Chapter 3.2
Hydrology and Water Quality

Introduction

This chapter provides a discussion of the hydrology and water quality issues related to the Proposed Project and the 130-Unit Alternative in Carmel Valley. This chapter includes a review of existing conditions based on available literature and field surveys; a summary of local, state, and federal policies and regulations related to hydrology and water quality; and an analysis of direct and indirect environmental impacts of the project. Where feasible, mitigation measures are recommended to reduce the level of impacts.

Impact Summary

The hydrology and water quality impacts of the Proposed Project and the 130-Unit Alternative are summarized in **Table 3.2-1.** As shown in **Table 3.2-1**, the Proposed Project and the 130-Unit Alternative would have some significant adverse impacts related to hydrology and water quality. However, with the implementation of the mitigation measures described in this Recirculated Draft EIR, all of the impacts listed would be reduced to less-than-significant levels.

Table 3.2-1. Hydrology and Water Quality Impact Summary

Impact	Proposed Project Level of Significance	130-Unit Alternative Level of Significance	Mitigation Measure	Level of Significance after Mitigation
A. Alteration of Drainage Patterns				
HYD-1: Alteration of Surface Drainage Patterns That Results in Increased Erosion or Siltation	Potentially Significant	Potentially Significant	<u>Both the Proposed Project and the 130-unit Alternative</u> HYD-1: Prepare and Implement a Stormwater Control Plan HYD-2: Prepare and Implement Operation and Maintenance Plan for Stormwater Control Measures HYD-3: Enter into Maintenance Agreement for Stormwater Control Measures BIO-3: Provide Funding Assurances and Reporting Concerning Restoration Progress and Success <u>Proposed Project Only</u> BIO-7: Monitor Bank Erosion in Project Reach and Restore Riparian Vegetation and River Bank As Necessary	LTS

Impact	Proposed Project Level of Significance	130-Unit Alternative Level of Significance	Mitigation Measure	Level of Significance after Mitigation
B. Stormwater Runoff and Drainage Infrastructure				
HYD-2: Result in Increased Stormwater Runoff Due to an Increase in Impervious Surfaces and Topographic Alterations Resulting in Drainage or Flooding Impacts	Potentially Significant	Potentially Significant	HYD-1, HYD-2, HYD-3	LTS
C. Water Quality				
HYD-3: Degrade Surface Water Quality during Construction and from Operation	Potentially Significant	Potentially Significant	HYD-1, HYD-2, HYD-3 HYD-4: Implement a Spill Prevention and Control Program HYD-5: Implement Measures to Maintain Surface Water or Groundwater Quality GEO-3: Prepare and Implement an Erosion and Sediment Control Plan	LTS
D. Groundwater Supply				
HYD-4: Substantially Deplete Groundwater Supplies or Interfere with Groundwater Recharge	LTS	LTS	None Required	–
E. Risk of Flooding				
HYD-5: Place Housing or Structures Within a 100-Year Flood Hazard Area and Expose People or Structures to a Significant Risk of Loss, Injury, or Death Involving Flooding	Potentially Significant	Potentially Significant	HYD-6: Protect Eastern Slope of Excavated Basin HYD-7: Avoid Encroachment into the 100-year Floodplain for Lot 130 Uses (130-Unit Alternative Only)	LTS
F. Risk of Inundation by Seiche, Tsunami, or Mudflow or Due to Sea Level Rise				
HYD-6: Expose People or Structures to a Significant Risk of Loss, Injury, or Death Involving Inundation Due to Seiche, Tsunami, or Mudflow Hazards or Flooding Associated with Sea Level Rise	LTS	LTS	None Required	–
LTS = Less than Significant				

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Environmental Setting

Research Methods

The following project information was reviewed for analysis of hydrology and water quality in the project area.

- Balance Hydrologics, Inc. 2005c. *Preliminary Stormwater Management Plan for Rancho Cañada, County of Monterey, California*. Prepared for Carlson, Barbee & Gibson, Inc. San Ramon, California.
- Balance Hydrologics, Inc. 2005a. Request for conditional letter of map revision, Carmel River, County of Monterey, California.
- Balance Hydrologics, Inc. 2006a. Additional information requested for case number 05-09-2100A444-R, Carmel River, County of Monterey, California. January.
- Balance Hydrologics, Inc. 2006b. Additional information requested for case number 05-09-A444-R, Carmel River, County of Monterey, California. May.
- Balance Hydrologics, Inc. 2006c. *Public Notice of Regulatory Floodway Change and Changes to the BFEs on The Carmel River Per the Conditional Letter of Map Revision Request for Rancho Cañada* (FEMA Case Number 05-09-A444R). June.
- Balance Hydrologics, Inc. 2014a. Re: Implications of the revised FEMA floodplain mapping for the Rancho Cañada Village Project, County of Monterey. Letter to Jacqueline Zischke from Edward D. Ballman. September 18.
- Balance Hydrologics, Inc. 2014b. *County Service Area 50 Final Lower Carmel River Stormwater Management and Flood Control Report*. Prepared for Monterey County Resource Management Agency. October.
- Balance Hydrologics, Inc. 2014c. Response to Comments from Computational Hydraulics and Transport, LLC on the Hydrology and Water Quality Section of the *Rancho Cañada Village Specific Plan Draft Environmental Impact Report*. September 18.
- Federal Emergency Management Agency (FEMA). 2009. *Flood Insurance Study, Monterey County, California, Unincorporated Areas*.
- Jacqueline Zischke. 2015. Email to ICF regarding County Service Area (CSA)-50 Hydrology. January 12.
- Mark R. Sterner, L&S Engineering and Surveying, Inc. 2014. Letter to Jacqueline Zischke regarding Drainage Summary for the Rancho Cañada Village 130-Unit Project Alternative per the Monterey Regional Storm Water Management Program Requirements. September 23.

Existing Conditions

Climate

The Carmel Valley is located on the central California coast, immediately adjacent to the Pacific Ocean. The climate in this region consists of generally mild temperatures year-round, with average

high temperatures varying from the low 60s (Fahrenheit) in the winter to the low 70s in the summer. Average annual precipitation is 18 to 20 inches, and the majority falls in the winter as rain (Balance Hydrologics 2005a).

Surface Water

The primary surface water feature in the project area is the Carmel River, which borders approximately 1,900 feet of the southern edge of the project site (Balance Hydrologics 2005a). **Figure 3.2-1** depicts the watershed of the project area. The Carmel River originates in the Santa Lucia Range of the Coast Ranges and flows generally north and west, and discharges into the Carmel Bay in the Pacific Ocean. It has a watershed area of 246 square miles at Via Mallorca, about 1-mile upstream of the project area (Balance Hydrologics 2005a). Watershed elevations vary from sea level to 4,965 feet at the highest peak, and vegetation consists of primarily chaparral, grasslands, and oak woodlands (Carmel River Watershed Conservancy 2004).

Project area topography is divided between floodplain and terrace. Most of the site consists of floodplain immediately adjacent to the river, while the northern most area consists of a terrace in the northwest and northeast corners (**Figure 3.2-2**). Project area soils have relatively high infiltration rates, ranging from 2 to 6 inches per hour over most of the site, and from 6 to 20 inches per hour over a small portion of the site. As a result, there appears to have been insufficient overland flow to establish a defined drainage pattern (**Figure 2-5**). Any existing drainage patterns were likely also altered by construction of golf course topography for the Rancho Cañada Golf Club. Local runoff is currently routed through a series of swales and drainage pipe, and all project area runoff ultimately drains to the Carmel River (Balance Hydrologics 2005a).

As shown in **Figure 3.2-1,** the project area is located within two County drainage areas (DAs). Additional offsite run-on for the residential portion of the project area (and the residential element of the 130-Unit Alternative) is generated upslope from the project area in two drainages: the western drainage is referred to as DA 27 and the eastern drainage is referred to as DA 26 (Balance Hydrologics 2014b). DA 27 is located within County Service Area No. 50[1] (CSA-50, Lower Carmel Valley), which not only provides for drainage, but it also funds flood-control projects in areas at the mouth of the Valley. DA 27 is 578 acres, and runoff travels south under Carmel Valley Road to a ditch (DA 27 channel) along the west side of the Carmel Middle School property. The ditch ends at a large swale northwest of the project area, where flows continue to the west towards Val Verde Drive. None of the flow from this watershed typically enters or impacts the Rancho Cañada Village property. DA 26 is 199 acres, and runoff travels south to a detention basin system located on Carmel Middle School property just north of the project area. DA 26 drains onto the Rancho Cañada Golf Club.

The western part of the 130-Unit Alternative is within DA 26 and DA 27. There is a separate drainage area that drains the eastern portion of the golf course and includes Lot 130 in the 130-Unit Alternative.

Groundwater

The project lies within the Carmel Valley Aquifer system, which functions as a water supply source for a large portion of the local area (Monterey County Water Resources Agency 2002 in Balance

[1] DA 27 stormwater flows into CSA-50, but the actual DA 27 area is not located within the CSA-50 (Balance Hydrologics 2014b). This area is located north of the project site.

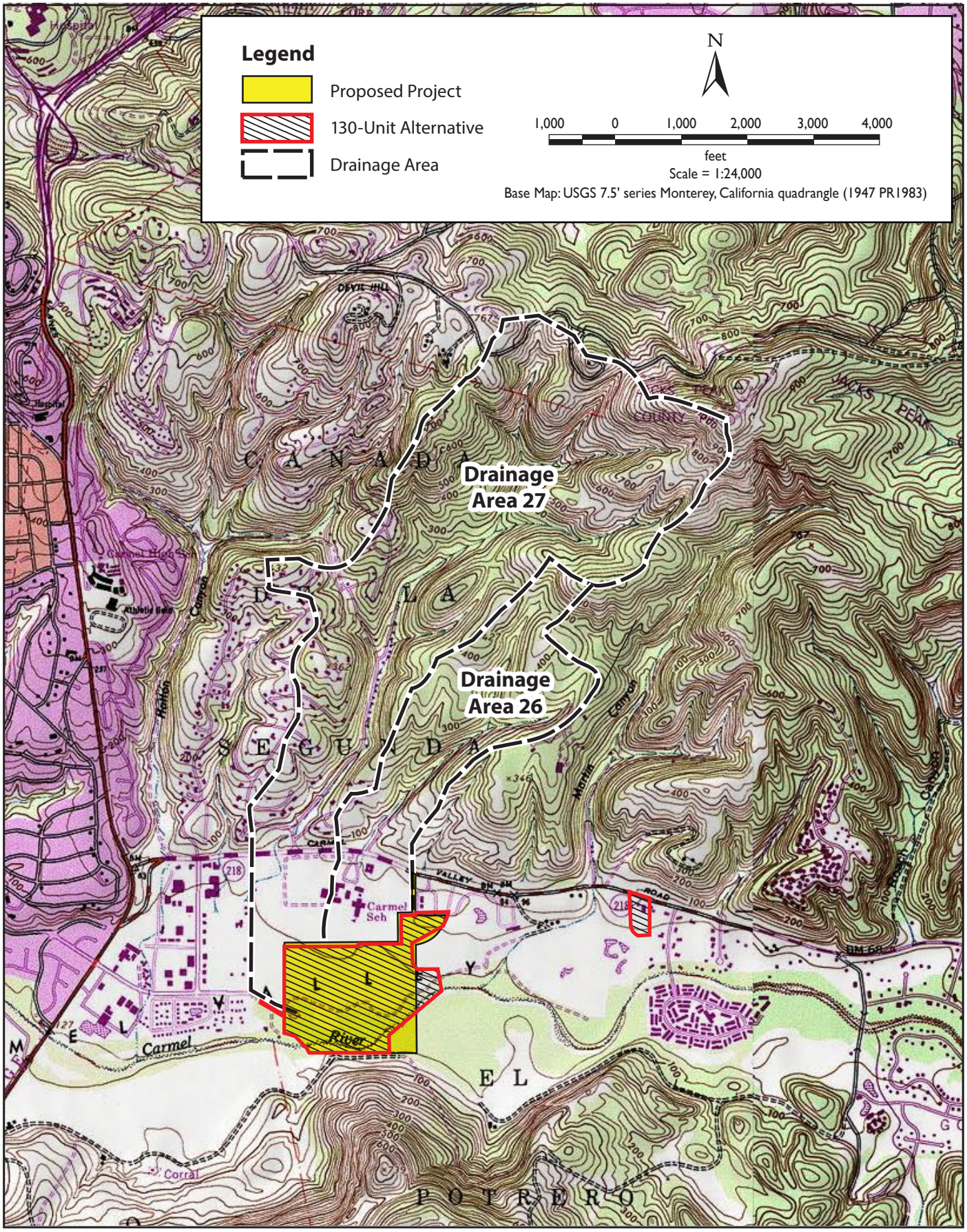

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Figure 3.2-1
County Drainage Areas 26 and 27

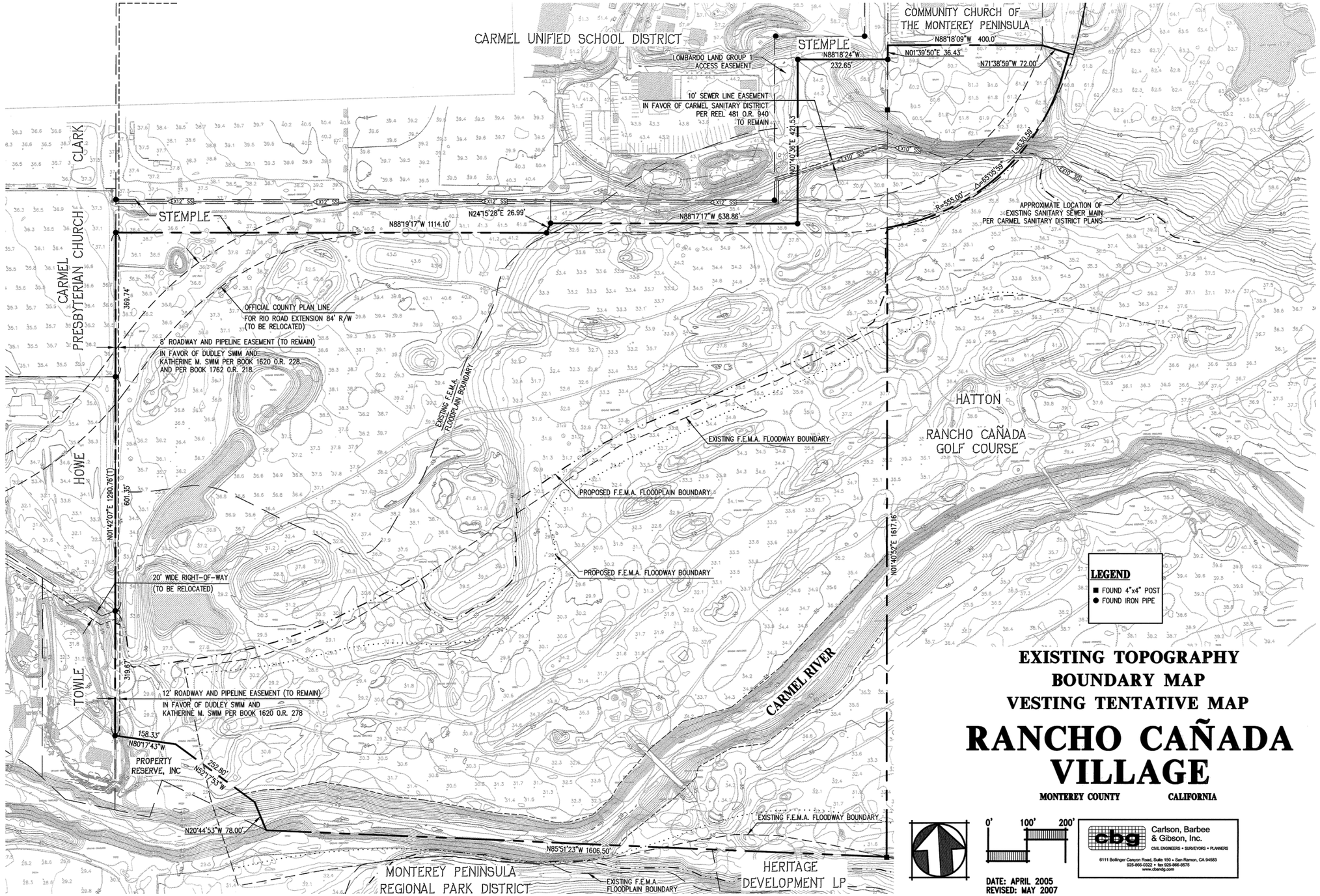

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Figure 3.2-2
Proposed Project Existing Topography

Hydrologics 2005a). The California-American (Cal-Am) Water Company utilizes this aquifer to provide water to 112,000 residents and 3,200 businesses in the greater Monterey Peninsula area, and numerous private wells also access the aquifer (Balance Hydrologics 2005a). Additional new wells must be permitted by the Monterey Peninsula Water Management District (MPWMD) (Monterey Peninsula Water Management District 2002). As explained in Chapter 3.10, *Public Services, Utilities, and Recreation*, Cal-Am is under State Water Resources Control Board (State Water Board) orders to reduce withdrawals from the Carmel River aquifer beyond its legal water rights.

The aquifer is formed from alluvial material along the Carmel River Valley and extends from San Clemente Dam to the Carmel River Lagoon at the Pacific Ocean (Balance Hydrologics 2005a). Lowered groundwater levels have been identified as the cause of several negative effects along the river: loss of riparian vegetation and associated bank instability and reduced steelhead habitat due to low river levels (Balance Hydrologics 2005a). Water levels are typically 5 to 30 feet below the ground surface, and increase rapidly during periods of recharge by the Carmel River (Department of Water Resources 2003). Water level elevations within the basin fluctuate by 5 to 15 feet during normal water years and may decline by as much as 50 feet during drought years (Department of Water Resources 2003).

One of the Cal-Am wells is located in the project area. Of the 21 wells that the Cal-Am has along the Carmel River, the Rancho Cañada well is the farthest downstream. The Rancho Cañada well was drilled in 1981. At this well, the groundwater is approximately 15 feet below the surface and pumping occurs at 49 feet below the surface (State Water Resources Control Board 1995).

Water supply related to the Proposed Project and 130-Unit Alternative is discussed further in Chapter 3.10, *Public Services, Utilities, and Recreation*.

Flooding and Drainage

Flooding has occurred along the Carmel River on multiple occasions. Levees have been constructed by private interests on the Carmel River from State Route 1 upstream approximately 4,000 feet on the north bank, and from 3,000 feet upstream of the mouth to 10,000 feet upstream of the mouth on the south bank. These levees are not adequate to hold the 1% annual chance flood (Federal Emergency Management Agency 2009).

Peak flows on the Carmel River typically occur between January and March, and large flood events are driven by seasonal storm patterns. Although the river has a large watershed, the lowest reaches of the river often go dry in the late summer months due to water supply withdrawals (ENTRIX 2008).

Table 3.2-2 presents the current estimated 10-year through 500-year Carmel River flows near the project area

Table 3.2-2. FEMA Flood Insurance Flows along the Carmel River

Return Period	10-Year	50-Year	100-Year	500-Year
Flow (cubic feet per second [cfs])[1]	9,500	18,500	22,700	32,600

Source: Federal Emergency Management Agency 2009.

[1] At U.S. Geological Survey Gage Near Carmel below Potrero Creek.

Within the project area, the water surface elevations at the 100-year flow (the base flood elevations) range from 39 feet (NAVD) at the southwest portion of the project area to 43 feet NAVD at the northeast portion of the project area. The 100-year water surface elevation near the intersection of Val Verde Road and Rio Road is approximately 36 feet NAVD (Federal Emergency Management Agency 2015).

As shown in **Figure 3.2-3**, approximately 56 acres of the project area is within the FEMA-designated 100-year floodplain of the Carmel River of which 30 acres are located within the regulatory floodway (Federal Emergency Management Agency 2009). As shown in **Figure 3.2-4**, 55 acres of the 130-Unit Alternative are within the FEMA-designated 100-year floodplain of the Carmel River, of which 31 acres are within the regulatory floodway (Federal Emergency Management Agency 2009). Monterey County (County) enforces flood control standards within 100-year flood hazard areas in accord with National Flood Insurance Program (NFIP) requirements, as discussed in more detail under the *Regulatory Setting*.

Drainage conditions within the County drainage areas are variable. The Monterey County Resource Management Agency (MCRMA) is responsible for flood control facilities within drainage areas of CSA-50. The 10-year discharge on DA 26 is estimated to be 28 cubic feet per second (cfs), while the 100-year discharge is estimated to be 78 cfs (Balance Hydrologics 2005a). The 10-year discharge on DA 27 is estimated to be 86 cfs (Balance Hydrologics 2005a) and the 100-year discharge is estimated to be 392 cfs (Balance Hydrologics 2014b). Runoff from the upstream portions of DA 27 is conveyed by natural upland channels to a 30-inch and two 24-inch culverts under Carmel Valley Road and then to an intermittent channel that flows along the western boundary of the Carmel Middle School property for a short distance before tapering out to existing grade. The channel becomes largely undefined before reaching the southwest corner of the school property. During large storm events, storm drain modeling (discussed below) indicates that flood flows will overtop the channel and be routed as overland flow into and through CSA-50 (Balance Hydrologics 2014b).

There are two significant dams on the Carmel River: Los Padres Dam and San Clemente Dam. These structures were constructed by Cal-AM for water supply purposes. No flood-control storage is allocated in either reservoir, although some flood-control benefits may be attributable to the dams early in the flood season when storage space is available as a result of summer draw down for water supply. The dams have little effect on reducing peak discharges downstream late in the flood season once they have become full (Federal Emergency Management Agency 2009). San Clemente Dam is presently being removed as part of habitat restoration efforts along the Carmel River and will be removed (along with the Old Carmel River Dam) by 2016. There are discussions about the potential future removal of Los Padres Dam as well, but its future fate is uncertain.

Water Quality

Surface Water Quality

The Carmel River is not listed by the state as an impaired water body pursuant to the Clean Water Act Section 303(d). Designated beneficial uses for the Carmel River (downstream from Tularcitos Creek), are as follows.

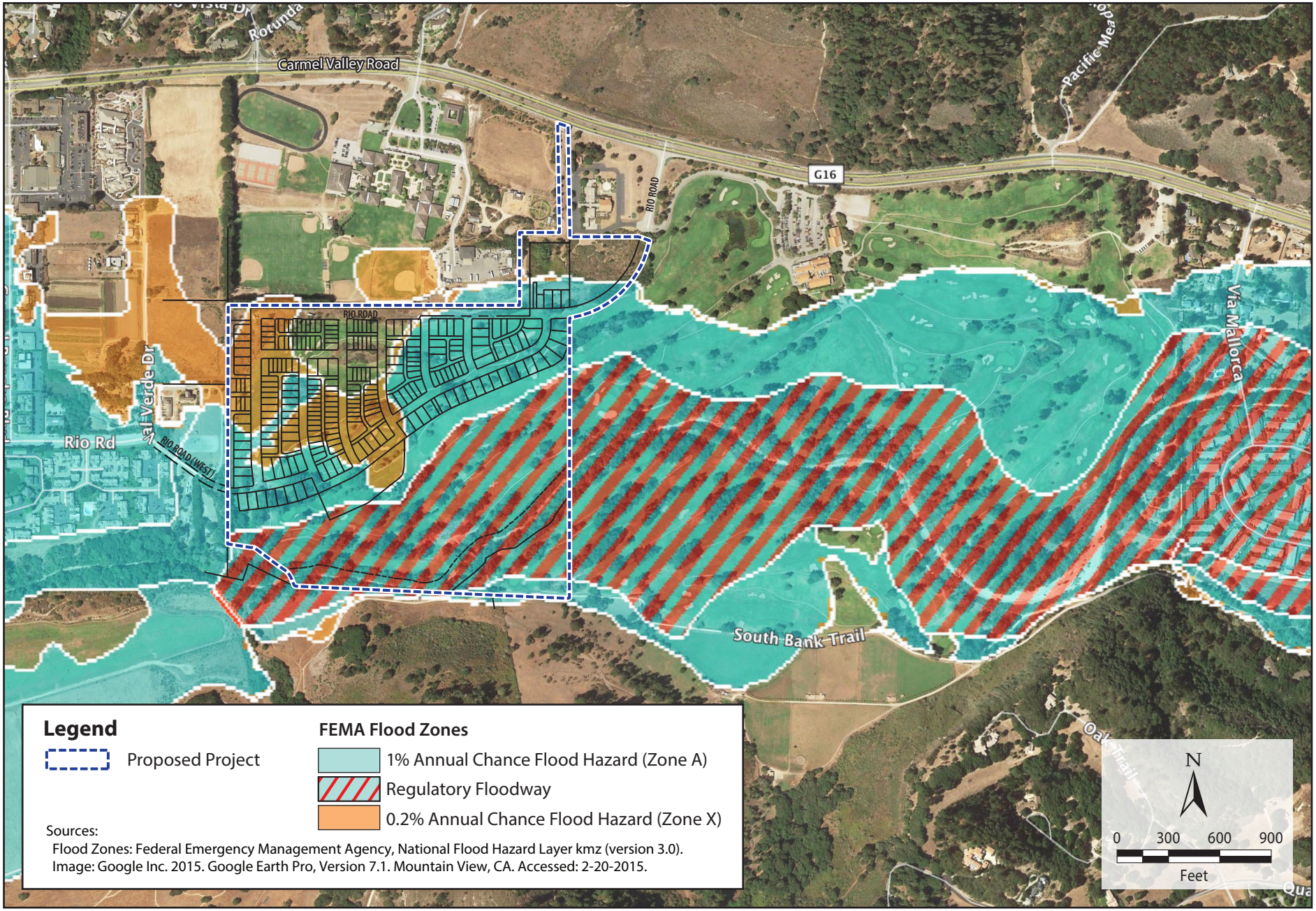

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Figure 3.2-3
FEMA Floodplain Boundaries in the Proposed Project

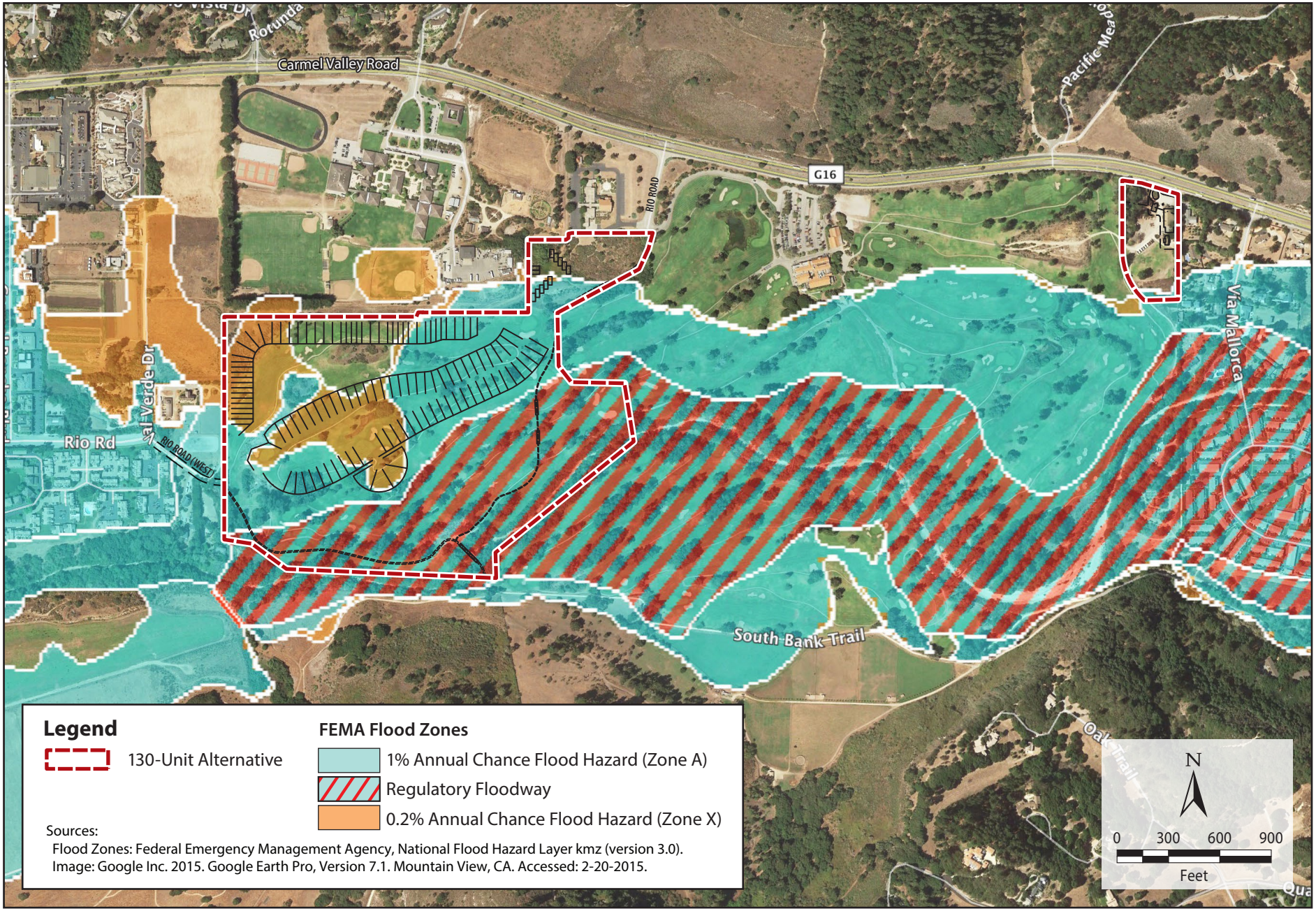

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Figure 3.2-4
FEMA Floodplain Boundaries in the 130-Unit Alternative

- Municipal and Domestic Supply (MUN)
- Agricultural Supply (AGR)
- Ground Water Recharge (GWR)
- Water Contact Recreation (REC-1)
- Non-Contact Water Recreation (REC-2)
- Wildlife Habitat (WILD)
- Cold Fresh Water Habitat (COLD)
- Warm Fresh Water Habitat (WARM) Migration of Aquatic Organisms (MIGR)
- Spawning, Reproduction, and/or Early Development (SPWN)
- Commercial and Sport Fishing (COMM)

Surface water quality objectives have been established by the Central Coast Regional Water Quality Control Board (Regional Water Board) for the Carmel River watershed, as shown in **Table 3.2-3**.

Table 3.2-3 Water Quality Objectives for the Carmel River[1] (milligrams per liter)

Watershed (Subbasin)	Total Dissolved Solids (TDS)	Chloride (Cl)	Sulfate (SO_4)	Boron (B)	Sodium (Na)
Carmel River	200	20	50	0.2	20

Source: Central Coast Regional Water Quality Control Board 2011.

[1] Objectives shown are annual mean values. Objectives are based on preservation of existing quality or water quality enhancement believed attainable following control of point sources.

Water quality in the Carmel River has been measured by MPWMD since 1991. Sampling has primarily occurred at two locations: below Los Padres Dam and below San Clemente Dam. The following water quality constituents are typically measured: temperature (in Fahrenheit [F°), dissolved oxygen (in milligrams per liter [mg/L]), pH, carbon dioxide (in mg/L), specific conductance (in microSiemens/centimeter [uS/cm]), and turbidity (in nephelometric turbidity units [NTU])(Monterey Peninsula Water Management District 2004).

Water temperature data have been collected at six additional locations along the Carmel River since 1996. In general, water temperatures in the river are within the desirable range for aquatic species in the winter and spring months. Lower temperatures are found during these seasons due to larger and cooler river inflows. As flows drop and the water warms, temperatures often exceed the recommended range for aquatic species during the summer and fall months. For example, maximum measured daily water temperatures can exceed 70° F in the mainstem, which is considerably higher than the optimal 50° F to 60° F range identified for steelhead growth. All six water temperature monitoring stations indicate stressful temperature conditions during the summer and fall seasons (Monterey Peninsula Water Management District 2004).

Dissolved oxygen values measured on the Carmel River generally meet or exceed 7 mg/L, while measured pH values uniformly fall between 7 and 8.5. Measured carbon dioxide values occasionally rise above the 10 mg/L upper limit recommended for fish. Measured specific conductance has ranged from 129 to 550 uS/cm, with an average of 267 uS/cm over the sampling period (Monterey Peninsula Water Management District 2004).

Measured turbidity in Carmel River is typically very low. Increases in turbidity have been observed during large winter storm events and for several months after large-scale landslide and bank erosion activity within the watershed. Turbidity levels also appear to have increased after water

levels in San Clemente Reservoir were lowered in June 2003, releasing a large amount of previously trapped sediment. It is unclear how long turbidity levels in the Carmel River remained elevated from this event, as monitoring data are only available through August 2004 (Monterey Peninsula Water Management District 2004).

No water quality data are available for local project area runoff. Surface water quality in the project area is directly affected by stormwater runoff from adjacent streets and properties delivering fertilizers, pesticides, metals, hydrocarbons, and other pollutants. The project site is currently in use as a golf course, and local runoff is likely to contain phosphorus, nitrogen, and fine sediments. Golf Course landscaping activities often include the use of pesticides, herbicides (e.g., glyphosate), fungicides (e.g., chlorothalonil, flutolanil, propiconazole, and iprodione), and fertilizers.

Groundwater Quality

Groundwater quality constituents of concern in the Carmel Valley Groundwater Basin are nitrates from septic tanks, iron, and manganese. Data collected by MPWMD in 1995 through 1996 indicated that nitrate concentrations in the basin, however, are actually much lower than state drinking water standards (Department of Water Resources 2003). Groundwater withdrawals for water supply in the lower portion of the basin must be treated for iron and manganese prior to distribution (Department of Water Resources 2003).

Beneficial uses of groundwater in the project area include MUN, AGR, and industrial use (IND). Water quality objectives have been set for groundwater regarding bacteria, chemical constituents, organic chemicals, radioactivity, and tastes and odors.

Regulatory Setting

This section discusses the federal, state, and local policies and regulations that are relevant to the analysis of hydrology and water quality impacts of the Proposed Project and 130-Unit Alternative.

Federal Policies and Regulations

Clean Water Act

The State Water Board is the state agency with primary responsibility for implementation of state and federally established regulations relating to water resource issues. Typically, all regulatory requirements are implemented by the State Water Board through Regional Water Boards established throughout the state. The Central Coast Regional Water Board is the agency responsible for regulating discharges in the Carmel River Valley.

The Clean Water Act (CWA) is the primary federal law that protects 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.

Section 303

The State of California adopts water quality standards to protect beneficial uses of state waters as required by Section 303 of the CWA and the Porter-Cologne Water Quality Control Act of 1969. Section 303(d) of the CWA established the total maximum daily load (TMDL) process to guide the

application of state water quality standards (see discussion of state water quality standards below). To identify candidate water bodies for TMDL analysis, a list of water quality–limited streams was generated. These streams are impaired by the presence of pollutants, including sediment, and are more sensitive to disturbance. No drainages in or immediately adjacent to the project area are 303(d) listed, including the Carmel River.

Section 401

Section 401 of the CWA 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 (or waiver). Water Quality Certifications are issued by Regional Water Quality Control Boards (Regional Water Boards) in California. Under the CWA, the state (via Regional Water Boards) 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 and imposes project-specific conditions on development. A Section 401 waiver establishes standard conditions that apply to any project that qualifies for a waiver.

Section 404

Section 404 of the CWA regulates the discharge of dredged and fill materials into waters of the United States, which include oceans, bays, rivers, streams, lakes, ponds, and wetlands. Project proponents must obtain a permit from the U.S. Army Corps of Engineers (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 impact 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. These include any or all of the following.

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

Wetlands are defined for regulatory purposes as areas "inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" (33 Code of Federal Regulations [CFR] 328.3, 40 CFR 230.3).

Section 404 permits may be issued only for the least environmentally damaging practicable alternative. That is, authorization of a proposed discharge is prohibited if there is a practicable alternative that would have fewer adverse impacts and lacks other significant adverse consequences.

Section 402

Section 402 of the CWA regulates discharges to surface waters through the National Pollutant Discharge Elimination System (NPDES) program, administered by the Environmental Protection Agency (EPA). In California, the State Water Board is authorized by the EPA to oversee the NPDES program through the Regional Water Boards (see related discussion under *Porter-Cologne Water*

Quality Control Act). The NPDES program provides for both general permits (those that cover a number of similar or related activities) and individual permits.

Federal Flood Insurance Program

Alarmed by increasing costs of disaster relief, Congress passed the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973. The intent of these acts was to reduce the need for large, publicly funded flood control structures and disaster relief by restricting development on floodplains.

FEMA administers the NFIP to provide subsidized flood insurance to communities that comply with FEMA regulations limiting development in floodplains. FEMA issues flood insurance rate maps for communities participating in the NFIP. These maps delineate flood hazard zones in the community. The locations of FEMA-designated floodplains in the project area are included in the *Environmental Setting*.

Executive Order 11988

Executive Order 11988 (Floodplain Management) addresses floodplain issues related to public safety, conservation, and economics. The order generally requires federal agencies constructing, permitting, or funding a project to do the following.

- Avoid incompatible floodplain development.
- Be consistent with the standards and criteria of the NFIP and restore and preserve natural and beneficial floodplain values.

State Policies and Regulations

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act, passed in 1969, articulates with the federal CWA. It established the State Water Board and divided the state into nine regions, each overseen by a Regional Water Board. The State Water Board is the primary state agency responsible for protecting the quality of the state's surface and groundwater supplies, but much of its daily implementation authority is delegated to the nine Regional Water Boards, which are responsible for implementing CWA Sections 401, 402, and 303(d). In general, the State Water Board manages both water rights and statewide regulation of water quality, while the Regional Water Boards focus exclusively on water quality within their regions.

California Regional Water Quality Control Board, Central Coast Region—Basin Plan

The Regional Water Board is responsible for implementing the *Water Quality Control Plan for the Central Coast Region* (Basin Plan), which includes Monterey County. The Basin Plan designates beneficial uses and water quality objectives for waters of the state, including surface waters and groundwaters. The Basin Plan includes both narrative and quantitative water quality objectives that can differ depending on the specific beneficial uses being protected. Narrative objectives are established for parameters such as color, suspended and settleable material, oil and grease, biostimulatory substances, and toxicity. Numeric objectives can include such parameters as

dissolved oxygen, temperature, turbidity, pH, and specific chemical constituents such as trace metals and synthetic organic compounds.

The Regional Water Board implements the Basin Plan through the issuance and enforcement of Waste Discharge Requirements (WDRs) and waivers of WDRs. WDRs may be issued to any entity that discharges waste that may affect the quality of any Central Coast surface water or groundwater. For discharges to waters protected under CWA, WDRs also could serve as a federally required NPDES permit (under CWA) to regulate waste discharges so that water quality objectives are met and to incorporate the requirements of other applicable regulations. Basin Plans are required to be reviewed every 3 years and provide the regulatory basis for determining WDRs and waivers of WDRs.

General Construction Permit

Construction activities are regulated under the NPDES General Permit for Construction Activities (General Construction Permit) provided that the total amount of ground disturbance during construction exceeds 1 acre. For qualifying projects, the project applicant must submit, before construction begins, a Notice of Intent (NOI) to the Regional Water Board to be covered by the General Construction Permit. The General Construction Permit requires the preparation and implementation of a stormwater pollution prevention plan (SWPPP), which also must be completed before construction begins. Implementation of the plan starts with the commencement of construction and continues through the completion of the project. Upon completion of the project, the applicant must submit a Notice of Termination to the Regional Water Board to indicate that construction is complete. The SWPPP needs to be prepared by a Qualified SWPPP Developer (QSD) and include pollution prevention measures (i.e., erosion and sediment control measures and measures to control nonstormwater discharges and hazardous spills), demonstration of compliance with all applicable local and regional erosion and sediment control standards, identification of responsible parties, a detailed construction timeline, and a best management practice (BMP) monitoring and maintenance schedule.

Coverage under the General Construction Permit is expected to be required as part of the Proposed Project (or the 130-Unit Alternative).

Permitting for Dewatering Activities

Under the NPDES program, the Regional Water Board has also adopted a General Permit for Discharges with Low Threat to Water Quality (Order No. R3-2011-0223, NPDES Permit No. CAG993001) (General Low Threat Permit). This permit applies to various categories of activities, and would be likely to apply to the Proposed Project or 130-Unit Alternative if the applicant conducted dewatering activities during construction and discharged the effluent to surface water or groundwater. This permit contains waste discharge and effluent limitations similar to those in the General Construction and General Industrial Permits. To obtain coverage, the applicant must submit an NOI and data establishing the chemical characteristics of the dewatering discharge. A standard monitoring and reporting program is included as part of the permit. For dewatering activities that are not covered by the general permit, an individual NPDES permit and WDRs must be obtained from the Regional Water Board.

The General Dewatering Permit is applicable to the Rancho Cañada Village development if there will be any excavation below the water table where dewatering to waters of the United Sates or state will take place.

Municipal Stormwater Permits

Under the CWA, urban areas with municipal separate storm sewer systems (MS4s) are required to obtain an NPDES permit. The Regional Water Boards administer the NPDES stormwater permitting program for MS4s. MS4s are categorized as either large or small. Cities with populations greater than 100,000 are considered to have large MS4 systems and are required to get permits under Phase I of the EPA's stormwater program. The only Phase I city in the Monterey Bay Region is Salinas. Other urban areas (areas with greater than 1,000 residents per square mile or areas with high growth potential), are considered to have small MS4s and are required to get permits under Phase II of the EPA's stormwater program.

The Phase II MS4 General Permit (Order No. 2003-0005-DWQ, NPDES No. CAS000004) was adopted by the State Water Board to provide NPDES permit coverage to municipalities not covered under the NPDES Phase I Rule (i.e., small MS4s generally for fewer than 100,000 people). To comply with the Phase II, MS4 permit, it is necessary for operators of small MS4s to create a stormwater management program (SWMP).

The County implements the Monterey Regional Stormwater Management Program (MRSWMP) in compliance with the Phase II MS4 Permit. The Phase II MS4 Permit applies to the permittees in the Monterey Regional Stormwater Group consist of the cities of Pacific Grove, Monterey, Seaside, Del Rey Oaks, Sand City, Carmel-by-the-Sea, and the urbanized, unincorporated areas of Monterey County. The Storm Water Management Plan (SWMP) used by each of these permittees is Revision 3 of the MRSWMP document, which was approved on June 23, 2011 by Regional Water Board staff. The SWMP includes unincorporated urban areas of Monterey County. The project area is located within Monterey County urbanized area C (Central Coast Regional Water Quality Control Board 2006b) and would be subject to the SWMP guidelines.

Phase II Municipal General Permit section E.12.k requires the permittee to comply with alternative post-construction stormwater management requirements based on a watershed process approach after development and approval by the Regional Water Board. The urbanized portions of the Central Coast Region are categorized into 10 Watershed Management Zones (WMZs), based on common key watershed processes and receiving water type (i.e., creek, marine nearshore waters, lake). Post-construction requirements are specific to WMZ, and are described below.

Post-Construction Stormwater Requirements

In July 2013, the Regional Water Board adopted Order R3-2013-0032, with new, more stringent Post-Construction Requirements (PCRs). These requirements supersede the post-construction requirements in the State Phase II MS4 permit. Projects are subject to the PCRs if they create or replace 2,500 square feet or more of impervious area. PCRs involve Low Impact Development (LID) measures to be implemented based on a tier-level approach, as shown in **Table 3.2-4**. These requirements are implemented via the Monterey Regional Stormwater Management Program (MRSWMP) in compliance with the County's MS4 Permit. The County RMA Environmental Services administers the County's NPDES General Permit issued by the State Water Resources Control Board.

RMA Environmental Services is responsible for reviewing land use development proposals and ensuring regulated projects implement post-construction requirements.

Table 3.2-4 Central Coast Regional Water Board MS4 Post-Construction Stormwater Requirements

Tier Level	Project Applicability/Trigger[1]	Requirements
1	Projects that create or replace 2,500 square feet or more of impervious area	Implement LID Measures: • Limit disturbance of natural drainage features. • Limit clearing, grading, and soil compaction. • Minimize impervious surfaces. • Minimize runoff by dispersing runoff to landscape or using permeable pavements.
2	Projects that create or replace 5,000 square feet or more of impervious area	• Tier 1 requirements. • Treat runoff with an approved and appropriately sized LID treatment system prior to discharge from the site.
3	Projects that create or replace 15,000 square feet or more of impervious area	• Tier 2 requirements. • Prevent offsite discharge from events up to the 95th percentile rainfall event using Stormwater Control Measures.
4[2]	Projects that create or replace 22,500 square feet or more of impervious area	• Tier 3 requirements. • Control peak flows to not exceed preproject flows for the 2-year through 10-year events.

Source: Central Coast Regional Water Quality Control Board 2014.

Notes:

[1] Applicable projects are those that are located within the MS4 permit boundaries defined by the Regional Water Board, including cities, certain institutions, and unincorporated urban areas are subject to the PCRs.

[2] The PCRs Tier 4 requirements are consistent with flood control requirements that were previously in effect. Additional peak-flow management, based on different criteria, may be required by the local flood control agency.

Section 1602 of the California Fish and Game Code

Under Chapter 6 of the California Fish and Game Code, California Department of Fish and Wildlife (DFW) is responsible for the protection and conservation of the state's fish and wildlife resources. Section 1602 et seq. of the code defines the responsibilities of DFW and requires that public and private applicants obtain an agreement to "divert, obstruct, or change the natural flow or bed, channel, or bank of any river, stream, or lake designated by the DFW in which there is at any time an existing fish or wildlife resource or from which those resources derive benefit, or will use material from the streambeds designated by the department." A streambed alteration agreement is required under Section 1602 of the California Fish and Game Code for all activities that involve temporary or permanent activities within state jurisdictional waters.

Local Policies and Regulations

Current County Plans and Policies

2010 Monterey County General Plan

Goals and policies defined in the 2010 General Plan and relevant to the Proposed Project and 130-Unit Alternative are provided below.

Conservation and Open Space Element

Soils

Goal OS-3: Prevent Soil Erosion To Conserve Soils And Enhance Water Quality.

Policy OS-3.1: Best Management Practices (BMPs) to prevent and repair erosion damage shall be established and enforced.

Policy OS-3.3: Criteria for studies to evaluate and address, through appropriate designs and BMPs, geologic and hydrologic constraints and hazardous 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.

Policy OS-3.7: Voluntary preparation and implementation of a coordinated resource management plan shall be encouraged in watersheds of State designated impaired waterways.

Policy OS-3.8: 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.

Marine and River Resources

Goal OS-4: Protect and conserve the quality of coastal, marine, and river environments, as applied in areas not in the coastal zone.

Policy OS-4.2: Direct and indirect discharges of harmful substances into marine waters, rivers or streams shall not exceed state or federal standards.

Policy OS-4.3: Estuaries, salt and fresh water marshes, tide pools, wetlands, sloughs, river and stream mouth areas, plus all waterways that drain and have impact on State designated Areas of Special Biological Significance (ASBS) shall be protected, maintained, and preserved in accordance with state and federal water quality regulations.

Safety Element

Flood Hazards

Goal S-2: Reduce the amount of new development in floodplains and, for any development that does occur, minimize the risk from flooding and erosion.

Policy S-2.1: Land Use planning to avoid incompatible structural development in flood prone areas shall be the primary means of minimizing risk from flood hazards.

Policy S-2.2: Uses such as agriculture, passive to low intensity recreation, and open space/conservation are the most acceptable land uses in the 100-year floodplain to lessen the potential for loss of life, injury, property damage, and economic and social dislocations to the maximum extent feasible.

Policy S-2.3: All new development, including filling, grading, and construction, within designated 100-year floodplain areas shall conform to the guidelines of FEMA and the National Flood Insurance Program and ordinances established by the County Board of Supervisors. With the exception of the construction of structures, Routine and Ongoing Agricultural Activities shall be exempt from this policy.

Policy S-2.6: Drainage and flood control improvements needed to mitigate flood hazard impacts associated with potential development in the 100-year floodplain shall be determined prior to approval of new development and shall be constructed concurrently with the development.

Goal S-3: Ensure effective storm drainage and flood control to protect life, property, and the environment.

Policy S-3.1: Post-development, off-site peak flow drainage from the area being developed shall not be greater than pre-development peak flow drainage. On-site improvements or other methods for storm water detention shall be required to maintain post-development, off-site, peak flows at no greater than predevelopment levels, where appropriate, as determined by the Monterey County Water Resources Agency.

Policy S-3.2: Best Management Practices to protect groundwater and surface water quality shall be incorporated into all development.

Policy S-3.3: Drainage facilities to mitigate the post-development peak flow impact of new development shall be installed concurrent with new development.

Policy S-3.5: Runoff Performance Standards that result in an array of site planning and design techniques to reduce storm flows plus capture and recharge runoff shall be developed and implemented, where appropriate, as determined by the Monterey County Water Resources Agency.

Policy S-3.9: In order to minimize urban runoff affecting water quality, the County shall require all future development within urban and suburban areas to implement Best Management Practices (BMPs) as approved in the Monterey Regional Storm Water Management Program which are designed to incorporate Low Impact Development techniques. BMPs may include, but are not limited to, grassy swales, rain gardens, bioretention cells, and tree box filters. BMPs should preserve as much native vegetation as feasible on the project site.

Public Services Element

Water Quality and Supply

Goal PS-2: Assure an Adequate and Safe Water Supply to Meet the County's Current and Long-Term Needs.

Policy PS-2.1: Coordination among, and consolidation with, those public water service providers drawing from a common water table to prevent overdrawing the water table is encouraged.

Policy PS-2.2: The County of Monterey shall assure adequate monitoring of wells in those areas experiencing rapid growth provided adequate funding mechanisms for monitoring are established in the CIFP.

Policy PS-2.3: New development shall be required to connect to existing water service providers where feasible. Connection to public utilities is preferable to other providers.

Policy PS-2.8: The County shall require 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. Implementation shall include standards that could regulate impervious surfaces, vary by project type, land use, soils and area characteristics, and provide for water impoundments (retention/detention structures), protecting and planting vegetation, use of permeable paving materials, bioswales, water gardens, and cisterns, and other measures to increase runoff retention, protect water quality, and enhance groundwater recharge.

Policy PS-2.8: The County shall use discretionary permits to manage construction of impervious surfaces in important groundwater recharge areas in order to protect and manage groundwater as a valuable and limited shared resource. Potential recharge are protection measures at sites in important groundwater recharge areas may include, but are not limited to, the following:

a. Restrict coverage by impervious materials.

b. Limit building or parking footprints.

c. Require construction of detention/retention facilities on large-scale development project sites overlying important groundwater recharge areas as identified by Monterey County Water Resources Agency.

The County recognizes that detention/retention facilities on small sites may not be practical, or feasible, and may be difficult to maintain and manage.

2013 Carmel Valley Master Plan

The 2013 CVMP was enacted as part of the 2010 General Plan and is intended to guide future land use within the 2013 CVMP plan area boundary. The project is subject to the following policies from the 2013 CVMP.

3.0 – Conservation/Open Space

Policy CV-3.4: Alteration of hillsides and natural landforms caused by cutting, filling, grading, or vegetation removal shall be minimized through sensitive siting and design of all improvements and maximum feasible restoration including botanically appropriate landscaping. Where cut and fill is unavoidable on steep slopes, disturbed areas shall be revegetated.

Policy CV-3.8: 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.

Policy CV-3.9: 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-3.10: Predominant landscaping and erosion control material shall consist of plants native to the valley that are similar in habitat, form, and water requirements. The following guidelines shall apply for landscape and erosion control plans:

a. Existing native vegetation should be maintained as much as possible throughout the valley.

b. Valley oaks should be incorporated on floodplain terraces.

c. Weedy species such as pampas grass and genista shall not be planted in the Valley.

d. Eradication plans for weedy species shall be incorporated.

e. The chaparral community shall be maintained in its natural state to the maximum extent feasible in order to preserve soil stability and wildlife habitat and also be consistent with fire safety standards.

Policy CV-3.20: A discretionary permit shall be required for new wells in the Carmel Valley alluvial aquifer. All new wells shall be required to fully offset any increase in extractions from this aquifer (see Policies PS-3.4 and PS-3.5). These requirements shall be maintained until such a time that the Coastal Water project (or its equivalent) results in elimination of all Cal-Am withdrawals in excess of its legal rights.

4.0 – Safety

Policy CV-4.1: In order to reduce potential erosion or rapid runoff:

a. The amount of land cleared at any one time shall be limited to the area that can be developed during one construction season.

b. 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.

c. Native vegetative cover must be maintained on areas that have the following combination of soils and slope:

1. Santa Lucia shaly clay loam, 30–50% slope (SfF)
2. Santa Lucia-Reliz Association, 30–75% slope (Sg)
3. Cieneba fine gravelly sandy loam, 30–70% slope (CcG)
4. San Andreas fine sandy loam, 30–75% slope (ScG)
5. Sheridan coarse sandy loam, 30-75% slope (SoG)
6. Junipero-Sur complex, 50–85% slope (Jc)

Policy CV-4.2: A comprehensive drainage maintenance program should be established by the identification of either sub-basins or valley-wide watershed zones.

Policy CV-4.3: In addition to required on-site improvements for development projects, a fee shall be imposed to help finance the improvement and maintenance of the drainage facilities identified in the Drainage Design Manual for Carmel Valley.

5.0 – Public Services

Policy CV-5.1: Pumping from the Carmel River aquifer shall be managed in a manner consistent with the Carmel River Management Program. All beneficial uses of the total water resources of the Carmel River and its tributaries shall be considered and provided for in planning decisions.

Policy CV-5.2: Water projects designed to address future growth in the Carmel Valley may be supported.

Policy CV-5.3: Development shall incorporate designs with water reclamation, conservation, and new source production in order to:

a. maintain the ecological and economic environment;

b. maintain the rural character; and

c. create additional water for the area where possible including, but not limited to, on-site stormwater retention and infiltration basins.

Policy CV-5.4: 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.

Policy CV-5.5: Parts of the Carmel Valley aquifer are susceptible to contamination from development in areas not served by a regional wastewater treatment facility. Development projects that include an on-site wastewater treatment system shall provide geologic and soils surveys that assess if conditions could preclude or restrict the possibility of satisfactorily locating such a system where it would not pose a threat of contamination to the aquifer. New development on existing lots of record shall be carefully reviewed for proper siting and design of any conventional or alternative on-site

wastewater treatment systems in accordance with standards of the Monterey County Code 15.20, the Central Coast Basin Plan and the Carmel Valley Wastewater Study.

Policy CV-5.6: Containment structures or other measures shall be required to control the runoff of pollutants from commercial areas or other sites where chemical storage or accidental chemical spillage is possible.

Monterey County Ordinances

Grading Ordinance

The Grading Ordinance (Chapter 16.08) was adopted to safeguard health, safety, and the public welfare, to minimize erosion, protect fish and wildlife, and to otherwise protect the natural environment of Monterey County. The Grading Ordinance sets forth rules and regulations to control all grading, including excavations, earthwork, road construction, fills and embankments, and establishes the administration procedure for issuance of permits; and provides for approval of plans and inspections of grading construction.

Erosion Control Ordinance

The Erosion Control Ordinance (Chapter 16.12) was adopted to eliminate and prevent conditions of accelerated erosion that have led to, or could lead to, degradation of water quality, loss of fish habitat, damage to property, loss of topsoil or vegetation cover, disruption of water supply, increased danger from flooding. The Erosion Control Ordinance requires 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; and establishes procedures for administering those provisions.

Urban Stormwater Quality Management and Discharge Control Ordinance

Monterey County Code Chapter 16.14, Urban Stormwater Quality Management and Discharge Control Ordinance (Stormwater Ordinance) was adopted to enhance watercourses within the unincorporated urbanized areas by, amongst other things, controlling the entry of urban pollutants into stormwater runoff that may enter the County storm drain system. This ordinance is applicable to all dischargers located within the unincorporated urbanized areas that discharge directly or indirectly into the County storm drain system.

Floodplain Ordinance

Regulations for floodplains in Monterey County are contained in Chapter 16.16 of Monterey County Code. The purpose of this ordinance is to promote the public health, safety, and general welfare, and to minimize public and private losses due to flood conditions in specific areas. This ordinance applies to all Special Flood Hazards Areas (100-year floodplain) within the jurisdiction of the County, as identified on Flood Insurance Rate Maps, and areas within 200-feet of a river of within 50 feet of a watercourse.

As defined in County Code, development means “any man-made change to improved or unimproved real estate, including but not limited to buildings or other structures, mining, dredging, filling, grading, paving, excavation, or drilling operations” located within the Special Flood Hazard Area. There are more restrictive regulations for development within the FEMA-defined floodway.

The project area falls under Monterey Regional Storm Water Management Program Tier 4 Water Management Zone 1. This requires projects to retain the 95th percentile storm event and to ensure that post-development peak flow rates are less than predevelopment peak flow rates for 2-year through 10-year storm events through detention measures onsite.

The Monterey County Water Resources Agency (MCWRA) is the primary regulatory authority for review and approval of flood control and drainage measures. For flood design criteria, peak runoff rates must not exceed predevelopment flows under comparable storm events, and runoff must not cause erosion. For drainage design criteria, stormwater detention facilities must be sized to limit the 100-year post-development runoff rate to the 10-year predevelopment rate.

Prior County Plans and Policies

As stated in Chapter 1, *Introduction*, discussion pertaining to the 1982 General Plan and the 1986 CVMP is provided for informational purposes only.

1982 Monterey County General Plan

Objectives and policies defined in the 1982 *Monterey County General Plan* (1982 General Plan) and relevant to the Proposed Project and 130-Unit Alternative are provided below.

Objective 5.2: Preserve vegetation where necessary to protect waterways from bank erosion and siltation.

Policy 5.2.1: Owners of property adjacent to waterways or responsible agencies shall be encouraged to maintain healthy vegetation along the drainage course, or provide other suitable means of preventing bank erosion or siltation.

Policy 5.2.2: The County shall establish special procedures for land use, building locations, grading operations, and vegetation removal adjacent to all waterways and significant water features.

Objective 16.2: Reduce the risk from flooding and erosion to an acceptable level by regulating the location, type, and density of land use.

Policy 16.2.3: All new development for which a discretionary permit is required, including filling, grading, and construction, shall be prohibited within 200 feet of the riverbank or within the 100-year floodway except as permitted by ordinance. No new development, including structural flood control projects, shall be allowed within the riparian corridor. However, improvements to existing dikes and levees shall be allowed if riparian vegetation damage can be minimized and at least an equivalent amount and quality of replacement is planted. In addition, exceptions may be made for carefully sited recreational trails.

Policy 16.2.4: All new development, including filling, grading, and construction, within designated 100-year floodplain areas shall conform to the guidelines of the National Flood Insurance Program and policies established by the County Board of Supervisors, with the advice of the Monterey County Flood Control and Water Conservation District.

Policy 16.2.5: All new development, including filling, grading, and construction, proposed within designated floodplains shall require submission of a written assessment prepared by a qualified hydrologist/engineer on whether the development will significantly contribute to the existing flood hazard. Development shall be conditioned on receiving approval of this assessment by the County Flood Control and Water Conservation District.

Objective 21.1: Enhance the quality of water in the County by regulating the type, location, and intensity of land use, and grading operations.

Policy 21.2.1: The County shall require all new and existing development to meet federal, state, and County water quality regulations.

Policy 21.2.3: Residential, commercial, and industrial developments which require 20 or more parking spaces shall include oil, grease, and silt traps, or other suitable means, as approved by the Monterey County Surveyor, to protect water quality; a condition of maintenance and operation shall be placed upon the development.

Policy 21.2.4: The County shall require the installation and maintenance of appropriate check valves on irrigation systems where liquid fertilizers are dispensed.

1986 Carmel Valley Master Plan

The 1986 Carmel Valley Master Plan (CVMP) is part of the 1982 General Plan. As such, the policies outlined in the 1986 CVMP and provided below must be considered in conjunction with the 1982 General Plan.

Policy 3.1.1.2 (CV): As part of the building permit process, the erosion control plan shall include these elements: Provision for keeping all sediment on-site. Provision for slow release of runoff water so that runoff rates after development do not exceed rates prevailing before development. Revegetation measures that provide both temporary and permanent cover. Map showing drainage for the site, including that coming onto and flowing off the property.

Storm drainage facilities shall be designed to accommodate runoff from 10-year or 100-year storms as recommended by the Monterey County Flood Control and Water Conservation District.

Policy 3.1.11 (CV): Development of on-site stormwater retention and infiltration basins is encouraged in groundwater recharge areas subject to approval by the Monterey Peninsula Water Management District, the County Health Department, the County Flood Control and Water Conservation District and the County Surveyor.

Policy 6.1.3 (CV): All beneficial uses of the total water resources of the Carmel River and its tributaries shall be considered and provided for in future planning decisions.

Policy 16.2.3.1 (CV): In order to protect the public health, welfare, and safety, development of land within 200 feet of the nominal Carmel River bank or 30 feet from any tributary bank as shown on the latest United States Geological Survey Topographic Maps shall require a special permit as set forth in the Carmel Valley Floodplain Ordinance. Where development of such an area may not be feasible due to public health, welfare and safety consideration. Density may be transferred from this area to other areas within a parcel.

Policy 16.2.10 (CV): No changes in zoning from FP-2 (stream overflow and backwater areas) to FP-3 (areas protected by dikes or levees) will be permitted except in areas with existing dikes. Also, no new FP-3 District shall be created.

Policy 35.1.3 (CV): Development shall be so designed that additional runoff, additional erosion or additional sedimentation will not occur off of the development site.

Storm drainage facilities shall be designed to accommodate runoff from the 10-year or 100-year storms as recommended by the Monterey County Flood Control and Water Conservation District.

Impact Analysis

Methods for Analysis

The evaluation of hydrology and water quality effects is based on professional standards and the conclusions of technical reports prepared for the project area. The key effects were identified and

evaluated based on the physical characteristics of the project area and the magnitude, intensity and duration of activities. It is assumed that the Proposed Project and 130-Unit Alternative would conform to County building standards, grading permit requirements, and erosion control requirements.

Criteria for Determining Significance

In accordance with CEQA, State CEQA Guidelines, 2010 General Plan plans and policies, 2013 CMVP plans and policies, and agency and professional standards, a project impact would be considered significant if the project would:

A. Alteration of Drainage Patterns

- Substantially alter the existing drainage pattern of the site or area, including changes that result in substantial erosion or siltation on- or offsite.

B. Stormwater Runoff and Drainage Infrastructure

- Substantially increase the rate or amount of surface runoff which would exceed capacity of existing or planned storm drain facilities, cause downstream or offsite drainage problems, or increase the risk or severity of flooding in downstream areas.

C. Water Quality

- Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface water quality or contribute substantial non-point sources of pollution to the Carmel Bay Water Quality Protection Area.

- Violate any water quality standards or waste discharge requirements or otherwise substantially degrade groundwater quality.

D. Groundwater Supply

- Substantially deplete groundwater supplies or interfere substantially with groundwater recharge, resulting in a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level that would not support existing land uses or planned uses for which permits have been granted).

E. Risk of Flooding

- Result in construction of habitable structures within a 100-year floodplain, which would expose people or structures to a significant risk of loss, injury, or death due to flooding.

- Expose people or structures to a significant risk of loss, injury, or death involving flooding.

F. Risk of Inundation by Seiche, Tsunami, or Mudflow or Due to Sea Level Rise

- Expose people, structures, or facilities to increased risk of inundation by seiche, tsunami, or mudflow or coastal flooding related to sea level rise.

Impacts and Mitigation Measures

A. Alteration of Drainage Patterns

Impact HYD-1: Alteration of Surface Drainage Patterns That Results in Increased Erosion or Siltation (less than significant with mitigation)

Overview

The 81-acre project area is currently a golf course with gentle slopes and undulating topography. The majority of stormwater currently infiltrates the ground, and what runoff is left is routed through swales and drainage pipes to the Carmel River. As shown in **Table 3.2-5**, Proposed Project development would result in an estimated 25 acres of new impervious surfaces.

The 83 acre proposed 130-Unit Alternative is nearly entirely golf course as well, with the exception of Lot 130 which has a maintenance facility. As shown in **Table 3.2-5**, development of the 130-Unit Alternative would result in approximately 14 acres of new impervious surfaces in the residential element.

Table 3.2-5: Estimated New Impervious Areas for the Proposed Project and 130-Unit Alternative

Alternative	Total Project Area (acres)	Residential Element (w/roads) (acres)	Open Space/Common Area within Residential Element (acres)	Residential without Open Space/ Common Areas (acres)	Total New Impervious Area for Residential Element (acres)
Proposed Project	81	45	3	42	25[1]
130-Unit Alternative	83	38	14	24	14[1]

Notes:

[1] New impervious surfaces were calculated using the total area of the development area excluding the habitat preserve, common areas, and park areas and then applying a 60% impervious area factor for buildings and roadways. The 60% factor is from the *Preliminary Stormwater Management Plan* (Balance Hydrologics 2005c).

Proposed Project

Construction

Construction effects on water quality, including erosion and siltation, are addressed under Impact HYD-3.

Operation

Implementation of the Proposed Project would change existing site drainage patterns and also result in new impervious surfaces associated with the creation of housing and roads, thereby preventing precipitation from infiltrating and causing it to pond or run off.

Stormwater Management

A preliminary stormwater management plan (Balance Hydrologics 2005a) has been prepared to address stormwater requirements for the Project. The measures identified in the plan, and recent updates (Balance Hydrologics 2005c; L&S Engineering and Surveying, Inc. 2014), would be implemented to maintain onsite infiltration and control peak flows. **Figure 2-5** shows the preliminary drainage plan for the Proposed Project. The final drainage plan would include, but is not limited to, the following post-construction BMPs.

- Good housekeeping: To minimize the amount of pollutants entering the storm drain system, project roadways and other paved areas shall be cleaned regularly using street sweeping equipment. Additionally, litter and debris that may accumulate on the streets of the project site will be regularly collected and properly disposed. These activities will be the responsibility of Rancho Cañada Village and/or its contractors.
- Bioswales: Grass strips, high infiltration substrates, and grassy swales will be used where feasible throughout the project site to reduce runoff, serve as biofilters, and provide initial stormwater treatment. This type of treatment will apply particularly to parking lots.
- Velocity dissipation measures: Physical devices will be placed at outlets of pipes and channels to reduce the velocity or the energy of exiting water. Outlet protection helps to prevent scour and to minimize the potential for downstream erosion by reducing the velocity or energy of concentrated stormwater flows.

The Proposed Project includes a conventional gravity-flow storm drain network to collect runoff from the site and route it to the Carmel River. Runoff would be directed to stormwater infiltration areas prior to being discharged into the river. The stormwater infiltration areas would cover a total of 0.8 acre and be located in the southern portion of the project site, within the proposed habitat reserve area, on the northern Carmel River floodplain.

Peak flows generated within the eastern portion of the project area would increase from 5 to 21 cfs for the 10-year storm, and from 8 to 31 cfs for the 100-year storm. Peak flows generated within the western portion of the project area would increase from 9 to 36 cfs for the 10-year storm, and from 13 to 54 cfs for the 100-year storm. Peak stormwater flows generated within the project area would be routed directly to the Carmel River without detention. Peak flows on the Carmel River generally occur several hours later than local runoff peak flows at this location. Utilizing direct conveyance of local runoff to the river would ensure that the two peak flows are not coincident and that stormwater produced within the project area does not increase peak flows on the Carmel River.

The Proposed Project falls under Monterey Regional Storm Water Management Program Water Management Zone 1 in Tier 4 (create/replace 22,500 square feet or more of impervious surface). This requires the Proposed Project to retain the 95th percentile storm event and to ensure that post-development peak flow rates are less than predevelopment peak flow rates for 2-year through 10-year storm events through detention measures on site. The infiltration system will be designed to infiltrate runoff from small to moderate rainfall events, up to and including the 95th percentile storm. Other conventional storm drain facilities, such as earth swales, lined ditches, concrete curb and gutter, manholes, catch basins, and underground storm drain pipes, would be incorporated into the Proposed Project to intercept stormwater flows at the project site boundaries, collect water within the development, and convey it to the stormwater infiltration basins.

Erosion and Scour due to Drainage Changes

Due to fill placement within portions of the existing floodplain, based on a relatively frequent 10-year storm flow, velocities in the main channel of the Carmel River would increase markedly for a short distance (about 100 feet) at a location roughly parallel with the eastern end of the proposed development. Velocities in this area would increase with the Proposed Project and could potentially cause erosion of larger sediment, resulting in increased sedimentation under post-project conditions, but because of the short distance of channel scour, the channel would not be permanently changed. The channel is expected to adjust to the change in velocities, eventually reaching a new equilibrium. Local bank erosion could occur during this period. If this occurs, then there could be loss of riparian vegetation along the eroded bank. These impacts are considered *potentially significant*. Implementation of **Mitigation Measure BIO-3** Provide Funding Assurances and Reporting Concerning Restoration Progress and Success, and **Mitigation Measure BIO-7**, Monitor Bank Erosion in Project Reach and Restore Riparian Vegetation and River Bank As Necessary, described in Chapter 3.3, *Biological Resources,* would ensure that this impact would be lowered to *less-than-significant* levels.

In addition, with the alterations of the floodplain, velocities in the right overbank may increase in one location under post-project conditions (at the eastern end of the proposed excavated basin). The increase in velocities in this area may result in erosion under bare-earth conditions. Application of the planting plan defined in the 2006 *Rancho Cañada Village Restoration and Mitigation Plan* (2006 Restoration Plan) for this area would ensure that this potential impact would remain *less-than-significant*.

Managing Offsite Drainage

The Proposed Project is not required to provide maintenance for offsite drainage from County drainage areas. However, offsite run-on originating in DA 26 would be collected downstream of the existing detention basin system on the Carmel Middle School property and routed through the project area in a new 18-inch storm drain line. This line would also collect runoff from the eastern portion of the developed area and route it through a larger 40-inch storm drain leading to the proposed stormwater infiltration area to the east. A second onsite drainage 30-inch line[2] would be installed to collect runoff from the western portion of the developed area to route flows through a larger 42-inch storm drain line leading to the proposed stormwater filtration area to the west.

Stormwater flows generated in DA 27 offsite would continue to flow along the ditch along the Carmel Middle School and westward toward CSA-50 as they do at present (Balance Hydrologics 2014b). While the offsite DA 27 flows may continue to flow west of the project site, the Project would not change the offsite DA 27 flows since they do not cross the project area. For local drainage, the Proposed Project would install a 24-inch line at the existing swale west of the project site just north of the Rio Road extension that would drain to an existing basin/wetland/swale located south of the residential area that is hydrologically connected to the Carmel River.[3]

[2] As shown in **Figure 2-5**, the northwestern area of the project site would drain into an 18-inch line. This line would continue south and connect to a 24-inch line and then a 30-inch line. Only the 30-inch line is discussed above.

[3] The Project Applicant has indicated that in the event the County chooses to raise Val Verde Road as part of a CSA-50 flood protection project, the Project Applicant would be willing to accommodate a 10 foot by 10 foot culvert under the Rio Road extension to accommodate the 100-year offsite flows from DA 27 (Zischke pers. comm.).

As noted in Chapter 2, *Project Description*, the County intends to construct a drainage channel from Carmel Valley Road, north of the project site, to the Carmel River that would run along the project site's western boundary to handle DA 27 flow. In order to accommodate the County's future drainage channel, the developer, at the time of construction would install a below-grade 84-inch buried drainage pipe on the project site that could connect to the drainage channel, when built, at a future date.

Conclusion

Mitigation Measures HYD-1, HYD-2, and HYD-3 would ensure the drainage facilities are properly designed, maintained and monitored so they operate as intended. With implementation of the proposed drainage system approved by MCWRA and with implementation of **Mitigation Measures BIO-3** and **BIO-7**, the Proposed Project would not substantially alter the existing drainage pattern of the site in a manner which would result in flooding or substantial erosion or siltation on or off the site and thus would have a *less-than-significant* impact.

130-Unit Alternative

Construction

Construction effects on water quality, including erosion and siltation, are addressed under Impact HYD-3.

Operation

Drainage changes resulting from the 130-Unit Alternative would be similar to the Proposed Project during operation, although the amount of new impervious space within the residential element would be much lower than the Proposed Project, and there could be some areas of new impervious surfaces at Lot 130. **Figure 2-9** shows the preliminary drainage plan for the residential element of the 130-Unit Alternative. There is no preliminary drainage plan for Lot 130.

Stormwater Management

The total retention/detention volume for the 130-Unit Alternative is 108,665 cubic feet. Due to the grading of the site, this volume would be split between three different infiltration/detention areas, as shown in **Figure 2-9** (L&S Engineering and Surveying, Inc. 2014). Stormwater runoff from the 130-Unit Alternative would be routed to one of the three areas by an underground storm drain system that collects runoff captured by roadway swales or curb and gutter. All runoff would be collected and controlled onsite. Overflows would allow for the controlled release of regulated and larger storm events to the basins created at the southern end of the property for further infiltration/retention. A vegetated drainage swale at the north edge of the property would maintain existing offsite run-on drainage paths and a new overflow standpipe for the neighboring property's detention basin (referred to as detention basin systems on the Carmel Middle School property in the discussion above[4]) would control and route offsite run-on from the adjacent property through the 130-Unit Alternative's proposed infiltration detention area 1 and 2 to the south (L&S Engineering and Surveying, Inc. 2014).

However, since this is not a project-related impact, the installation of a culvert is not a required project mitigation measure and is not included as part of the Proposed Project.

[4] Note: The DA 26 detention area on Carmel Middle School property is referred to as the neighboring property's detention basin in the 130-Unit Alternative analysis for consistency purposes with the drainage plan figures.

Proposed basins at the southern end of the property were created to offset the proposed earthwork within FEMA Zone AE. The volume of those basins equates to 3,023,758 cubic feet. One of the infiltration/detention areas for the 130-Unit Alternative is incorporated into the volume of these basins. The required retention/detention volume for this area equals 8,483 cubic feet. This results in an excess retention volume of 3,015,275 cubic feet for the 130-Unit Alternative (L&S Engineering and Surveying, Inc. 2014).

The proposed 130-Unit Alternative also falls under Monterey Regional Storm Water Management Program Water Management Zone 1, in Tier 4. As noted above, this requires the 130-Unit Alternative to retain the 95th percentile storm event and to ensure that post-development peak flow rates are less than predevelopment peak flow rates for 2-year through 10-year storm events through detention measures onsite.

With implementation of the proposed drainage system approved by MCWRA, the residential element of the 130-Unit Alternative would not substantially alter the existing drainage pattern of the site in a manner which would result in substantial erosion or siltation on or off the site.

Erosion and Scour

The hydraulic analysis for the 130-Unit Alternative was done as part of the CSA 50 report (Balance Hydrologics 2014b). Based on that analysis, the 130-unit Alternative would not result in substantial changes in velocities in the Carmel River channel or the overbank areas and thus would not be expected to result in substantial erosion and scour, and thus this impact would be *less-than-significant* level.

Managing Offsite Drainage

Similar to the Proposed Project, the residential element of the 130-Unit Alternative would accommodate DA 26 offsite flows with the proposed drainage facilities. Stormwater flows generated in DA 27 would continue to flow along the ditch along the Carmel Middle School and the westward toward CSA-50 as they do at present (Balance Hydrologics 2014b).[5] Drainage plans for Lot 130 were not provided. **Mitigation Measure HYD-1** would require such drainage plans to be developed and reviewed and approved by the County before issuance of building permits (Lot 130).

As noted in Chapter 2, *Project Description*, the County intends to construct a drainage channel from Carmel Valley Road, north of the project site, to the Carmel River that would run along the project site's western boundary to handle DA 27 flow. In order to accommodate the County's future drainage channel, the developer, at the time of construction would install a below-grade 84-inch buried drainage pipe on the project site that could connect to the drainage channel, when built, at a future date.

Conclusion

Mitigation Measures HYD-1, HYD-2 and HYD-3 would ensure the drainage facilities are properly designed, maintained and monitored so they operate as intended. With implementation of these measures, this impact related to the residential element would be *less than significant*.

[5] As noted above, the Project Applicant has indicated that in the event the County chooses to raise Val Verde Road as part of a CSA-50 flood-protection project, the Project Applicant would be willing to accommodate a 10 foot by 10 foot culvert under the Rio Road emergency access road to accommodate the 100-year offsite flows from DA 27

Mitigation Measure HYD-1: Prepare and Implement a Stormwater Control Plan

Prior to recordation of a final map, the applicant shall submit to Monterey County RMA Environmental Services a Stormwater Control Plan prepared by a registered professional engineer, addressing Post-Construction Stormwater Management Requirements (PCRs) for Development Projects in the Central Coast region. The Plan shall include the location of drainage facilities and construction details. A report with supporting calculations shall also be provided. The Plan shall be reviewed by a licensed Geotechnical Engineer to ensure conformance with the Geotechnical Investigation or Engineering Geology Report.

Mitigation Measure HYD-2: Prepare and Implement Operation and Maintenance Plan for Stormwater Control Measures

Prior to recordation of a final map, the applicant shall submit an Operation and Maintenance Plan to RMA Environmental Services for review and approval. The plan shall be prepared by a registered Professional Engineer and include, at a minimum, the following: 1) Site map identifying all structural Stormwater Control Measures requiring O&M practices to function as designed; 2) O&M procedures for each structural Stormwater Control Measure, including, but not limited to, LID facilities, retention/detention basins and proprietorship devices; 3) O&M Plan shall include short- and long-term maintenance requirements, recommended frequency of maintenance and estimated maintenance costs.

Mitigation Measure HYD-3: Enter into Maintenance Agreement for Stormwater Control Measures

Prior to recordation of a final map, the applicant shall enter into Maintenance Agreement with Monterey County. The applicant shall submit a signed and notarized Agreement to RMA Environmental Services for review and approval. The Agreement shall clearly identify the responsible party for ongoing maintenance of structural Stormwater Control Measures. The Agreement shall contain provisions for an annual report to be prepared by a registered Professional Engineer. The annual report shall be submitted to RMA-Environmental Services for review and approval no later than August 15 of each year. All recommended maintenance shall be completed by October 15 of the same year. If maintenance is required, certification shall be provided that all recommended maintenance has been completed before the start of the rainy season.

B. Stormwater Runoff and Drainage Infrastructure

Impact HYD-2: Result in Increased Stormwater Runoff Due to an Increase in Impervious Surfaces and Topographic Alterations Resulting in Drainage or Flooding Impacts (less than significant with mitigation)

Proposed Project

As described under Impact HYD-1, stormwater currently infiltrates the ground at the project site, and remaining runoff flows to the Carmel River. As shown in **Table 3.2-5**, Proposed Project development would result in approximately 25 acres of new impervious surfaces. The introduction

(Zischke pers. comm.). However, since this is not an impact related to the 130-Unit Alternative, the installation of a culvert is not a required mitigation measure, and is not included as part of the 130-Unit Alternative.

of new impervious surfaces would reduce the ground surface available for infiltration of rainfall and increase surface stormwater runoff. Increased runoff could contribute to localized flooding of the Carmel River and increase the risk of downstream flooding. The Proposed Project would include the installation of new storm drainage facilities, including conventional drainage facilities and stormwater infiltration areas. The infrastructure systems would be designed and engineered with sufficient capacity to accommodate anticipated peak flows, minimizing the potential for upset.

These impacts would be *potentially significant*. With implementation of **Mitigation Measures HYD-1** and **HYD-2** to ensure the drainage facilities are properly maintained and monitored so they operate as intended this impact would be *less than significant*.

130-Unit Alternative

The volume of runoff for the residential element of the 130-Unit Alternative would be far less than the Proposed Project due to the smaller number of residential units and the smaller increase in impervious space. The 130-Unit Alternative would include the installation of new storm drainage facilities in the residential element, including conventional drainage facilities and stormwater infiltration areas. The infrastructure systems would be designed and engineered with sufficient capacity to accommodate anticipated peak flows, minimizing the potential for flooding downstream areas. As currently designed this system has excess capacity. **Mitigation Measures HYD-1** and **HYD-2** would ensure the drainage facilities are properly maintained and monitored so they operate as intended, this impact would be maintained at a *less-than-significant* level.

The 130-Unit Alternative would have different impacts related to Lot 130. As there is no design for the potential Lot 130 uses, project-level analysis of stormwater runoff and infrastructure will need to be done as part of subsequent review (or prior to issuance of building permits) as required by **Mitigation Measure HYD-3**. With this mitigation, impacts related to stormwater runoff and infrastructure for the 130-Unit Alternative would be reduced to *less-than-significant* levels.

C. Water Quality

Impact HYD-3: Degrade Surface Water Quality during Construction and from Operation (less than significant with mitigation)

Proposed Project

Construction

Surface Water

Construction-related earth disturbing activities would occur in the development of the Proposed Project. These activities could cause soil erosion and sedimentation to local waterways. Construction of new sewer pipelines, retention basins, and grading would require heavy equipment such as earth-moving devices. Large trucks would be used in the transportation of construction materials to the site. Such machines have potential to leak hazardous materials that may include oil and gasoline. In addition, improper use of fuels, oils, and other construction-related hazardous materials, such as pipe sealant, may also pose a threat to surface or groundwater quality.

To reduce or eliminate construction-related water quality effects, before onset of any construction activities, the Project Applicant will demonstrate coverage under the General Construction Permit. The Regional Water Board and the County would be responsible to ensure that construction

activities comply with conditions in this permit, which will require development of a SWPPP, implementation of BMPs identified in the SWPPP, and monitoring to ensure that effects on water quality are minimized.

As part of this process, the Project Applicant would be required to implement multiple erosion[6] and sediment control[7] BMPs in areas with potential to drain to surface water. These BMPs would be selected to achieve maximum sediment removal and represent the best available technology that is economically achievable. BMPs to be implemented may include, but are not limited to, the following measures.

- Erosion Control Measures: soil stabilization measures, such as hydraulic mulch, hydroseeding, geofabric, and other soil binders will be applied to disturbed areas.
- Sediment Control Measures: measures, such as silt fences, staked fiber rolls/straw wattles, silt/sediment basins and traps, storm drain inlet protection, street sweeping, will be implemented to prevent erosion and sedimentation near water bodies and storm drains.
- Drainage facilities in downstream offsite areas will be protected from sediment using BMPs acceptable to the County and the Regional Water Board.
- Grass or other vegetative cover will be re-established on the construction site as soon as possible after disturbance.

Final selection of BMPs would be subject to review by the County. The County would need to verify that an NOI and SWPPP have been filed before allowing construction to begin. The County or its agent (i.e., State Water Board Qualified Stormwater Practitioner) shall perform routine inspections of the construction area to verify that the BMPs specified in the SWPPP are properly implemented and maintained. The County would notify contractors immediately if there is a noncompliance issue and will require compliance.

The County would verify that coverage under the General Construction Permit and the Regional Water Board's General Low Threat Permit, if applicable, has been obtained before allowing dewatering activities to water bodies to begin. Dewatering requirements, such as treatment, monitoring and report, would be implemented.

These impacts are considered *potentially significant*. Implementation of the SWPPP, **Mitigation Measure GEO-3** (Prepare and Implement an Erosion and Sediment Control Plan, refer to Chapter 3.1, *Geology, Seismicity, and Soils*) and **Mitigation Measures HYD-4** and **HYD-5** (described further below), would ensure that impacts would be reduced to *less-than-significant* levels.

Groundwater

Trenching and excavation associated with the Proposed Project are not expected to reach a depth that can expose the water table, in which a path to the groundwater basin may become available for contaminants to enter the groundwater system. If this were to occur, primary construction-related contaminants that could reach groundwater would include oil and grease and construction-related

[6] Erosion control measures are source control measures that protect the soil surface and prevent soil particles from being detached by rainfall, flowing water, or wind.

[7] Sediment control measures are those that trap soil particles after they have been detached and moved by rain, flowing water, or wind.

hazardous materials. Discharge of construction-related dewatering effluent could result in the release of contaminants to surface water.

In addition, if dewatering to waters of the United States or state is necessary, it would be conducted according to the Central Coast Regional Water Quality Control Board General Low Threat Permit. Before discharging any dewatered effluent to surface water, the Project Applicant would obtain a General Low Threat Permit. Depending on the volume and characteristics of the discharge, coverage under the State Water Board's General Construction Permit or the Regional Water Board's General Dewatering Permit is possible. As part of the permit, the permittee would design and implement measures as necessary so that the discharge limits identified in the relevant permit are met. As a performance standard, these measures would be selected to achieve maximum sediment removal and represent the best available technology that is economically achievable. Implemented measures may include retention of dewatering effluent until particulate matter has settled before it is discharged, use of infiltration areas, and other BMPs. Final selection of water quality control measures would be subject to approval by the County. With implementation of the SWPPP and potentially the requirements of a Low Threat Permit, impacts would be reduced to *less-than significant* levels.

Operation

As discussed in Impact HYD-1, the Project would result in an increase in impervious surfaces. As such, the Proposed Project could increase stormwater and non-stormwater runoff, transporting contaminants to adjacent receiving waters. Contaminated runoff waters could flow into the Carmel River and further downstream into the Carmel Lagoon and could degrade the water quality of these water bodies.

During the dry season, vehicles release contaminants onto the impervious surfaces where they will accumulate until the first storm event. During this initial storm event or "first flush," the concentrated pollutants would be transported via runoff to stormwater drainage systems. Anticipated runoff contaminants associated with the Proposed Project include sediment, pesticides, oil and grease, metals, bacteria, and trash.

The Preliminary Stormwater Management Plan described above would be required to include BMPs to maximize stormwater quality. The BMPs will include a combination of source control, structural improvements, and site design to the extent required to ensure compliance with the CWA and regulations noted in the *Regulatory Setting*.

The proposed development is located in an area identified as "Urbanized Area C" in the Monterey Regional Storm Water Management Plan (SWMP). A homeowner's association, community services district, or similar entity would be formed for the maintenance of roads, drainage facilities, erosion control improvements, and open spaces. The Project Applicant would enter into a Drainage Systems Agreement with the County. The Agreement would include requirements for the type and frequency of cleaning and maintenance of catch basins, sediment traps, stormwater inlets, and other drainage facilities. The storm drainage system would be maintained on a regular basis to remove pollutants, reduce high pollutant concentrations during the first flush of storms, prevent clogging of the downstream conveyance system, and maintain the catch basins sediment trapping capacity. The homeowner's association, or similar responsible entity, would provide an annual drainage report to the MCWRA for review and approval. An annual erosion control report, analyzing Carmel River bank erosion adjacent to the project site, would also be submitted to the MCWRA.

The Proposed Project's stormwater drainage system, which includes two infiltration basins and conventional drainage facilities, would treat surface runoff. With implementation of **Mitigation Measures HYD-1** and **HYD-2** to ensure the stormwater drainage system is properly maintained and monitored so it operates as intended, impacts on water quality as it relates to stormwater runoff would be reduced to a *less-than-significant* level.

130-Unit Alternative

Construction

Impacts of construction of the 130-Unit Alternative on surface water and groundwater quality would be similar to those of the Proposed Project. All relevant regulatory requirements, including preparation and implementation of a SWPPP and potentially requirements of a Low Threat Permit would apply. Impact of construction of the residential element would be less than the Proposed Project due to a smaller area of construction and less fill. However, this alternative would result in slightly larger area of construction related to the future Lot 130 development.

The 130-Unit Alternative's impact on water quality during construction would be *potentially significant*. Implementation of a SWPPP, **Mitigation Measure GEO-3** (Prepare and Implement an Erosion and Sediment Control Plan, refer to Chapter 3.1, *Geology, Seismicity, and Soils*), and **Mitigation Measures HYD-4** and **HYD-5** would ensure that impacts would be reduced to a *less-than-significant* level.

Operation

Operation of the 130-Unit Alternative would have similar water quality impacts as those for the Proposed Project but would result in a different area and an additional location of new impervious surfaces. Although the residential area of the 130-Unit Alternative would result in approximately 14 acres of new impervious surfaces, which would be much less than the Proposed Project, the new impervious area resulting from development of Lot 130 is not yet known. This alternative would result in a new volume of polluted stormwater runoff from Lot 130 compared to existing conditions. This impact would be *potentially significant*.

The proposed stormwater drainage system for the 130-Unit Alternative described in Impact HYD-1 includes three different infiltration/detention areas and vegetated drainage swales that would treat surface runoff. With the proposed stormwater drainage system, implementation of **Mitigation Measures HYD-1** and **HYD-2** to ensure the stormwater drainage system is properly maintained and monitored so it operates as intended, and implementation of **Mitigation Measure HYD-3** to address drainage for Lot 130, operational impacts on water quality would be reduced to a *less-than-significant* level.

Mitigation Measure HYD-4: Implement a Spill Prevention and Control Program

Prior to construction, the Project Applicant will develop and implement a spill prevention and control program to minimize the potential for, and effects from, spills of hazardous, toxic, or petroleum substances during construction activities for all contractors. The program will be completed before any construction activities begin. Implementation of this measure will comply with state and federal water quality regulations.

The County will review and approve the spill prevention and control program before onset of construction activities. The County will routinely inspect the construction area to verify that the

measures specified in the spill prevention and control program are properly implemented and maintained. The County will notify contractors immediately if there is a noncompliance issue and will require compliance.

The federal reportable spill quantity for petroleum products, as defined in the EPA's CFR (40 CFR 110) is any oil spill that (1) violates applicable water quality standards, (2) causes a film or sheen upon or discoloration of the water surface or adjoining shoreline, or (3) causes a sludge or emulsion to be deposited beneath the surface of the water or adjoining shorelines.

If an appreciable spill has occurred and is reportable, the contractor's superintendent will notify the County and the County will need to take action to contact the appropriate safety and clean-up crews to ensure the spill prevention plan is followed. A written description of reportable releases must be submitted to the Regional Water Board. This submittal must include a description of the release, including the type of material and an estimate of the amount spilled, the date of the release, an explanation of why the spill occurred, and a description of the steps taken to prevent and control future releases. The releases would be documented on a spill report form.

If surface water or groundwater quality levels have been degraded in excess of water quality standards, **Mitigation Measure HYD-5** would be required and would reduce this impact to a *less-than-significant* level.

Mitigation Measure HYD-5: Implement Measures to Maintain Surface Water or Groundwater Quality

If an appreciable spill has occurred and results determine that project activities have adversely affected surface water or groundwater quality, a detailed analysis will be performed by a Registered Environmental Assessor to identify the likely cause of contamination. This analysis will conform to American Society for Testing and Materials (ASTM) standards, and will include recommendations for reducing or eliminating the source of mechanisms of contamination. Based on this analysis, the Project Applicant will select and implement measures to control contamination, with a performance standard that groundwater quality must be returned to baseline conditions. These measures will be subject to approval by the County.

D. Groundwater Supply

Impact HYD-4: Substantially Deplete Groundwater Supplies or Interfere with Groundwater Recharge (less than significant)

Proposed Project

Construction

During construction, excavation for the Proposed Project would be required for removal and installation of utilities (gas mains, electrical distribution systems, and storm drains), building foundation, and other infrastructure. The depth to groundwater at the project site is typically 5 to 30 feet below ground surface. Groundwater levels increase rapidly during periods of recharge by the Carmel River and may decline by as much as 50 feet during drought years. The groundwater within the project area was detected at a well location at 15 feet below the surface and pumping occurs at 49 feet below the surface. Although utility improvements and other activities during construction

would excavate areas, potential dewatering activities would be temporary and minor and would be subject to the requirements of the SWPPP. Potential use of groundwater during construction for dust control, concrete pouring, and other activities would be minimal and temporary and, therefore, would not result in groundwater depletion.

Therefore, because potential dewatering and groundwater use for the Proposed Project would be temporary and minimal, impacts from construction on groundwater recharge and supplies would be *less than significant*. No mitigation is required.

Operation

During operation, groundwater recharge[8] may be affected by the Proposed Project. The Proposed Project would include approximately 25 acres of new impervious surface. The remaining portions of the project site would maintain existing groundwater recharge capabilities. Stormwater runoff from small to moderate rainfall events would be routed to infiltration areas onsite, providing recharge of storms up to the 95th percentile event.

Stormwater infiltration areas would collect and store stormwater runoff for percolation and release into new outfall pipes in severe storms. Low-impact development stormwater treatment methods such as this would be designed in accordance with the MCWRA and state agency policy and the design would ensure infiltrated groundwater would not cause underlying groundwater to exceed water quality objectives or adversely affect beneficial uses. These areas would promote infiltration and allow for the removal of pollutants as stormwater percolates down through the soil.

Annual post-project groundwater recharge at the project site has been estimated to be 33.2 acre-feet (Balance Hydrologics 2005a) exclusive of infiltration in pervious areas of the project site, which may be substantial. Average annual pre-project groundwater recharge of approximately 34.9 acre-feet was estimated using average annual rainfall, irrigation, and evapotranspiration (Balance Hydrologics 2005a). This value is only 1.7 acre-feet greater than the estimated recharge of 33.2 acre-feet for post-project conditions.

The Proposed Project is anticipated to use groundwater as a supply but would result in a reduction in withdrawals over current usage (see Chapter 3.10, *Public Services, Utilities, and Recreation*). In order to meet the Proposed Project's water demands Cal-Am would use pumped groundwater from onsite wells or a connection to Cal-Am facilitated by dedication of an appropriate amount of the applicant's water right to Cal-Am. Overall annual water use during Proposed Project operation would decrease because existing baseline golf course irrigation (approximately 204 acre-feet per year [AFY] on average) associated with the golf course that would be removed is much higher than the estimated water demand for the Proposed Project (estimated average of 115 AFY).

Therefore, with implementation of stormwater infiltration areas for recharge and the estimated minimal change in recharge combined with a reduction in water supply withdrawals, impacts on groundwater supplies would be *less than significant*. From a water supply point of view, the reduction in water use would have a *beneficial* impact on the Carmel River aquifer. No mitigation is required.

[8] Recharge is determined by the ability of water to infiltrate into the soil.

130-Unit Alternative

Construction

Potential impacts on groundwater conditions during construction of the 130-Unit Alternative would be the similar to those for the Proposed Project. Therefore, because potential dewatering and groundwater use for the Proposed Project would be would be temporary and minimal, and SWPPP requirements would address any associated water quality issues, impacts from construction of the 130 Unit Alternative on groundwater recharge and supplies would be *less than significant*. No mitigation is required.

Operation

Groundwater conditions for the 130-Unit Alternative would be similar to the Proposed Project during operation in regards to groundwater quality but different in terms of groundwater supply.

The 130-Unit Alternative would include approximately 14 acres of new impervious surface in the residential element. Lot 130 is not likely to substantially change the amount of impervious space from existing conditions with the maintenance facility. The proposed stormwater treatment areas would be designed to accommodate any potential runoff volumes based on the additional new impervious area and would allow for infiltration.

Annual water use during operation of the 130-Unit Alternative would decrease because the golf course baseline irrigation (approximately 204 AFY on average) is greater than the 130-Unit Alternative water demand (estimated average of 130 AFY, including potential water transfers to other Cal-Am users).

Therefore, with construction and operation of stormwater infiltration areas for recharge and reduced overall water use per year, groundwater depletion would be avoided, and impacts on groundwater recharge and supplies would be *less than significant*. From a water supply point of view, the reduction in water use would have a *beneficial* impact on the Carmel River aquifer. No mitigation is required.

E. Risk of Flooding

Impact HYD-5: Place Housing or Structures Within a 100-Year Flood Hazard Area and Expose People or Structures to a Significant Risk of Loss, Injury, or Death Involving Flooding (less than significant with mitigation)

Proposed Project

Impacts Associated with Inundation

As shown in **Figure 3.2-3**, housing for the Proposed Project would not be built within the current FEMA floodway, but fill would be placed within the 100-year floodplain (Balance Hydrologics 2014b). The land where structures are built would be raised sufficiently to keep structures above the 100-year flood elevation, reducing the likelihood of flooding in the Proposed Project development. While the houses in Rancho Cañada are unlikely to be flooded, the fill on which they are built and increases in runoff from new impervious area have the potential to cause a constriction in the river channel during high flow events, which could raise water levels upstream.

A portion of the northern Carmel River floodplain would be excavated to provide fill material for a building pad; all structures would be placed on this building pad above the base flood elevation and, therefore, outside of the 100-year floodplain. In addition, no fill would be placed within the regulatory floodway (Balance Hydrologics 2005b). The County floodplain regulations allow fill in the floodway fringe, which is the area within the 100-year flood zone, but outside of the floodway. The floodway limit is defined such that, if fill intruded on the floodway, there would be potential for the river upstream of the fill to rise more than 1 foot. Because the Proposed Project would not be intruding on the floodway, this project is acceptable under FEMA guidelines and County floodplain regulations. A Conditional Letter of Map Revision has been approved by FEMA, which would effectively move the floodplain and floodway boundaries if the Project is built as proposed so that none of the development area would be located within the floodway or floodplain.

The Proposed Project would have a relatively small effect on water surface elevations during flood events. A hydraulic model analysis of existing and post-project water surface elevations indicates that a maximum increase of 0.75 feet occurs approximately 700 feet upstream of the downstream end of the project area. This value was determined by comparing the post-project water surface elevation at Cross-Section 52 reported in Balance Hydrologics' May 2006 model results to the existing conditions water surface elevation at the same location as reported in Balance Hydrologics' January 2006 model results. This increase is located within the project area boundary, and all project structures would be placed above the post-project water surface elevation at this location (36.6 feet).

The maximum post-project increase at the upstream limit of the hydraulic model is 0.11 feet, based on the same model comparison described above. Given that the upstream limit of the model is in the middle of the Rancho Cañada Golf Club golf course, it is expected that the difference in water surface elevations would attenuate to essentially zero at the upstream end of the golf course. Downstream of the project area, the modeled 100-year water surface elevations are unchanged.

The modeled existing and post-project 100-year water surface elevations at the proposed Rio Road location are 33.8 feet (Balance Hydrologic 2006a and 2006b), while the existing ground elevation at the same location is 35.5 feet.

It is important to note that the hydraulic modelling done by Balance Hydrologics in 2006 used more conservative flooding assumptions than those in the latest FEMA study (Federal Emergency Management Agency 2009) and, thus, the EIR analysis would, if anything, overstate the water surface elevations of the Proposed Project (Balance Hydrologics 2014a).

Impacts Associated with Redirected Flows

During some flood events, the Carmel River is expected to rise high enough to spread onto the right bank in the project area (**Figure 3.2-3**). At the upstream (east) end of the project area, such flood flows would likely enter the excavated basin along its eastern edge, spilling over a drop of about 8 to 10 feet. It is possible that flows spilling over this drop could scour the steep slope, causing a headcut back toward the river. If the headcut extends far enough, the channel may shift course and end up flowing through the excavated area. This would be undesirable because it would bring the river close to the houses adjacent to the excavated area and possibly redirect the river downstream of the project area.

This impact would be *potentially significant*. Implementation of **Mitigation Measure HYD-6** would ensure that the impact would be reduced to *less than significant*.

There is an existing unconsolidated berm near the southwest corner of the project area that may be subject to erosion during overbank flows on the north bank. However, the Carmel River embankment is wooded at and upstream of the berm, and there are mature trees throughout the 100-year floodplain on the southwestern side of the project. Model results show that these trees and other roughness elements reduce flow velocities and shear stresses by a minimum of 50% (Wallace et al., 2014) from those experienced within the main river channel during the 100-year flood scenario. The model results show overbank velocities and shear stresses in the area of the berm are predicted to be approximately 4.5 feet/second and less than 1 pound/square foot respectively in the 100-year flood scenario. Compared to hydraulic modeling of the preproject conditions, overbank flow velocity during the 100-year flood event for the downstream, western end of the Rancho Cañada project is predicted to increase from 3.27 feet/second to 4.45 feet/second, an increase of 1.18 feet/second. Shear stress at the same location is predicted to increase from 0.39 to 0.82 pounds/square foot, an increase of 0.43 pounds/square foot. Typical permissible velocities for established streambanks with vegetation range from 3 to 8 feet/second, and typical permissible shear stresses are up to 3 pounds/square foot (NEH, 2007). Model results near the existing unconsolidated berm at the western edge of the project fall at the low end for velocity and below the values for shear stress, respectively and thus the Proposed Project would not substantially change erosive conditions for the aforementioned unconsolidated soil berm and this thus impact would be *less than significant*.

Mitigation HYD-6: Protect Eastern Slope of Excavated Basin

No protection should be needed for the downstream portions of the excavated area because rapid movement of water over a drop is not expected to occur there. To the extent that the upstream portion of the excavated area is exposed to higher velocities, erosion risks can be mitigated through slope protection measures that could include rock or turf-reinforced mats.

130-Unit Alternative

Impacts Associated with Inundation

Flood conditions resulting from the 130-Unit Alternative would be similar to the Proposed Project As shown in **Figure 3.2-4**, housing for the 130-Unit Alternative would not be built within the current 100-year FEMA floodway but would be built partially within the 100-year floodplain. The 130-Unit Alternative would result in a slightly larger amount of fill within the 100-year floodplain (168,000 cubic yards vs. 120,000 cubic yards with the Proposed Project). The areas of cut within the floodplain for the 130-Unit Alternative have been designed to compensate in terms of volume with the new fill within the floodplain, similar to the Proposed Project, such that there would be no net decrease in flood storage volumes on the north bank of the Carmel River. As a result, this alternative would have similar effects on water surface elevations as the Proposed Project. The 130-Unit Alternative was included in the CSA-50 2014 flood study (Balance Hydrologics 2014b) which shows that this alternative would not substantially change flooding conditions.

Lot 130 is mostly outside the 100-year floodplain with the exception of the southern edge. **Mitigation Measure HYD-7** requires development on Lot 130 to avoid placement of any structures or fill within the 100-year floodplain at these locations. With implementation of **Mitigation Measure HYD-7,** the 130-Unit Alternative would have *less-than-significant* impacts related to flood inundation.

Impacts Associated with Redirected Flows

As noted above for the Proposed Project, during some flood events, the Carmel River is expected to rise high enough to spread onto the right bank in the project area (**Figure 3.2-4**). At the upstream (east) end of the western part of the 130-Unit Alternative area, such flood flows would likely enter the excavated basin along its eastern edge, spilling over a drop of 7 feet. It is possible that flows spilling over this drop could scour the steep slope, causing a headcut back toward the river. If the headcut extends far enough, the channel may shift course and end up flowing through the excavated area. This would be undesirable because it would bring the river close to the houses adjacent to the excavated area and possibly redirect the river downstream of the project area. This impact would be *potentially significant*. Implementation of **Mitigation Measure HYD-6** would reduce this impact to *less than significant.*

Concerning the existing unconsolidated berm near the southwest corner of the project area described above, model results for the 130-unit Alternative show that overbank flow velocity in this area during the 100-year flood event for the downstream, western end of the Rancho Cañada project is predicted to increase from 3.05 feet/second to 3.66 feet/second, an increase of 0.57 feet/second. Shear stress at the same location is predicted to increase from 0.52 to 0.75 pounds/square foot, an increase of 0.23 pounds/square foot. Typical permissible velocities for established streambanks with vegetation range from 3 to 8 feet/second, and typical permissible shear stresses are up to 3 pounds/square foot (NEH, 2007). Model results near the existing unconsolidated berm at the western edge of the project fall at the low end for velocity and below the values for shear stress, respectively and thus this alternative would not substantially change erosive conditions for the aforementioned unconsolidated soil berm and this thus impact would be *less than significant*.

Mitigation HYD-7: Avoid Encroachment into the 100-Year Floodplain for Lot 130 Uses

If the 130-Unit Alternative is approved by the County, no structures or fill will be placed within the 100-year floodplain area on the south side of the newly created Lot 130.

F. Risk of Inundation by Seiche, Tsunami, or Mudflow or Due to Sea Level Rise

Impact HYD-6: Expose People or Structures to a Significant Risk of Loss, Injury or Death Involving Inundation Due to Seiche, Tsunami, or Mudflow Hazards or Flooding Associated with Sea Level Rise (less than significant)

Proposed Project

The effect of tsunamis depends on elevation and proximity to the ocean. The project site is approximately 1.5 miles from the tidally affected portion of the Carmel River, and the elevation of the houses would be at approximately 40 feet above mean sea level. Tsunamis pose a negligible hazard to the project site because only a very large tsunami could affect the project area. It is unlikely a seiche would occur in the project area because no large water bodies are nearby. The project area is relatively flat (elevations range from 25 to 40 feet above mean sea level), with little risk of mudflow.

Due to its elevation, the project site is not subject to coastal flooding that might result from sea level rise as a result of climate change. The high range of projected sea level range is up to 66 inches (5.5 feet) by 2100 compared to 2000 levels. Existing extreme water surface elevations at the Carmel Lagoon, including coincident high tide and riverine flooding, are estimated at 14.6 feet (Balance

Hydrologics 2014b). Thus, 2100 flood potential at the high end of the range of potential sea level rise would be 20 feet above mean sea level. This level is considered an unlikely flood level because it would combine the top of the projected sea level rise with extreme event of coincident high tide and riverine flooding, but even in this low-probability contingency, the project site would still be above the flood level.

Therefore, this impact would be *less than significant*. No mitigation is required.

130-Unit Alternative

Potential impacts of the 130-Unit Alternative on increasing the risk of a seiche, tsunami, or mudflow or related to coastal flooding with sea level rise would be the same as the Proposed Project. Therefore, this impact would be *less than significant*. No mitigation is required.