Authority (PRWFPA) was created by the California Legislature in response to flooding on the lower river. The PFWFPA is developing a plan for improving flood protection along the Pajaro River involving the use of Soap Lake to attenuate projected flood flows on the lower river. This would prevent future levee failures. Preliminary planning has been completed. (Pajaro River Watershed Flood Prevention Authority 2008)

2007 General Plan Policies

The failure and inundation potential of all dams and levees within unincorporated portions of the county is not presently known. The 2007 General Plan allows growth and development in three areas that are potentially subject to either dam or levee failure: the Carmel Valley planning area and the Castroville and Pajaro Community Areas.

Safety Element

Safety Element Policy S-3.8 (flood hazards [mapping]) establishes that, to assist planners in determining potential inundation hazards for existing and future development, the County shall coordinate the periodic review, completion, and filing (with appropriate State and County Offices of Emergency Services) of inundation maps for all dams and levees whose failure could cause loss of life or personal injury within Monterey County. Where inundation maps indicate dam or levee failure could cause loss of life or property or personal injury, the corresponding responsible party shall investigate levee or dam stability and management, identifying emergency alert, evacuation, rehabilitation, and maintenance needs as appropriate.

Area Plan Policies

Cachagua Area Plan

Cachagua Area Plan Policy CACH-4.2 specifically addresses dam failure by prohibiting construction unless the risk of loss of life or property damage is low.

Significance Determination

The extent to which the County allows future development that puts people at risk to loss of life or property from dam or levee failure represents a potentially significant impact that is addressed by 2007 General Plan goals and policies, including Policy S-3.8. In addition to state and federal regulations requiring periodic inspection of flood protection facilities and dams, actions are underway to eliminate the dam failure hazard from the San

Clemente Dam and to reduce the potential for levee failure on the lower Pajaro River.

Mitigation Measures

Implementation of the 2007 General Plan policies in conjunction with other activities currently underway would reduce potential impacts associated with the risk of dam and levee failure to a less-than-significant level. No additional mitigation is required.

Significance Conclusion

Therefore, this impact would be less than significant.

Buildout

Impact of Development with Policies

Buildout would see the development of a substantial number of existing lots of record throughout the county. This would potentially increase the risk from failure of levees or dams by increasing the geographic extent of development.

Significance Determination

The policies of the 2007 General Plan would be fully implemented by 2092, and it may be assumed that federal and state regulatory requirements would be at least as stringent as they are today. Development on individual lots would presumably be subject to the same, or more stringent, regulations as today.

Global climate change will result in variable weather patterns in the future. Higher rain totals than included in the engineering assumptions for the Pajaro River flood risk reduction project would reduce the effectiveness of anticipated flood protection improvements. Similarly, existing dams may not have sufficient capacity to handle peak flood flows if rain exceeds design assumptions. Presumably, these facilities will be expanded or rebuilt as necessary to maintain dam safety, in accordance with current state law.

Mitigation Measures

Specific information for Monterey County regarding future weather patterns and 100-year floodplain limits does not exist. Therefore, no mitigation is feasible.

Significance Conclusion

As a result of uncertainty over future severe weather patterns, this impact is conservatively considered to be significant.