D.19 Water Resources and Hydrology

This section describes the affected environment for Water Resources and Hydrology in Section D.19.1, and presents the relevant regulations and standards in Section D.19.2. Sections D.19.3 through D.19.5 describe the impacts of the Proposed Project and the alternatives. Section D.19.6 presents the mitigation monitoring requirements, and Section D.19.7 lists references cited.

D.19.1 Environmental Setting / Affected Environment

This section describes the affected environment for water resources and hydrology, including surface water and groundwater.

D.19.1.1 Regional Setting and Approach to Data Collection

The information presented in this section was gathered from a guided site visit conducted on March 4, 2014, as well as information provided in the Proponent's Environmental Assessment and associated documents dated October 25, 2013. The data includes consideration of the preliminary design for the Proposed Project, available topographic maps, and water resources data available from the California Department of Water Resources, United States Geological Survey, Federal Emergency Management Agency, Western Regional Climate Center, California State Water Resources Control Board, Regional Boards, and local jurisdictions. Specific data sources are cited in the text, and listed in Section D.19.7.

Climate

The project area climate is characterized by hot, dry summers and mild winters. Annual precipitation is relatively uniform at approximately 13 to 20 inches over the western 30 miles of the project route, dropping to approximately 5.5 inches per year at the eastern end of the route. Rainfall is seasonal, with most rain occurring in the winter months. About 70% of total precipitation falls during December through March throughout the entire route. Average snowfall is less than 1 inch annually. June, July and August, with only about 3% of total annual precipitation, are the driest months at the west end of the route. May, June and July are the driest months at the eastern end, with about 3% of the annual total. January is the coldest month, averaging a low of 42 degrees at the east end of the route and 39 degrees at the west end. The hottest month, July, averages a high of 108 degrees at the east end of the route, and 95 degrees at the west end (WRCC, 2014).

Streams and Watercourses

Major streams and watercourses crossed by the project route are identified in Table D.19-1. Figures D.19-1a through D.19-1i (presented at the end of this section) show the locations of most watercourses on a topographic base map.

Table D.19-1. Surface Water Features Crossed by the Proposed Project

Surface Water Feature	Segment/ Milepost (MP)	Stream Type	Comments
Mission Zanja Creek	Segment 1/MP SB 0.8	Urban	Constructed channel
San Timoteo Creek	Segment 1/MP SB 1.9	Urban	Constructed channel.
Stream Channel	Segment 1/MP SB 3.1	Natural channel	Two project crossings of this channel within a distance of approximately 230 feet.
Reche Canyon	Segment 2/MP 2.0	Urban	None

Table D.19-1. Surface Water Features Crossed by the Proposed Project

Surface Water Feature	Segment/ Milepost (MP)	Stream Type	Comments
Stream Channel	Segment 2/MP 3.0	Natural channel	None
Stream Channel	Segment 3/MP 5.8	Natural channel	Steep hilly terrain. There are several smaller drainageways between this and the previous channel.
Various Stream Channels	Segments 3 and 4/MP 5.8 to 16	Natural channels	At least 30 natural drainage courses in steep hilly terrain.
San Timoteo Creek	Segment 4/MP15.9	Natural channel	Two crossings at this location.
Stream Channel	Segment 4/MP 16.1	Natural channel	Creek runs parallel to and in the same canyon bottom as San Timoteo Creek.
Stream Channel	Segment 4/MP 16.3	Natural channel	Creek is ill-defined in a wide shallow channel at this point.
Stream Channel	Segment 4/MP 19	Natural channel	Channel has been highly modified by urbanization except for a 300-foot segment upstream of I-10. Tower D-V 126 would be placed in this segment.
Stream Channel	Segment 4/MP 19.6	Urban channel	None
Stream Channel	Segment 4/MP 19.9	Urban channel	Channel is within a golf course.
Little San Gorgonio Creek	Segment 4/MP 20.5	Urban channel	Channel is within a golf course.
Noble Creek	Segment 4/MP 20.9	Urban channel	None
Stream Channel	Segment 4/MP 21.5	Natural channel	None
Potrero Creek	Segment 4/MP 22.4	Natural channel	First of two Potrero Creeks. Drains to San Jacinto River
Smith Creek	Segment 4/MP 23.9	Natural channel	None
Montgomery Creek	Segment 4/MP 25.3	Natural channel	None
Stream Channel	Segment 4/MP 25.6	Natural channel	None
Stream Channel	Segment 4/MP 26.1	Natural channel	None
Stream Channel	Segment 4/MP 26.7	Natural channel	None
San Gorgonio River	Segment 5/MP 27.6	Natural channel	Active channel is approximately 400 feet wide along the project alignment. New structures would be placed outside the river channel.
San Gorgonio River	Segment 5/MP 28.2	Natural channel	Active channel is approximately 300 feet wide along the project alignment. New structures would be placed outside the river channel.
Stream Channel	Segment 5/MP 28.2 to 30.4	Natural channel	Several minor stream crossings.
San Gorgonio River	Segment 5/MP 30.4	Natural channel/ alluvial fan	Active channel is approximately 850 feet wide along the project alignment. Old channel braids from past overflows are as far as 1,500 feet (measured along the project route) outside the main channel at the location of the crossing. Four new structures would be located within 100 feet of the main active channel. Another two would be located within the area of potential braiding.
Potrero Creek	Segment 5/MP 30.5	Natural channel/ alluvial fan	Second of two Potrero Creeks. Drains to San Gorgonio River
Stream Channel	Segment 5/MP 32.5	Natural channel	None

Table D.19-1. Surface Water Features Crossed by the Proposed Project

Surface Water Feature	Segment/ Milepost (MP)	Stream Type	Comments
Millard Canyon Creek	Segment 5/MP 33	Natural channel/ alluvial fan	Braided channel is approximately 860 feet wide along the project alignment.
Stream Channel	Segment 5/MP 33.6	Natural channel/ alluvial fan	None
Deep Canyon	Segment 5/MP 33.8	Natural channel/ alluvial fan	Several stream braids present at this location.
Lion Canyon	Segment 5/MP 34.8	Natural channel/ alluvial fan	Several stream braids present at this location.
Stream Channel	Segment 5/MP 35.7	Natural channel/ alluvial fan	None
Stream Channel	Segment 5/MP 36.0	Natural channel/ alluvial fan	None
Stream Channel	Segment 5/MP 36.1	Natural channel/ alluvial fan	None
Stream Channel	Segment 6/MP 37.0	Natural channel/ alluvial fan	None
Stubble Canyon	Segment 6/MP 37.4 to 38.1	Natural channel/ alluvial fan	Stubble Canyon Wash has several braids crossing this portion of the route. 9 new structures to be constructed within the area encompassed by the braided channels, but not within active channels.
Cottonwood Canyon	Segment 6/MP 38.8	Natural channel/ alluvial fan	None
Stream Channel	Segment 6/MP 38.8 to 41.7	Natural channel	Several minor watercourses in hilly terrain.
Whitewater River	Segment 6/MP 41.7	Natural channel/ alluvial fan	No structures in the active channel.
Super Creek	Segment 6/MP 42.7	Natural channel/ alluvial fan	Braided desert channel spans approximately 550 feet along the project alignment.
Stream Channel	Segment 6/MP 44.5 to 45.0	Natural channel/ alluvial fan	Several minor watercourses.
Mission Zanja Creek	San Bernardino–Redlands-Timoteo Line	Urban	Constructed channel.
Mission Zanja Creek	San Bernardino–Redlands-Tennessee Line	Urban	Constructed channel.
Morey Arroyo	San Bernardino–Redlands-Tennessee Line	Urban	Constructed channel.

Source: USGS, 2014a; SCE, 2014; SCE, 2013. Note: SCE prepared a Drainage Assessment (described in EIS Section D.4.1), as preliminary information related to potential jurisdictional waters under Section 404 of the Clean Water Act, to support project design. After final design, SCE will prepare a Jurisdictional Delineation Report of the project's areas of impact.

Watercourses along the eastern portion of the route are all tributary to the Whitewater River, which drains southeastward toward the Salton Sea (an inland lake). All streams that cross the project alignment east of Milepost (MP) 23, near Beaumont, contribute tributary drainage to the Whitewater River. These streams are generally dry most of the year, with flow occurring mostly in response to rainfall events. The larger streams originating in the nearby San Bernardino Mountains may have semi-permanent to permanent flow from snowmelt and rainfall in the mountains. These include the Whitewater River, Cottonwood

Canyon, Stubble Canyon, Lion Canyon, Deep Canyon, Millard Canyon, and the San Gorgonio River. The Whitewater River is perennial in the area of the project (USGS, 2014b).

Many of the watercourses east of MP 23 are braided alluvial streams on alluvial fans. These stream channels are highly subject to erosion and channel shifting, with flow potentially taking different channel paths, or forming new channels, from one flood to the next. The Millard Canyon channel, at project MP 33, has at least three potentially active braids that span 860 feet of the transmission line alignment. Within 0.5 miles downstream of the project crossing, the channel braids expand to a total width of more than 2,000 feet. Comparison of historical aerial photographs indicates that in the vicinity of the San Gorgonio River crossing at MP 30.4, the south channel bank eroded approximately 50 feet between 2004 and 2005. At another point, approximately one-half mile downstream, lateral erosion in that same interval was approximately 130 feet.

Potrero Creek at MP 22.4 drains south to the San Jacinto River, which drains into Lake Elsinore.

West of MP 23, all watercourses drain toward the Pacific Ocean. The Santa Ana River, not crossed by the project but located within 1,000 feet of the Vista Substation, is the main watercourse conducting flow to the Pacific Ocean. All streams that cross the project alignment west of MP 23 contribute tributary drainage to the Santa Ana River, mostly by way of San Timoteo Creek, which enters the Santa Ana River approximately 2.3 miles southwest of the San Bernardino Substation. Reche Canyon and mission Zanja drain directly into the Santa Ana River.

Natural stream crossings west of MP 23 (eastern Beaumont) are generally well-defined channels lined with vegetation. Streamflow is seasonal with most flow in the winter and activated by rainfall. The larger watercourses, including Reche Canyon, mission Zanja, and San Timoteo Creek, are more likely to have summer flow, possibly including urban runoff in urban areas, than the smaller streams. San Timoteo Creek receives treated wastewater from the City of Beaumont and the Yucaipa Valley Water District (YVWD, 2014, RWQCBSAR, 2009). Stream channels west of MP 23 (Banning and west) can be subject to lateral erosion, but generally do not exhibit the braided morphology common on the alluvial fans to the east. Many have been confined and stabilized into lined and constructed urban channels (urban in Table D.19-1) that have little susceptibility to lateral erosion.

There are numerous minor local drainageways and gullies within the project right-of-way but not listed in Table D.19-1. These minor drainageways have been inventoried and mapped in the PEA Drainage Assessment Report (SCE, 2013) for the purposes of making a preliminary determination of which watercourses may come under the jurisdiction of the U.S. Clean Water Act.

Floodplains

Floodplains are areas in and adjacent to stream channels that can be subject to flooding by flows in or overflowing the main channel. Floodplains are usually represented by a flood return period such as 50-year or 100-year, meaning the flood discharge recurs on average once every 50 or 100 years. Longer return periods represent larger floods. The 100-year flood is used for flood insurance, regulatory, and floodplain management purposes.

Federal Emergency Management Agency (FEMA, 2014) 100-year floodplains have been mapped for some of the watercourses crossed by the proposed route. Figures D.19-1a through D.19-1i show the location of mapped FEMA regulatory floodplains along the project route.

The absence of a mapped floodplain does not necessarily mean there is no flood or erosion hazard. For example, the San Gorgonio River floodplain in the vicinity of MPs 28 to 31 on Figure D.19-1g shows several disjointed triangular-shaped floodplains where the floodplain was mapped for the City of Banning. The San Gorgonio River floodplain was not mapped for the adjacent unincorporated Riverside County.

Surface Water Quality

Water quality along the route is generally good. None of the streams crossed by the project is listed as impaired in the California State Water Resources Control Board Final 2010 Integrated Report (SWRCB, 2010). The nearest downstream impaired water body is the Santa Ana River Reach 4, located approximately 1,000 feet from the Vista Subbasin, and listed as impaired for pathogens, salinity, total dissolved solids (TDS), and chlorides. All of the streams crossing the project west of MP 22 contribute tributary flow to the Santa Ana River at or above Reach 4. Potrero Creek at project MP 22.4 drains to streams that eventually reach Lake Elsinore, which is listed as impaired for nutrients, organic enrichments, polychlorinated biphenyls (PCBs, industrial compounds used in transformers and other equipment), and sediment toxicity. Lake Elsinore is approximately 30 miles distant from the location of the Potrero Creek crossing of the project. All of the streams crossing the project east of MP 23 drain to streams that eventually reach the Salton Sea, which is listed as impaired for arsenic, chlorpyrifos (an insecticide), DDT, enterococcus (a bacteria that can cause illness), nutrients, and salinity. The Salton Sea is more than 40 miles distant from the nearest point on the project route.

Surface Water Beneficial Uses

The California State Water Resources Control Board designates beneficial uses of surface waters in order to protect these uses against water quality degradation. Beneficial uses for the watercourses crossed by the project are described in the Water Quality Control Plan for the Colorado River Basin (RWQCBCRB, 2014) and the Water Quality Control Plan for the Santa Ana River Basin (RWQCBSRB, 1995). Listed beneficial uses are:

- **San Timoteo Creek:** Groundwater Recharge, Water Contact Recreation, Non-Contact Water Recreation, Warm Freshwater Habitat, Wildlife Habitat and, intermittently in the lower reaches, Agriculture Supply.
- **Little San Gorgonio Creek:** Municipal and Domestic Supply, Groundwater Recharge, Water Contact Recreation, Non-Contact Water Recreation, Cold Freshwater Habitat, and Wildlife Habitat and.
- **Other Tributaries to San Timoteo Creek:** Municipal and Domestic Supply, Groundwater Recharge, Water Contact Recreation, Non-Contact Water Recreation, Warm Freshwater Habitat, and Wildlife Habitat. All of these are intermittent beneficial uses.
- **Potrero Creek (MP 22.4)**: Municipal and Domestic Supply, Agriculture Supply, Groundwater Recharge, Water Contact Recreation, Non-Contact Water Recreation, Warm Freshwater Habitat, and Wildlife Habitat. All of these are intermittent beneficial uses.
- **Millard Canyon Creek:** Municipal and Domestic Supply, Agriculture Supply, Groundwater Recharge, Water Contact Recreation, Non-Contact Water Recreation, Warm Freshwater Habitat, and Wildlife Habitat.
- **Potrero Creek (MP 30.5)**: Agriculture Supply, Groundwater Recharge, Water Contact Recreation, Non-Contact Water Recreation, Warm Freshwater Habitat, and Wildlife Habitat.
- **San Gorgonio River:** Municipal and Domestic Supply, Agriculture Supply, Groundwater Recharge, Water Contact Recreation, Non-Contact Water Recreation, Cold Freshwater Habitat, and Wildlife Habitat.
- **Whitewater River:** Municipal and Domestic Supply, Agriculture Supply, Groundwater Recharge, Water Contact Recreation, Non-Contact Water Recreation, Warm Freshwater Habitat (intermittent), Cold Freshwater Habitat, and Wildlife Habitat.

- **Unlisted Perennial and Intermittent Streams (Colorado River Basin):** Groundwater Recharge, Water Contact Recreation (perennial streams), Non-Contact Water Recreation, Warm Freshwater Habitat, and Wildlife Habitat.
- **Unlisted Ephemeral Washes (Colorado River Basin):** Groundwater Recharge, Non-Contact Water Recreation, and Wildlife Habitat. All of these are intermittent beneficial uses.

Groundwater

The project route crosses 7 groundwater basins, shown on Figures D.19-1a through D.19-1i. Groundwater basins west of MP 23.3 (Beaumont) are associated with the Upper Santa Ana Valley. Groundwater Basin. Groundwater basins in the eastern portion of the route, east of MP 23.3, are subbasins of the Coachella Valley Groundwater Basin. The following groundwater basin descriptions are based on California Groundwater Bulletin 118 (DWR, 2003) except as otherwise indicated:

Upper Santa Ana Valley Groundwater Basin

- **Upper Santa Ana Valley Bunker Hill Subbasin:** The Upper Santa Ana Valley Bunker Hill Subbasin underlies the San Bernardino Valley in southwestern San Bernardino County and northwestern Riverside County. The surface area of the basin is 120 square miles. Groundwater is found in Holocene and Pleistocene alluvial deposits. The depth to groundwater ranges from approximately 102 feet to 201 feet below ground surface (SCE, 2013). Major recharge comes from the Santa Ana River, Mill Creek, Lytle Creek and, to a lesser extent, Cajon Creek and San Timoteo Creek. Water levels have been relatively stable except in the far eastern and northwestern portion of the basin, where there have been declines. Water quality is generally good for most uses. The water contains calcium bicarbonate (a characteristic of what is commonly referred to as "hard" water), with TDS averaging 324 mg/l (milligram per liter, equivalent to parts per million, or ppm). There are several contamination plumes in this subbasin, including:
  - The 150,000-acre-foot Redlands Plume primarily composed of trichloroethylene (TCE)
  - The 100,000-acre-foot Norton Air Force Base plume consisting of TCE and perchloroethylene (PCE), both of which are toxic chlorinated hydrocarbons
  - The Newark and Muscoy plumes of TCE and PCE in northern San Bernardino
  - The Santa Fe plume primarily of petroleum based contaminates.
- **Upper Santa Ana Valley Riverside-Arlington Subbasin:** The Upper Santa Ana Valley Riverside-Arlington Subbasin underlies part of the upper Santa Ana Valley in southwestern San Bernardino County and northwestern Riverside County. The surface area of the basin is 92 square miles. Groundwater is found in Quaternary alluvial deposits. The depth to groundwater ranges from approximately 62 feet to 74 feet below ground surface (SCE, 2013). Major recharge is from the Santa Ana River, adjacent basin underflow, and irrigation return flow. Water levels have been relatively stable to slightly declining. The water is calcium-sodium bicarbonate in quality, with TDS averaging 463 mg/l.
- **Upper Santa Ana Valley Rialto-Colton Subbasin:** The Upper Santa Ana Valley Rialto-Colton Subbasin underlies a portion of the upper Santa Ana Valley in southwestern San Bernardino County and northwestern Riverside County. The surface area of the basin is 47 square miles. Groundwater is found in Holocene and Pleistocene alluvial deposits. The depth to groundwater ranges from approximately 56 feet to 128 feet below ground surface (SCE, 2013). Major recharge areas are Lytle Creek in the northwestern part of the basin, Reche Canyon in the southeastern part, and the Santa Ana River in the south-central part. Water levels fluctuate with precipitation and runoff. Water Quality is generally good, with TDS averaging 230 mg/l.

- **Upper Santa Ana Valley San Timoteo Subbasin:** The Upper Santa Ana Valley San Timoteo Subbasin underlies Cherry Valley and the City of Beaumont in southwestern San Bernardino and northwestern Riverside Counties. Surface area of the basin is 114 square miles. Groundwater is found in alluvium and San Timoteo Formation. Depth to groundwater ranges from approximately 85 feet to 612 feet below ground surface (SCE, 2013). Recharge is derived mainly from subsurface inflow and percolation of precipitation, runoff, and imported water. Spreading grounds are used to percolate imported and runoff water. Water levels in domestic wells are seasonally variable, with declines in the Cherry Valley area. Water quality is generally good, with TDS averaging 253 mg/l. Groundwater character is sodium bicarbonate, calcium bicarbonate, calcium-magnesium bicarbonate or sodium chloridesulfate depending on location.

Coachella Valley Groundwater Basins

- **Coachella Valley San Gorgonio Pass Subbasin:** The Coachella Valley San Gorgonio Pass Subbasin lies entirely within the San Gorgonio Pass. Surface area of the basin is 60 square miles. The water-bearing zones consist primarily of Pleistocene and Holocene alluvial deposits and Pliocene to Pleistocene age San Timoteo Formation. Depth to groundwater ranges from approximately 47 feet to 513 feet below ground surface (SCE, 2013). Recharge is from surface runoff, mainly from the San Gorgonio River. Water quality is generally good, with TDS around 106 to 205 mg/l. Groundwater character is calcium-sodium bicarbonate.
- **Coachella Valley Indio Subbasin:** The Coachella Valley Indio Subbasin is located in the desert region northwest of the Salton Sea. Surface area of the basin is 525 square miles. The water-bearing zones consist primarily of Pleistocene and Holocene alluvial deposits. Groundwater depth ranges from approximately 363 feet to 408 feet below ground surface (SCE, 2013). Recharge is derived mainly from surface runoff, subsurface inflow, and imported Colorado Aqueduct water delivered to the Whitewater Spreading Grounds. Water levels have been declining due to urbanization and groundwater pumping since the 1980s despite the Colorado River imports. Water quality is generally good, with TDS around 300 mg/l. Native groundwater character is calcium bicarbonate. Groundwater near major faults contains elevated levels of fluoride, and there is a nitrate plume in the vicinity of Cathedral City and La Quinta.
- **Coachella Valley Mission Creek Subbasin:** The Coachella Valley Mission Creek Subbasin is located in the desert region northwest of the Salton Sea. Surface area of the basin is 76 square miles. The water-bearing zones consist primarily of old alluvial fan and terrace deposits. Recharge is derived mainly from runoff from the surrounding highlands which includes flow from the Whitewater and San Gorgonio Rivers. Water levels in domestic wells vary from 140 to 721 feet below ground surface with an average depth to water of 372 feet. Water levels have been declining at a rate of 0.5 to 1.5 feet per year since the early 1950s due to scarce annual precipitation and groundwater extractions. Water quality is generally good, with TDS below 500 mg/l. Groundwater ranges in character from a calcium-magnesium bicarbonate type in the northwest to sodium chloridesulfate type in the southeast.

D.19.1.2 Environmental Setting by Segment

This section describes the specific environmental setting for surface water and groundwater for each of the 6 segments of the Proposed Project. Refer to Table D.19-1 for specific water body information for each segment.

Segment descriptions 1 to 6 refer to the surface water and groundwater setting for the new 220 kV transmission line and structures, and associated substations. The setting for the 66 kV Subtransmission Line improvements, the Tennessee Substation, and new telecommunication line features outside the existing transmission right-of-way, are described separately as applicable to each segment.

D.19.1.2.1 Segment 1: San Bernardino

Streams and Watercourses

Segment 1 is illustrated on Figures D.19-1a and D.19.1b. It crosses Mission Zanja Creek and San Timoteo Creek (Table D.19-1). Both watercourses are in constructed urban channels approximately 75 to 90 feet wide, designed to convey flow and protect against flooding and erosion. Within Segment 1, the proposed San Bernardino–Redlands-Timoteo Line crosses Mission Zanja Creek. The proposed San Bernardino–Redlands-Tennessee Line crosses Mission Zanja Creek and Morey Arroyo.

Local drainage consists primarily of street flow in the urban area north of Beaumont Avenue (approximately MP SB 2.8). There are several natural local drainageways in the undeveloped land between Beaumont Avenue and San Bernardino Junction that are formed by minor canyons in the local hills. These are all small dry watercourses with total length of only a few hundred feet from the location of the project crossing to the headwaters.

Floodplains

Mission Zanja and San Timoteo Creeks have mapped FEMA floodplains within this segment. Both floodplains are confined to the constructed channels at the location of the Segment 1 crossings. FEMA has not mapped the extent of the floodplains along the small drainageways south of Beaumont Avenue.

Groundwater

All but approximately the southernmost 0.5 miles of this segment is in the Upper Santa Ana Valley Bunker Hill Groundwater Subbasin. The southernmost half mile is in the Upper Santa Ana Valley San Timoteo Groundwater Subbasin.

D.19.1.2.2 Segment 2: Colton and Loma Linda

Streams and Watercourses

Segment 2 (illustrated on Figure D.19-1b) crosses Reche Canyon near MP 2 and an unnamed stream channel at MP 3 (Table D.19-1). Reche Canyon flow is in a constructed channel approximately 50 feet wide at the location of the crossing. The unnamed drainageway crossing is a natural channel with headwaters approximately 1.3 miles upstream of the crossing location.

Local drainage along this segment consists of several natural local drainageways formed by minor canyons in the local hills. These small dry watercourses in steep terrain have total length ranging from only a few hundred feet to approximately 0.8 miles from the location of the project crossing to the headwaters.

Floodplains

Reche Canyon has a mapped FEMA floodplain approximately 210 feet wide within this segment, indicating that the constructed channel is not adequate to contain the 100-year discharge. The extent of the floodplain for the crossing at MP 3.0 has not been mapped by FEMA.

Groundwater

Segment 2 lies above the San Timoteo, Rialto-Colton, and Riverside-Arlington groundwater subbasins of the Upper Santa Ana Valley Groundwater Basin.

D.19.1.2.3 Segment 3: San Timoteo Canyon

Streams and Watercourses

Segment 3 (illustrated on Figures D.19-1b through D.19-1-d) crosses a series of unnamed stream channels in the steep, hilly terrain known as the San Timoteo Badlands (Crofton Hills). These are all local streams with relatively small watersheds, and are typically dry most of the year. Total stream length from the location of the project crossing to the headwaters ranges from a few hundred feet to approximately 1.5 miles. Most of the streams are in a natural condition, although several have been modified by minor development. All of these streams drain into San Timoteo Creek within approximately 0.25 to 1 mile of the project crossing.

Floodplains

There are no mapped FEMA floodplains in Segment 3.

Groundwater

All of Segment 3 lies above the Upper Santa Ana Valley San Timoteo Groundwater Basin.

D.19.1.2.4 Segment 4: Beaumont and Banning

Streams and Watercourses

Segment 4 (illustrated on Figures D.19-1e and D.19-1f) crosses San Timoteo Creek, Little San Gorgonio Creek, Noble Creek, Potrero Creek, Smith Creek, Montgomery Creek, and several unnamed drainageways as indicated in Table D.19-1. With the exception of San Timoteo Creek, all of these streams have their origin in or at the foothills of the San Bernardino Mountains to the north of the project. San Timoteo Creek flows westward through a flat-bottomed valley roughly 0.25 to 0.5 miles wide between low hills. Most of the streams originating in the area of the San Bernardino Mountains flow generally southward on a sloping alluvial plain. Those stream crossings that are in the Beaumont area, including Little San Gorgonio Creek, Noble Creek and two unnamed channels at MPs 19.6 and 19.9, are in constructed urban channels. The rest are in a natural condition at the location of the project.

Segment 4 includes the divide, at approximately MP 22, between streams that flow toward the Pacific Ocean, and those that flow toward the Salton Sea (or Lake Elsinore in the case of Potrero Creek, as described above). There are numerous small local drainageways originating in the hills at the western end of this segment, or on the alluvial plain or foothills of the San Bernardino Mountains.

Floodplains

Potrero Creek adjacent to Cherry Avenue (MP 22.4) is the only mapped FEMA floodplain in Segment 4 (Figure D.19-1f). At the Potrero Creek crossing the flooding appears to be sheet flow approximately 300 feet wide at the location of the project crossing. Several streams, including Noble Creek, the unnamed stream at MP 21.5, and Smith Creek are mapped either upstream or downstream of the project route. The mapped Smith Creek floodplain is approximately 1 mile wide at a point 1,000 feet downstream of the project route. There are no topographic features between the project route and the mapped floodplain that could be expected to substantially affect floodplain width.

Groundwater

The western portion of Segment 4 lies above the Upper Santa Ana Valley San Timoteo Groundwater Basin. The eastern portion (east of MP 23) lies above the Coachella Valley San Gorgonio Pass Groundwater Basin.

D.19.1.2.5 Segment 5: Morongo Tribal Lands and Surrounding Areas

Streams and Watercourses

Segment 5 (illustrated on Figures D.19-1f through D.19-1h) crosses the San Gorgonio River in three places, as well as Potrero Creek (separate from the Segment 4 Potrero Creek), Millard Canyon Creek, Deep Canyon, Lion Canyon, and several unnamed drainageways, as indicated in Table D.19-1. All of these streams have their origin in or near the foothills of the San Bernardino Mountains to the north of the project, and all flow generally southward to southwestward toward the Salton Sea on a sloping alluvial plain. All of the streams exhibit characteristics of braided alluvial fan flow and natural instability. Braided channels can be hundreds of feet wide as indicated in Table D.19-1. There are numerous small local drainageways originating on the alluvial plain or foothills of the San Bernardino Mountains.

Floodplains

The San Gorgonio River within the City of Banning (Figure D.19-1g) is the largest mapped floodplain within this segment. Approximately 2,300 linear feet of the project route is within the 100-year floodplain of the San Gorgonio River between MPs 28 and 29, and another 3,350 feet is within the mapped floodplain between MPs 29 and 31. Approximately 1,200 feet of the project route is within the mapped floodplain of Millard Canyon Creek at MP 33. None of the other stream floodplains have been mapped along this segment.

Groundwater

All of Segment 5 lies above the Coachella Valley San Gorgonio Pass Groundwater Subbasin.

D.19.1.2.6 Segment 6: Whitewater and Devers

Streams and Watercourses

Segment 6 (illustrated on Figures D.19-1h and D.19-1i) crosses Stubble Canyon (Stubble Creek), Cottonwood Canyon, the Whitewater River, Super Creek, and several unnamed drainageways as indicated in Table D.19-1. All of these streams have their origin in or near the foothills of the San Bernardino Mountains to the north of the project, and all flow generally southward to southwestward toward the Salton Sea on a sloping alluvial plain. All of the streams exhibit characteristics of braided alluvial fan flow and natural instability. Braided channels can be very wide as indicated by the example of Stubble Creek, which has active braids spanning a width of approximately 3,700 feet at the location of the project crossing. There are numerous small local drainageways originating on the alluvial plain or foothills of the San Bernardino Mountains. The Colorado River Aqueduct, operated by the Metropolitan Water District of Southern California, crosses Segment 6 at approximately MP 37.5. The aqueduct is in an underground conduit at this location.

Floodplains

Stubble Creek is the only mapped floodplain within this segment. Approximately 4,000 linear feet of the project route is within the 100-year floodplain of Stubble Creek in the vicinity of MP 38 (Figure D.19-1h).

Groundwater

Segment 6 lies above the Coachella Valley San Gorgonio Pass, Coachella Valley Indio, and Coachella Valley Mission Creek groundwater basins (Figures D.19-1h and D.19.1i).

D.19.1.2.7 San Bernardino–Redlands-Timoteo 66 kV Line

Streams and Watercourses

The San Bernardino–Redlands-Timoteo Line crosses Mission Zanja Creek approximately 0.25 miles upstream of Segment 1. At this location Mission Zanja Creek is in a constructed urban channel approximately 50 feet wide, designed to convey flow and protect against flooding and erosion. Local drainage along this segment consists of street flow.

Floodplains

The Mission Zanja floodplain is mapped within this segment and extends to the north out of the constructed channel to a width of approximately 400 feet in this location.

Groundwater

This segment is over the Upper Santa Ana Valley Bunker Hill Groundwater Subbasin.

D.19.1.2.8 San Bernardino–Redlands-Tennessee 66 kV Line

The San Bernardino–Redlands-Tennessee Line crosses Mission Zanja Creek and the Morey Arroyo. The Mission Zanja is in constructed urban channels approximately to 65 feet wide, designed to convey flow and protect against flooding and erosion. The Morey Arroyo is in a semi-natural urban channel, approximately 25 feet wide, overgrown with riparian vegetation. Local drainage along this segment consists of street flow.

Floodplains

The Mission Zanja and Morey Arroyo floodplains are mapped within this segment. The Mission Zanja floodplain extends to the north out of the constructed channel approximately 850 feet at this location. The Morey Arroyo floodplain extends to the north and south out of the constructed channel approximately 660 feet at this location.

Groundwater

This segment is over the Upper Santa Ana Valley Bunker Hill Groundwater Subbasin.

D.19.1.2.9 Tennessee Substation

There are no surface water resources at the Tennessee Substation. All drainage is local street flow. The substation is above the Upper Santa Ana Valley Yucaipa Groundwater Subbasin. Groundwater at this location is approximately 160 feet below the ground surface.

D.19.1.2.10 Telecommunications Features

New telecommunication features are shown in Figures B-15a to B-15e. The proposed overhead telecommunications routes shown in Figure B-15a, associated with the San Bernardino Substation in Segment 1, crosses Mission Zanja Creek, which at the location of the crossings is a designed and constructed channel approximately 50 feet wide. Local drainage consists of street flow. The Mission Zanja floodplain is approximately 400 to 600 feet wide in this location. New telecommunications features at the San Bernardino Substation have no hydrologic features except for local street flow. All of these features are over the Upper Santa Ana Valley Bunker Hill Groundwater Subbasin.

The proposed underground route shown in Figure B-15b, associated with the Vista Substation, has no hydrologic features except for local street flow. This route is over the Upper Santa Ana Riverside-Arlington Groundwater Subbasin.

The proposed underground route shown in Figure B-15c, associated with the El Casco Substation, has no hydrologic features except for local flow. This route is over the Upper Santa Ana San Timoteo Groundwater Subbasin. The proposed overhead route shown in Figure B-15c would be on existing poles in a line that parallels San Timoteo Creek.

The proposed overhead route shown in Figure B-15d, associated with the Maraschino Substation, crosses San Timoteo Creek over an existing roadway culvert. The floodplain at that location is roughly 40 feet wide and apparently contained within the culvert. The proposed underground route shown in Figure B-15d crosses Potrero Creek in two locations, and crosses two additional minor drainageways. No floodplain information is available for these crossings. This route is over the Upper Santa Ana San Timoteo Groundwater Subbasin.

The first 690 feet of the proposed underground route shown in Figure B-15d, associated with the Banning Substation, between the existing Devers-Valley No. 2 500 kV structure M21 T3 and an existing distribution pole on Coyote Trail approximately 3,200 feet west of Old Idyllwild Road, is within the designated floodway of Smith Creek. Portions of the proposed overhead route are also within the floodway. The floodway, designated by FEMA as an area to be reserved for the flow of water in a 100-year storm event, is approximately 900 feet wide at this location. This route is over the Upper Santa Ana San Timoteo Groundwater Subbasin.

The proposed underground route shown in Figure B-15e, associated with the Devers Substation, has no hydrologic features except for local flow. This route is over the Coachella Valley Mission Creek Groundwater Basin.

D.19.1.3 Environmental Setting for Connected Actions

This section describes the environmental setting for surface water and groundwater for each of the three areas that are analyzed for connected actions related to the Proposed Project.

Desert Center Area. The Desert Center area is in eastern Riverside County and includes the Palen Valley and the western portion of the Chuckwalla Valley. The Chuckwalla Valley basin generally trends northwest to southeast and is surrounded by relatively impervious bedrock mountain exposures. Climate in the area is characterized by high aridity and low precipitation, with hot summer months and cool, dry winters. Average annual precipitation in the area (based on the gauging stations at Blythe Airport and Eagle Mountain) is 3.6 to 3.7 inches. Most moisture from precipitation is lost through evaporation and evapotranspiration.

The Desert Center area is located in the Colorado River HR, and is generally within the Palen HA subdivision of the Chuckwalla HU (the easternmost portion of the area is within the Ford HA).

Surface water resources in the area generally take the form of ephemeral desert washes with no water during most of the year. Numerous washes traverse the alluvial plains downstream of source areas, including the Eagle and Palen Mountains. There are no perennial streams in study area. Palen Dry Lake, a shallow playa where water gathers after a rain event but evaporates quickly, is located in the eastern portion of the area. There are no FEMA-mapped 100-year floodplains in the area, although shallow to moderately deep sheet flow would occur following a major rainfall event. The area does not contain any CWA 303d-listed impaired waterbodies.

The Desert Center area is underlain by the Chuckwalla Valley Groundwater Basin. California Groundwater Bulletin 118 estimated the total storage capacity of the basin at 9,100,000 acre-feet (DWR, 2003). Sulfate, chloride, fluoride, and TDS concentrations are high for domestic use (DWR, 2003). High concentrations of boron and TDS, and high sodium percentage impair groundwater for irrigation use (DWR, 2003). In the valley north of Palen Lake, TDS content ranges from 2,960 to 4,370 mg/L. Depth to groundwater in 2013 was approximately 150 feet bgs (USGS, 2013). According to a recent report by the USGS, "water needs associated with proposed solar energy projects within the basin have generated concern about potential detrimental effects on local groundwater resources" (2013). Recent analysis suggests that the basin is not currently in an overdraft condition (BLM, 2013).

Blythe Area. The Blythe area is located in eastern Riverside County and includes unincorporated land in Riverside County, west of the City of Blythe. The area is located on the Palo Verde Mesa, which is bounded on the east by the Palo Verde Valley, on the southwest by the Mule Mountains, on the northwest by the McCoy Mountains, and on the north by the Little Maria and Big Maria Mountains. Climate in the area is arid, with hot, dry summers and cooler winters. Average annual precipitation in the area (based on a gaging station at Blythe airport) is approximately 4 inches. Most moisture from precipitation is lost through evaporation and evapotranspiration.

The Blythe Area is located in the Colorado River HR, generally within the Palo Verde HA subdivision of the Colorado HU. The westernmost portion of the study area is adjacent to the Ford HA.

With the exception of the Colorado River, which lies to the east of the area, surface water resources in the area generally take the form of ephemeral desert washes with no water during most of the year. Numerous washes traverse the alluvial plains downstream of source areas, including the Big Maria, Little Maria, McCoy, and Mule Mountains. There are no perennial streams in the area. The Colorado River and several perennial agricultural supply ditches are east of the area. There are no FEMA-mapped 100-year floodplains in the area, although shallow to moderately deep sheet flow would occur following a major rainfall event. The area does not contain any CWA 303d-listed impaired waterbodies. However, the Palo Verde Outfall Drain and Lagoon, which is impaired by DDT, pathogens, and toxaphene, lies to the south-east of the area.

The Blythe area is underlain by the Palo Verde Mesa Groundwater Basin. California Groundwater Bulletin 118 estimated the total storage capacity of the basin at 6,840,000 acre-feet (DWR, 2003). High concentrations of arsenic, selenium, fluoride, chloride, boron, sulfate, and TDS have been recorded in the basin (DWR, 2003). Depth to groundwater in the basin ranges from approximately 80 feet bgs to approximately 150 feet bgs (RCPD, 2014). The water budget for the basin remains uncertain, but recent analysis suggests that the basin is not currently in an overdraft condition (BLM, 2013).

D.19.2 Applicable Regulations, Plans, and Standards

This section describes regulations, plans, and standards relevant to hydrology and water resources.

D.19.2.1 Federal

Clean Water Act

The Clean Water Act (CWA) (33 U.S.C. Section 1251 et seq., formerly the Federal Water Pollution Control Act of 1972) was enacted with the intent of restoring and maintaining the chemical, physical, and biological integrity of the waters of the United States. The CWA requires states to set standards to protect, maintain, and restore water quality through the regulation of point source and certain non-point source discharges to surface water. Those discharges are regulated by the National Pollutant Discharge Elimination System (NPDES) permit process (CWA Section 402). NPDES permitting authority is administered by the California State Water Resources Control Board (SWRCB) and its' nine Regional Water Quality Control Boards (RWQCB). The SCE West of Devers Upgrade Project is within areas administered by the Santa Ana and Colorado River Regional Water Quality Control Boards.

The SCE West of Devers Upgrade Project would disturb more than 1 acre of ground, placing the project under the NPDES and the California General Permit for Discharges of Storm Water Associated with Construction Activity (General Construction Permit). The NPDES Construction General Permit, administered by the Federal Environmental Protection Agency on Tribal Lands (Federal General Permit for Storm Water Discharges Associated with Construction Activities on Tribal Land), and by the California State Water Resources Control Board elsewhere on the West of Devers Project, requires the development and implementation of a Storm Water Pollution Prevention Plan (SWPPP) describing Best Management Practices (BMPs) the discharger would use to protect stormwater runoff. The SWPPP must contain a visual monitoring program; a chemical monitoring program for "non-visible" pollutants to be implemented if there is a failure of BMPs; and a sediment monitoring plan if the site discharges directly to a waterbody listed on the 303(d) list for sediment.

The General Permit requires that the SWPPP include a description of post-construction BMPs, and a maintenance schedule. An effective storm water management strategy must address the full suite of storm events including water quality, channel protection, overbank flood protection, and extreme flood protection. Overbank flood protection and extreme flood protection events are traditionally dealt with in local drainage and flood protection ordinances. However, measures in the General Permit to address water quality and channel protection also reduce overbank and extreme flooding impacts.

Section 401 of the CWA requires that any activity, including river or stream crossings during road, pipeline, or transmission line construction, which may result in a discharge into waters of the U.S. be certified by the RWQCB. This certification ensures that the proposed activity does not violate State and/or federal water quality standards. The SCE West of Devers Upgrade Project is expected to result in discharges to waters of the U.S., and would require Section 401 certification.

Section 404 of the CWA authorizes the U.S. Army Corps of Engineers (ACOE) to regulate the discharge of dredged or fill material to the waters of the U.S. and adjacent wetlands. Discharges to waters of the U.S. must comply with Section 404 (b)(1) guidelines, meaning impacts must be avoided where possible, and minimized and mitigated where avoidance is not possible. The PEA includes a drainage assessment that makes a preliminary assessment of waters potentially affected by the project that may be jurisdictional under Section 404, but no final determination has been made at this time.

Section 303(d) of the Clean Water Act requires states to establish Total Maximum Daily Load (TMDL) programs for streams, lakes and coastal waters that do not meet certain water quality standards. This program is described further under Section D.19.2.2 (State) below.

National Flood Insurance Act/Flood Disaster Protection Act

The National Flood Insurance Act of 1968 made flood insurance available for the first time. The Flood Disaster Protection Act of 1973 made the purchase of flood insurance mandatory for the protection of property located in Special Flood Hazard Areas. These laws are relevant because they led to mapping of regulatory floodplains and to local management of floodplain areas according to guidelines which include prohibiting or restricting development in flood hazard zones. Some of the structures proposed by the SCE West of Devers Upgrade Project would be located in designated flood hazard zones and would be subject to review by local floodplain management authorities.

D.19.2.2 State

California Streambed Alteration Agreement

Sections 1600–1616 of the California Fish and Game Code requires that any public utility (or other entity) that proposes an activity that would substantially divert or obstruct the natural flow of any river, stream or lake; substantially change or use any material from the bed, channel, or bank of, any river, stream, or lake; or, deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake, must notify the California Department of Fish and Wildlife (CDFW). If the CDFW determines the alteration may adversely affect fish and wildlife resources, a Lake or Streambed Alteration Agreement would be prepared. The Agreement includes conditions necessary to protect those resources. The Agreement applies to any stream including ephemeral streams and desert washes.

The project would cause transmission structures and roads to be constructed in watercourses determined by the State of California to be habitat for fish and wildlife, and notification under Section 1600 would be required.

California Porter Cologne Water Quality Control Act

The Porter Cologne Water Quality Control Act of 1967, Water Code Section 13000 et seq., requires the SWRCB and the nine RWQCBs to adopt water quality criteria to protect State waters. These criteria include the identification of beneficial uses, narrative and numerical water quality standards, and implementation procedures. The criteria for the project area are contained in the Water Quality Control Plan for the Santa Ana River Basin (CRWQCB, 2014) and the Water Quality Control Plan Colorado River Basin – Region 7 (CRWQCB, 2014). Constraints in the water quality control plans relative to the Proposed Project relate primarily to the avoidance of altering the sediment discharge rate of surface waters, and the avoidance of introducing toxic pollutants to the water resource. A primary focus of water quality control plans is to protect designated beneficial uses of waters. In addition, anyone proposing to discharge waste that could affect the quality of the waters of the state must make a report of the waste discharge to the Regional Water Quality Control Board or State Water Resources Control Board as appropriate, in compliance with Porter-Cologne.

TMDL Program

The California TMDL Program evaluates the condition of surface waters and sets limits on the amount of pollution that the water can be exposed to without adversely affecting the beneficial uses of those waters. The RWQCBs identify waters that are not attaining standards, and develop total maximum daily loads to account for all sources of the pollutants that caused the water to no attain standards. TMDL levels are established to achieve the applicable water quality standards. When the TMDL is established as a standard, a program must be designed to implement the TMDL. TMDLs developed by RWQCBs are added to the Water Quality Control Plan (Basin Plan) as amendments and include implementation provisions.

D.19.2.3 Local

Local Floodplain Regulations

Most counties and cities have floodplain and drainage regulations that regulate floodplain development. These regulations generally prohibit floodplain development that would result in flooding of the development itself, and prohibit floodplain development that would result in adverse flooding impacts on other property. For instance, floodplain encroachments that raise water levels on other property are generally prohibited, as are diversions and concentrations of flow. The Proposed Project would cross designated floodplains that are under the jurisdiction of Riverside County, the City of Banning, the City of Beaumont, and the City of Redlands.

D.19.3 Environmental Impacts of the Proposed Project

This section describes environmental impacts of the Proposed Project relevant to hydrology and water resources.

D.19.3.1 Approach to Impact Assessment

The impact analysis is based on an assessment of baseline conditions relevant to the site climate, topography, watersheds and surface waters, groundwater, floodplains, and surface water use, described in Section D.19.1. These baseline conditions were evaluated based on their potential to be affected by construction activities as well as operation and maintenance activities related to the Proposed Project and alternatives. Potential impacts were then identified based on the predicted interaction between construction, operation, and maintenance activities with the affected environment.

Impacts are described in terms of location, context and intensity, and identified as being either short- or long-term, or direct and indirect in nature. Beneficial as well as adverse impacts are identified, with a discussion of the effect and risk to water quality and public health and safety, and potential violation of environmental laws. Mitigation measures are developed to avoid or minimize impacts.

D.19.3.1.1 Applicant Proposed Measures

Table D.19-2 presents the Applicant Proposed Measures (APMs) that relate to hydrology and water resources. APM BIO-1 has been superseded by Mitigation Measures VEG-1d (Restore or revegetate temporary disturbance areas) and APMs HYDRO-2 and HYDRO-3 have been superseded by Mitigation Measure WR-2a (Implement an Erosion Control Plan and demonstrate compliance with water quality permits).

Table D-19-2. Applicant Proposed Measures – Water Resources and Hydrology

APM	Description
Biology	
APM BIO-1	**Revegetation Plan.** Prior to starting construction, a draft revegetation plan would be prepared to guide the revegetation of those areas subject to temporary project impacts during construction and that are not included within either the WR-MSHCP or CV-MSHCP (e.g., land areas within the Morongo Reservation or San Bernardino County), and where dominant land cover consists of native vegetation. The objective of revegetation would be to re-establish vegetation back to pre-construction conditions (e.g., by maintaining roughly equivalent or comparable native to non-native dominance patterns) with consideration of adjacent community composition. Areas dominated primarily by non-native vegetation and that are temporarily disturbed by construction activities may also be revegetated; however, the primary objective for those areas would be to stabilize soils to minimize erosion potential in accordance with any applicable SWPPP requirements. Prior to completing construction activities, the revegetation plan would be finalized to address site-specific conditions, methodology and technique, implementation schedule, monitoring and maintenance, and success criteria. The revegetation plan would also direct revegetation of temporarily impacted native-dominated vegetation areas located in the WR-MSHCP and the CV-MSHCP plan areas consistent with MSHCP standards and pursuant to any agreements negotiated between SCE and the MSHCP management entities (e.g., RCA and CVCC) regarding SCE's obligations as a PSE receiving coverage for impacts to various resources. If SCE does not gain PSE status under either MSHCP, the draft revegetation plan to re-establish native-dominated vegetation back to pre-construction conditions (as noted above) would include native dominated areas within

Table D-19-2. Applicant Proposed Measures – Water Resources and Hydrology

APM	Description
	MSHCP areas also. The draft revegetation plan would be submitted to the CPUC, BLM, and applicable wildlife agencies for approval after completion of final engineering and prior to the start of construction. The Revegetation Plan will include the following elements: (a) A statement of revegetation goals for different areas within the project (e.g., to mitigate project impacts to specific resources) based on the administrative land jurisdiction particular areas fall in and also based on the different vegetation types and the constituent elements therein. In particular, revegetation objectives for areas supporting native vegetation may differ substantially from the objectives for revegetation in other areas. Revegetation objectives will be specified for different habitat and vegetation types and for the following administrative areas: 1) San Bernardino County, including specific reference to goals for revegetation within USFWS-designated Critical Habitat for California gnatcatcher and areas deemed occupied by Stephens' kangaroo rat; 2) WRC MSHCP areas, including Public/Quasi-Public conservation areas and Additional Reserve Lands; 3) CVMSHCP areas; and 4) areas to be re-vegetated on land within the Morongo Reservation. Examples of likely goals may include preventing or minimizing further site degradation; stabilizing soils; promoting passive vegetation recovery over time; replacing degraded natural vegetation and habitat value with equivalent vegetation cover and composition as compared to pre-construction conditions; and minimizing soil erosion, dust generation, and weed invasions. (b) Quantitative success criteria. Because restoration goals will differ according to location, success criteria shall be tailored appropriately to areas in different administrative jurisdictions (please see above) and will also be defined specifically for areas containing habitat for listed species and other special-status species for which habitat value is being replaced along the route. (c) Implementation. The Plan will describe SCE's proposed implementation measures, including: (a) pre-construction characterization of specific areas subject to temporary construction impacts; (b) soil preparation measures, including locations of recontouring, decompacting, soil amendments, imprinting, or other treatments; (c) details for top soil salvage and storage, as applicable; (d) plant material collection and acquisition guidelines, including guidelines for obtaining plants or seed from vendors; (e) scheduling and methods for planting or seeding; (f) proposed irrigation methods. (d) Maintenance. The Plan will include scheduling and methods for proposed maintenance activities such as weeding, trash removal, etc. (e) Monitoring and Reporting. The Restoration Plan will include a detailed monitoring and reporting program, commensurate with the goals and success criteria for each revegetation site. The monitoring and reporting program will be designed to evaluate progress toward success criteria at appropriate milestones, provide an objective determination whether each site meets success criteria at the end of the monitoring period, and report this information to the relevant agencies. (f) Contingency. The Plan will include contingency measures for implementation if revegetation efforts make insufficient progress toward success criteria at specified milestones
Hydrology	
APM HYDRO-1	Installation of drainage improvements would be designed to maintain the existing flow patterns as practicable.
APM HYDRO-2	Soil disturbance at structures and access roads would be minimized and designed to prevent long-term erosion through revegetation or construction of permanent erosion control structures.
APM HYDRO-3	Erosion control and hazardous material plans will be incorporated into the construction bidding specifications to ensure compliance.

D.19.3.2 Impact Criteria

NEPA does not have specific significance criteria. However, NEPA regulations contain guidance regarding significance analysis. Specifically, consideration of "significance" involves an analysis of both context and intensity (Title 40 Code of Federal Regulations 1508.27). Using the following criteria for the purposes of analysis, the project or an alternative would impact hydrology and water resources if it would:

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

  The project overlies several groundwater basins and would involve construction excavation.

- Place within a watercourse or flood hazard area structures which would impede or redirect flood flows, or otherwise alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in erosion, siltation, or mudflow.

  The project crosses a number of watercourses, and some of the excavation would be in or near watercourses. There would be construction-related ground disturbance.

- Increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site, create or contribute to runoff water which would exceed the capacity of existing or planned stormwater drainage systems, divert or obstruct flow in a manner that would induce or exacerbate flooding, or otherwise contribute to flood-related damage, on- or off-site.

  This impact relates to flooding and flood damage. Portions of the project would be in floodplain areas.

- Violate any water quality standard or waste discharge requirement, or otherwise degrade water quality, including through providing substantial additional sources of polluted runoff.

  Portions of the project would be in or cross streamflow areas.

D.19.3.3 Impacts and Mitigation Measures

Impact WR-1: The project would deplete groundwater supplies or interfere with groundwater recharge

Construction Water Usage. As explained in Section B.3.1.4, SCE has estimated it would use up to a maximum of 250 acre-feet of water per year for construction purposes. Over the nearly 50-mile right-of-way, this water could be obtained from any of 14 possible local water districts (see Table B-8 in Section B). These local water districts use a combination of surface water and groundwater for water supply.

SCE would not extract groundwater itself to use for dust control; this water would be provided by local or regional water purveyors. Mitigation Measure UPS-1a (Use non-potable water for construction purposes; see Section D.17) would require SCE to use non-potable water for dust control and soil compaction whenever feasible. If non-potable water is not available, SCE's construction water demand has the potential to affect local water supplies. As shown in Table B-8 in Section B, the total water supply from the 14 identified water districts exceeded total water use within those districts by 22,597 acre-feet in 2010 (the most recent year with complete data). Water supply and water use data was not available for all 14 of the identified districts. However, based on the best available and most current data, water supply exceeds water use in the area by almost an order of magnitude more than SCE's proposed construction water demand. Therefore, even if non-potable water is not available for dust suppression and soil compaction, the potential adverse effect on local water supplies due to Proposed Project construction water use would be very minor.

Dewatering. Construction excavation or augering would be required, up to 60 feet in depth, to construct structures and other underground facilities. Should groundwater be found in these excavations, dewatering may be necessary. This would be a direct impact to the groundwater resource.

Most of the groundwater aquifers underlying the project route are deeper than 60 feet and are unlikely to be affected by dewatering activities. Two possible exceptions are the Coachella Valley San Gorgonio Pass Groundwater Basin, which has reported water levels within 47 feet of the surface, and the Upper Santa Ana Valley Rialto-Colton Subbasin, which has groundwater within 56 feet of the ground surface. It is not known whether these depths are at the locations of the Proposed Project. There is a possibility that some dewatering could occur in the San Gorgonio Pass and Upper Santa Ana Valley Rialto-Colton groundwater basins during construction of structures, particularly those structures within the alluvial floodplains of the watercourses described in Table D.19-1.

The impacts to the San Gorgonio Pass Groundwater Basin and Upper Santa Ana Valley Rialto-Colton Groundwater Basin are expected to be minimal, because the maximum excavation or augering depth extends only a short distance into the highest reported level of the groundwater. Not all excavations would require dewatering. Also, these impacts would be temporary (occurring during construction only), and the amount of water to be extracted would be small in comparison to the volume of water in the groundwater basin. The groundwater supplies would not be depleted.

It is possible that additional shallow subsurface water could be encountered at other locations during construction, possibly requiring dewatering. Although there is a potential for local shallow groundwater to occur anywhere along the route, it is most likely to occur where structures are proposed at or near the watercourse crossings listed in Table D.19-1, especially in the western portion of the route where rainfall is higher. Temporary dewatering of local groundwater during construction of transmission structures and underground portions of the route would not affect the major aquifers that are used for water supply.

Mitigation Measure for Impact WR-1: The project would deplete groundwater supplies or interfere with groundwater recharge

UPS-1a Use non-potable water for construction. (Full text included in Section D.17)

Impact WR-2: The project would cause erosion and siltation

Project construction would require excavation and grading for access roads and new transmission structures, trenching for underground facilities, and excavation and grading for the removal of existing structures. Disturbance of soil during construction could result in erosion of disturbed areas during rainfall events, with eroded soil potentially transported by runoff to downstream watercourses, streets or other areas. This would be an indirect impact requiring the action of rainfall and surface runoff to occur.

Land disturbance caused by project construction activities, including existing unpaved access roads, could produce erosion and surface runoff. The highest potential for this impact to occur would be on new access roads and pads to be constructed for the proposed 220 kV structures, and in hilly areas with steep terrain such as the Timoteo Badlands area of Segment 3. San Timoteo Creek and local tributaries in Segment 3 would be potentially affected by sediment eroded from project work areas.

This impact could also occur during project operation (after construction is complete). Lands disturbed by grading and excavation could continue to erode during rainfall events well after construction has ended. In most cases the risk to water quality would be minimal, though there would be some risk to public safety (e.g., if project-induced siltation were to obstruct traffic lanes in a street or highway).

SCE has committed to implementation of three APMs that would reduce erosion: APM HYDRO-2, APM HYDRO-3, and APM BIO-1. While these APMs would reduce many impacts to water quality and would address short-term and long-term soil erosion induced by construction, Mitigation Measure WR-2a (Implement an Erosion Control Plan and demonstrate compliance with water quality permits; full text presented below) adds detail and is required to ensure that erosion is controlled. Mitigation Measure WR-2a supersedes APMs HYDRO-2 and HYDRO-3.

As described in Section B.3.1.2 (Section B, Project Description), SCE would develop and adhere to SWPPPs in conformance with the California General Permit for Discharges of Storm Water Associated with Construction Activities and the Federal General Permit for Storm Water Discharges Associated with Construction Activity on Tribal Land. The SWPPP would be required to implement best management practices to control surface erosion. Multiple SWPPPs are expected to be required for project construction. With implementation of Mitigation Measure WR-2a, APMs, and existing regulations, surface erosion impacts are expected to be minimal.

Drainage patterns could be disturbed through grading, construction of structure pads, and placement of structures and other above-ground structures in watercourses. Due to the nature of this project, with small-footprint structures spread over a large area, any drainage pattern disturbance would be local. Local disturbances, for instance a structure constructed in a flow path could cause local scour and erosion that could extend to adjacent property, and result in deposition of eroded material into stream beds downstream of the area of disturbance. The effect could be temporary during construction, or long-term, as would be the case with a structure in a flow path, with similar risks to public safety as described for this impact above. This impact could occur anywhere along the project route where construction would be in flow paths. The most likely areas of effect are in the vicinity of the watercourses listed in Table D.19-1.

Access roads would be constructed in watercourses, and some structures may be located directly within major watercourses listed in Table D.19-1. APM HYDRO-1 requires maintaining the existing flow pattern where possible. Mitigation Measure WR-2a (Implement an Erosion Control Plan and demonstrate compliance with water quality permits) is recommended. Compliance with Sections 404 and 401 of the Clean Water Act, and with Sections 1600–1616 of the California Fish and Game Code, would further reduce impacts to watercourses, and require mitigation. With mitigation, APMs, and compliance with existing regulations, erosion impacts related to disturbance of drainage patterns are expected to be minimal.

Mitigation Measure for Impact WR-2: The project would cause erosion and siltation

WR-2a **Implement an Erosion Control Plan and demonstrate compliance with water quality permits.** SCE shall develop and submit an Erosion Control Plan to the CPUC and BLM for approval at least 60 days prior to construction. The Erosion Control Plan may be part of the Stormwater Pollution Prevention Plan, and kept onsite and readily available on request.

Soil disturbance at structures and access roads is to be minimized and designed to prevent long-term erosion. The Erosion Control Plan shall include:

- The location of all soil-disturbing activities, including but not limited to new and/or improved access and spur roads.
- The location of all streams and drainage structures that would be directly affected by soil-disturbing activities (such as stream crossings or public storm drains by the right-of-way and access roads).
- BMPs to protect drainage structures, such as public storm drains, downstream of soil disturbance activities.
- Design features to be implemented to minimize erosion during construction and during operation (if the project feature is to remain permanent after construction).
- If soil cement is proposed, the specific locations must be defined in the Plan, and evidence of approval by appropriate jurisdiction shall be submitted to the CPUC and BLM prior to its use.

- If design features include the use of retaining structures and/or walls, the design of the features shall be consistent with Mitigation Measure VR-3a (Reduce color contrast of retaining walls and land scars).
- The location and type of BMPs that would be installed to prevent off-site sedimentation and to protect aquatic resources.
- Specifications for the implementation and maintenance of erosion control measures and a description of the erosion control practices, including appropriate design and installation details.
- Proposed schedule for inspection of erosion control/SWPPP measures and schedule for corrective actions/repairs, if required. Erosion control/SWPPP inspection reports shall be provided to the CPUC EM.

Locations requiring erosion control/SWPPP corrective actions/repairs shall be tracked, including dates of completion, and documented during inspections. Inspections and monitoring shall be performed in compliance with the Federal and California Construction General Permits. The inspection reports shall be maintained and kept in their respective SWPPP, kept on site as required by the Federal and State Construction General Permits, and made available to the RWQCB, CPUC, BLM, counties, local municipalities, and tribal governments, on request. Additionally, an Annual Report shall be filed for each reporting period in compliance with Federal and California Construction General Permit reporting requirements.

SCE shall submit to the CPUC and BLM Grading Plans that define the locations of the specific features listed above.

SCE shall submit to the CPUC and BLM evidence of possession of applicable required permits for the representative land disturbance prior to engaging in soil-disturbing construction/ demolition activities. Such permits may include, but are not limited to, a CWA Section 402 NPDES California General Permit for Storm Water Discharges Associated with Construction Activities (General Permit) from the applicable Regional Water Quality Control Board(s) (RWQCBs), and the Federal General Permit for Storm Water Discharges Associated with Construction Activities on Tribal Land.

Prior to ground disturbance in stream channels or other waters jurisdictional to the State of California or the Federal Government, SCE shall obtain a Streambed Alteration Agreement from the California Department of Fish and Wildlife, a Section 404 permit from the USACE, and a CWA Section 401 certification from the SWRCB.

Impact WR-3: The project would cause flood damage

The rate or amount of surface runoff could be increased as a result of changes to the permeability of the ground surface through the construction of new impervious areas, or by removal of vegetation and alteration of natural soil surface characteristics by constructing and compacting new access roads. New impervious surfaces resulting from the project would be small and limited primarily to new structures and their foundations, resulting in negligible increase in runoff. For example, structure footings would be approximately 38 square feet in area. It would take 50 structures to have an equivalent impervious area as one medium-sized house.

Some new access roads in mountainous areas may be paved. Most disturbances that could result in changes in rainfall/runoff characteristics would consist of unpaved access roads, spur roads, temporary construction roads, structure pads, and temporary staging areas. Areas with the largest potential for increased runoff would be in areas currently not disturbed, which consist of most of Segments 2, 3, 4, 5 and 6.

Total disturbance during construction is estimated at less than 5,000 acres, averaging about 104 acres per mile of route. Perceptible local increases in runoff rate and amount could occur as a result of this disturbance. However, the total area is small compared to the size of watersheds capable of producing most flooding. The San Timoteo Creek watershed, in which roughly half of the disturbance would occur, has an area of 125 square miles at Loma Linda, meaning total project-related ground disturbance in that watershed would be about 2 percent of the total area of the watershed. This disturbance is expected to result in minimal increase in runoff and little risk to water quality.

Most of the ground disturbance for roads would be temporary and for the duration of construction only. Of the nearly 5,000 acres of total disturbance, about 4,200 would be restored to natural condition, leaving about 500 acres permanent disturbance (about 11.4 acres per mile) that would be converted from natural ground to mostly unpaved access roads and pads. Minor local increases in runoff rate and volume are probable. In terms of the overall watersheds involved, this disturbance, and associated long-term increases in runoff rate and volume, is minimal.

APM HYDRO-1 requires maintaining the existing flow pattern where possible, which would minimize the potential for diverting or obstructing flow in a manner that would induce or exacerbate flooding, as would compliance with Clean Water Act Section 404. All of the proposed new above-ground structures are relatively small and widely distributed, such that diversions of flood flows are unlikely with the exception of local minor drainage. None of the proposed structures are located in active channels, but several (as shown in Tables D.19-1 and D.19-3) are within potentially active braided areas of alluvial fans which could become active channels.

Table D.19-3 defines the locations where new structures would be installed within known floodplains. In the event of large floods the structures would cause local flow turbulence, but damaging flow diversions due to the presence of the structure are unlikely because of the small tower footprint relative to the width of the floodplain, and the placement of most structures outside the active channel where the potential for damaging diversions is greatest. Those structures located in braided alluvial fans will be in areas where flow paths are naturally subject to variation and are of much greater extent than the footprint of the towers.

Table D.19-3. New Transmission Towers in Mapped FEMA 100-Year Floodplains.

Transmission Line	Tower Number	Watercourse	Comments
San Bernardino–Redlands-Tennessee 66 kV	70, 71, 72, 73, 74, 84	Mission Zanja	No structures in active channel
San Bernardino–Redlands-Tennessee 66 kV	90, 91, 92, 93	Morey Arroyo	No structures in active channel
San Bernardino–Timoteo-Redlands 66 kV	43, 44	Mission Zanja	No structures in active channel
Devers-Vista No. 1 220 kV	5N48, 5S48, 5N48, 5S48,	San Gorgonio River	No structures in active channel
Devers-Vista No. 1 220 kV	5N35, 5S35, 5N36, 5S36, 5N37, 5S37, 5N38, 5S38	San Gorgonio River	No structures in active channel. All structures within braided alluvial fan.
Devers-Vista No. 1 220 kV	5N19, 5S19	Millard Canyon Creek	No structures in active channel.
Devers-Vista No. 1 220 kV	6S41, 6S42, 6N42, 6S43, 6N43, 6S44, 6N44, 6S45, 6N45	Stubble Creek	No structures in active channel. All structures within braided alluvial fan.

Listed in this table are structures known to be within mapped 100-year floodplains. Many areas prone to flooding are not mapped. Towers that may be within unmapped floodplains are not listed.

Flood-related damage to project structures is possible in the event that lateral erosion of watercourse banks or vertical scour of the stream bed during a large flood reaches and destabilizes a structure or other underground project feature. Transmission structures could be destabilized if footings are not designed for anticipated stream scour, which may not be considered in the design process for structures not currently in active channels. Direct effects to public safety could occur through scour-related destruction of or damage to the transmission structure, resulting in tower collapse and interruption of electric service. At least four structures (5N34, 5S34, 5N54, 5S35) would be located within 100 feet of the active channel of the San Gorgonio River. The active channel at this point is approximately 450 feet wide. The channel banks in this general area are known to have moved by erosion up to 130 feet in a flood or floods that occurred between 2004 and 2005, and it is possible these four structures could be captured by the channel during future large floods. Other structures within the active braided area of the alluvial fans emanating from the San Bernardino Mountains could also be at risk (see Tables D.19-1 and D.19-2).

As described in Section D.19.1.2.10 (Telecommunications Facilities), a portion of a new underground telecommunications line would be within the designated floodway of Smith Creek. The proposed line would not obstruct flow, and would therefore be compatible with floodway uses, but the line could be uncovered and damaged by vertical scour during a large flood, resulting in possible communication outages.

Onsite damages related to channel erosion and vertical scour during a flood could be prevented by design of footings and burial depth to account for erosion and scour. The final design analysis has not been completed, and it is not known at this time if footings and burial depths would take erosion and scour into account. Mitigation Measure WR-3a (Implement flood, erosion, and scour protection for aboveground and belowground improvements) is recommended in order to reduce the potential for damage and interruption of power and communication services due to erosion and scour.

Mitigation Measure for Impact WR-3: The project would cause flood damage

WR-3a **Implement flood, erosion, and scour protection for aboveground and belowground improvements.** SCE shall make a determination during final project design phase as to the lateral erosion and 100-year scour potential for watercourses near proposed structures and other above-ground features, as well as new underground conduits. This determination shall be made by a registered professional engineer with expertise in river mechanics. If the determination identifies specific structures or underground conduits that may be subject to scour or lateral movement of a stream channel, these structures shall be protected against 100-year scour and/or lateral erosion through modifications of the foundation design, or otherwise in a manner determined to be appropriate by the river mechanics engineer.

SCE shall provide the determination of lateral erosion and scour potential, and documentation of corrective actions and the engineering basis thereof, to the CPUC and BLM prior to the start of construction (as defined in Mitigation Measure EM-1a (Prepare monitoring plan).

SCE shall evaluate and conform to NPDES MS4 Phase I and II requirements for post-construction BMPs and, in consultation with San Bernardino and Riverside Counties and applicable local jurisdictions and agencies, prepare or conform to existing Water Quality Management Plans where determined necessary.

Impact WR-4: The project would degrade water quality, or violate a water quality standard or waste discharge requirement

Construction of the project would require excavation and grading for roads, trenches and structures, and for removal of existing structures. Disturbance of soil during construction could result in soil erosion and lowered water quality through increased turbidity and sediment deposition into local streams. Downstream beneficial uses could be adversely affected through violation of RWQCB water quality objectives for suspended solids, total dissolved solids, sediment and turbidity. This impact would apply to all watercourses along the route (see list of watercourses in Table D.19-1).

Accidental spills or disposal of harmful materials used during construction could wash into and pollute surface waters or groundwater. Materials that could contaminate the construction area or spill or leak include lead-based paint flakes, diesel fuel, gasoline, lubrication oil, cement slurry, hydraulic fluid, antifreeze, transmission fluid, lubricating grease, and other fluids. Downstream beneficial uses could be adversely affected through violation of RWQCB water quality objectives for toxicity and chemical constituents. This impact could affect all watercourses along the route.

The dry nature of most of the surface streams is such that should material spills occur during construction, these could easily be cleaned up prior to water being contaminated (because water is not generally flowing). Groundwater basins potentially affected generally have groundwater deeper than 60 feet, which in nearly all cases would be below the maximum depth of excavation (see the description of Impact WR-1). With shallow excavation and deeper groundwater, there is little likelihood that groundwater could be affected directly during construction.

Mitigation Measures WR-2a (Implement an Erosion Control Plan and demonstrate compliance with water quality permits) and WR 3a (Implement flood, erosion, and scour protection for aboveground and belowground improvements) would require development of and adherence to erosion-control and flood protection plans during construction, conformance to NPDES MS4 Phase I and II requirements for post-construction BMPs, and adherence to applicable Water Quality Management Plans. Development and adherence to the SWPPP in conformance with applicable California or Federal General Permits for Discharges of Storm Water Associated with Construction Activity would require best management practices to prevent and control erosion and siltation during construction, prevent, contain and mitigate accidental spills during construction, require post-construction BMPs, and address treatment, if required, and disposal of, dewatered groundwater to prevent violation of water quality objectives or damaging beneficial uses. Compliance with Sections 401 and 404 of the Clean Water Act would also minimize this impact. Mitigation Measure HH-2a (Prepare a hazardous materials and waste management plan), described in Section D.10 Hazards and Hazardous Materials, would further ensure against potential surface and groundwater contamination.

D.19.3.4 Impacts of Connected Actions

Impact WR-1: The project would deplete groundwater supplies or interfere with groundwater recharge

Desert Center Area. Connected solar projects in this the Desert Center area would include development of a 500 MW solar trough project and 450 MW of solar PV on a total of 6,600 acres. The area is underlain by the Chuckwalla Valley Groundwater Basin. Total storage capacity of the basin is approximately 9,100,000 acre-feet (DWR, 2003). Depth to groundwater in 2013 was approximately 150 feet bgs (USGS, 2013). Recent analysis suggests that the basin is not currently in an overdraft condition (BLM, 2013).

The Revised Presiding Member's Proposed Decision for the Palen Solar Power Project concluded that the Reconfigured Alternative #2 would require a total of approximately 5,750 af of water for construction, and approximately 300 afy of water during operation of the project (CEC, 2010). Other solar projects in this area include the DHSP (described above) and an additional 300 MW of solar PV that would be developed on approximately 2,400 acres. Excluding DHSP, these additional connected action projects would be composed of a 250 MW solar PV project and a 50 MW solar PV project, which would be constructed on 2,000 acres and 400 acres, respectively. The DHSP would require a total of approximately 800 to 1,000 af of water for construction and approximately 26 to 39 afy of water for operations. Using this as a gage, the 250 MW solar PV project would be approximately two-thirds larger than the DHSP in terms of MW and acres, and it is assumed that it would require two-thirds more water for construction and operation. Total construction water demand for the 250 MW solar PV project is assumed to be 1,328 to 1,660 af. Operational water demand is assumed to be approximately 43 to 65 afy. The 50 MW solar PV project would be one-third the size of the DHSP in terms of MW and acres, and it is assumed that it would require two-thirds less water for construction and operation. Total construction water demand for the 50 MW solar PV project is assumed to be 264 to 330 af. Operational water demand is assumed to be approximately 9 to 13 afy.

The total combined construction water demand for the connected solar projects in this area is estimated at 8,142 to 8,740 af. Total combined operational water demand is estimated at 378 to 417 afy. The storage capacity for the Chuckwalla Valley Groundwater Basin is reported as approximately 9,100,000 af (DWR, 2003). The current amount of water in storage is unknown, but recent analysis suggests that the basin is not currently in an overdraft condition (BLM, 2013). In September of 2013, the Final Staff Assessment for the Palen Solar Electric Generating System concluded that the Chuckwalla Valley Groundwater Basin had a positive annual water balance of 2,608 af (CEC, 2013). Although the total construction water demand of up to 8,740 af and the total operational water demand of up to 417 afy represent a very small percentage of the total storage capacity of the basin (0.04% and 0.002%, respectively), the total construction water demand for all of the solar projects in this area would exceed the annual water balance for the Chuckwalla Valley Groundwater Basin and would lead to overdraft conditions. However, these construction-related adverse effects would be temporary, and the total combined operational water demand for all of the solar projects in this area would not exceed the positive annual water balance for the basin or result in continued overdraft conditions.

Mitigation would be required to prevent a substantial adverse effect to groundwater levels. Implementation of mitigation, including but not limited to: measures to monitor drawdown and groundwater overdraft conditions; the provision of alternative sources of water from outside of the basin; and, drought water management and water conservation programs would reduce the severity of this adverse effect. If groundwater monitoring reveals that construction of the solar projects in this area would lead to overdraft conditions in the basin, then measures including water conservation programs or alternative sources of water supply would be required to protect groundwater resources.

Blythe Area. The connected solar projects in this the Blythe area would involve development of 524 MW of solar PV projects on about 4,200 acres. Groundwater in this area is described in Section D.19.1.3. The study area is underlain by the Palo Verde Mesa Groundwater Basin. The total storage capacity of the basin is estimated at approximately 6,840,000 acre-feet (DWR, 2003). High concentrations of arsenic, selenium, fluoride, chloride, boron, sulfate, and TDS have been recorded in the basin (DWR, 2003). Depth to groundwater in the basin ranges from approximately 80 feet bgs to approximately 150 feet bgs (RCPD, 2014). The water budget for the basin remains uncertain, but recent analysis suggests that the basin is not currently in an overdraft condition (BLM, 2013).

The environmental analysis for the Desert Harvest Solar Project (DHSP) concluded that total construction water demand would be approximately 800 to 1,000 acre-feet. The DHSP is in a similar climatic and topographic area as the Blythe area and would involve development of 150 MW of solar PV on approximately 1,200 acres. The connected projects in the Blythe area would include three solar PV projects that would produce a combined 524 MW on a total of approximately 4,200 acres. Two of the projects would be 150 MW solar PV developments on 1,200 acres each. The third project would be 224 MW developed on approximately 1,800 acres. The combined connected actions in this the Blythe area would be approximately 3.5 times larger than the DHSP in terms of MW and acres. These connected action projects are therefore estimated to require a combined total of approximately 2,800 to 3,500 acre-feet of water for construction. Operational water demand for the DHSP would be approximately 26 to 39 afy, mainly for panel washing. Total operational water demand for the combined connected action projects in this study area would be 3.5 times greater, or approximately 91 to 136.5 afy.

The total storage capacity of the Palo Verde Mesa Groundwater Basin is estimated at approximately 6,840,000 acre-feet (DWR, 2003). The current amount of water in storage is unknown, but recent analysis suggests that the basin is not currently in an overdraft condition (BLM, 2013). Although the total construction water demand of up to 3,500 af and the total operational water demand of up to 136.5 afy are large amounts of water, they represent a very small percentage of the total storage capacity of the basin (0.05% and 0.002%, respectively). Because the basin is not currently understood to be in an overdraft condition, and because both the total construction water demand and total operational water demand for the connected action projects in this area represent very small percentages of the total storage capacity of the basin, the construction and operational adverse effects on groundwater in this study area could be minimized with effective mitigation.

These adverse effects could be reduced through implementation of mitigation, including but not limited to: measures to monitor drawdown and groundwater overdraft conditions; the provision of alternative sources of water from outside of the basin; and, drought water management and water conservation programs.

Impact WR-2: The project would cause erosion and siltation

Common to All Areas. Construction of the connected action projects would require ground-disturbing activities (including vegetation clearance, excavation, and grading) for access roads, PV panel, gen-tie lines, and O&M buildings. The solar trough project in Desert Center also would substitute parabolic mirrors for PV panels. Disturbance of soil during construction could result in erosion of disturbed areas during rainfall events. The eroded soil potentially would be transported by runoff to downstream watercourses, streets or other areas. This would be an indirect adverse effect requiring the action of rainfall and surface runoff to occur.

Land disturbance caused by project construction activities for this connected action, including existing unpaved access roads, could produce erosion and surface runoff. The highest potential for this impact to occur would be for areas of recent ground disturbance that experience a sufficiently large amount of precipitation that results in runoff, including channel flow in the desert washes and sheet flow or shallow flooding. This impact could also occur during project operation (after construction is complete). Lands disturbed by grading and excavation could continue to erode during rainfall events well after construction has ended.

Average annual precipitation in three connected action areas is approximately 4 to 5 inches and most of that water is lost to evaporation and evapotranspiration. However, numerous ephemeral desert washes traverse the area. Drainage patterns could be disturbed through grading, construction of solar PV panel arrays and O&M buildings, and by placement of structures in watercourses. Disturbance and alteration of the existing drainage pattern could result in accelerated erosion and sedimentation. The connected action project in this area would be located on mostly flat ground and would experience runoff infrequently in response to large precipitation events. Drainage in the area takes the form of broad, ephemeral desert washes and sheet flow across the valley floor. Due to the broad, meandering nature of drainage in the area, it is not expected that the solar project here would substantially disturb or alter the existing drainage pattern.

This adverse effect related to increased erosion and sedimentation could be reduced through compliance with existing regulation and implementation of mitigation. Section 402 of the Clean Water Act requires development and implementation of a Storm Water Pollution Prevention Plan (SWPPP), which includes BMPs to prevent polluted stormwater from leaving the project site. Mitigation that would reduce this adverse effect includes the development and implementation of an erosion control plan, and the implementation of project design characteristics to maintain the existing drainage and flow pattern across the project site. With implementation of mitigation and compliance with existing regulations, this adverse effect would be minor.

Impact WR-3: The project would cause flood damage

Common to All Areas. Existing drainage patterns in all areas are characterized by ephemeral drainages which contain water only after precipitation events sufficient to produce runoff. Construction of the connected action projects would alter surface water drainage patterns through the implementation of infrastructure and components such as the PV arrays (or parabolic mirror arrays), O&M buildings, and access roads, and soil compaction required to install these features. Construction of the connected action projects would include both temporary and permanent disturbance to the sites. Temporary disturbance would result from trenching for electrical conduit as well as site preparation and leveling for construction staging areas, concrete batch plant(s), and temporary access roads. Permanent disturbance would result from construction of access roads, O&M facilities, and solar PV panel or parabolic mirror array foundations.

Alterations to drainage patterns during the construction of the connected action projects could result in flooding on- or off-site. Encroachment of a project structure into a stream channel or floodplain could result in flooding of or erosion damage to the encroaching structure, diversion of flows and increased flood risk for adjacent property, or increased erosion on adjacent property. Earthmoving activities would occur within or adjacent to on-site drainages only where permitted for road crossings, trenching, and restoration work. In addition, it is anticipated that some project features would be placed in areas subject to periodic overland flow or placed within broad, ephemeral washes.

The permanent aboveground features associated with the projects would be designed and engineered to withstand potential flooding and erosion hazards. Without the implementation of mitigation measures, construction of the projects would increase stormwater peak-flow rates and velocities both on site and off site. This adverse effect related to flood damage could be reduced through compliance with existing regulation and implementation of mitigation. Section 402 of the Clean Water Act requires development and implementation of a Storm Water Pollution Prevention Plan (SWPPP), which includes BMPs to prevent polluted stormwater from leaving the project site. Mitigation that would reduce this adverse effect includes the development and implementation of a project-specific erosion control plan, and the implementation of project design characteristics to maintain the existing drainage and flow pattern across a project site. With implementation of mitigation and compliance with existing regulations, this adverse effect would be minor.

Desert Center Area. Connected actions in this study area would include the development of a 500 MW solar trough project and 450 MW of solar PV on a total of 6,600 acres. The rate or amount of surface runoff could be increased as a result of changes to the permeability of the ground surface through the construction of new impervious areas, or by removal of vegetation and alteration of natural soil surface roughness characteristics by constructing and compacting new access roads. New impervious surfaces resulting from the connected action projects would be small and limited primarily to the foundations for the parabolic mirrors, solar PV panel arrays, and O&M facilities. There are no FEMA-mapped 100-year floodplains in the area, although shallow to moderately deep sheet flow would occur following a major rainfall event.

Blythe Area. Connected actions in this study area would include the development of 524 MW of solar PV projects on about 4,200 acres. The rate or amount of surface runoff could be increased as a result of changes to the permeability of the ground surface through the construction of new impervious areas, or by removal of vegetation and alteration of natural soil surface roughness characteristics. New impervious surfaces resulting from the connected action project would be small and limited primarily to solar PV panel arrays and their foundations. There are no FEMA-mapped 100-year floodplains in the area, although shallow to moderately deep sheet flow would occur following a major rainfall event.

Impact WR-4: The project would degrade water quality, or violate a water quality standard or waste discharge requirement

Common to All Areas. Downstream beneficial uses could be adversely affected through violation of RWQCB water quality objectives for suspended solids, total dissolved solids, sediment and turbidity.

Accidental spills or disposal of hazardous materials used during construction could wash into and pollute surface waters or groundwater. Hazardous materials that could be released during construction of the connected action project include lead-based paint flakes, diesel fuel, gasoline, lubrication oil, cement slurry, hydraulic fluid, antifreeze, transmission fluid, lubricating grease, and other fluids. Downstream beneficial uses could be adversely affected through violation of RWQCB water quality objectives for toxicity and chemical constituents.

The dry nature of most of the study area is such that should material spills occur during construction, these could easily be cleaned up prior to water being contaminated (because water is not generally flowing). Given the depth to groundwater in all of the areas, there is little likelihood that groundwater would be affected directly during construction.

This adverse effect related to water quality degradation could be reduced through compliance with existing regulation and implementation of mitigation. A required SWPPP includes BMPs to prevent polluted stormwater from leaving the project sites. Mitigation that would reduce this adverse effect includes: the development and implementation of erosion control plans; the implementation of project design characteristics to maintain the existing drainage and flow pattern across the project sites; and the development and implementation of a hazardous materials and waste management plan that would require BMPs to prevent, contain and clean-up accidental spills. With implementation of mitigation and compliance with existing regulations, this adverse effect would be minor.

Desert Center Area. Connected actions in this study area would include the development of a 500 MW solar trough and 450 MW of solar PV on a total of 6,600 acres. Construction of the connected action projects would require excavation and grading for O&M facilities, roads, trenches, the parabolic mirrors, and PV panel array foundations. Groundwater in the study area is encountered at average depth of approximately 150 feet bgs, which in nearly all cases would be below the maximum depth of excavation.

Blythe Area. Connected actions in this study area would include the development of 524 MW of solar PV projects on about 4,200 acres. Construction of the connected action projects would require excavation and grading for O&M facilities, roads, trenches, and PV panel array foundations. Groundwater in the study area is encountered at depths of approximately 80 to 150 feet bgs, which in nearly all cases would be below the maximum depth of excavation.

D.19.4 Environmental Impacts of Project Alternatives

Three alternatives are considered in this section; all of these alternatives would be located within the existing WOD ROW. The No Action Alternative is evaluated in Section D.19.5. Alternatives are described in detail in Appendix 5 (Alternatives Screening Report) and are summarized in Section C.

Water resources and hydrology within the ROW are described by segment in Section D.19.1.2 above; the description of the environmental setting would apply equally to the alternatives.

D.19.4.1 Tower Relocation Alternative

The Tower Relocation Alternative would locate certain transmission structures in Segments 4, 5, and 6 farther from existing homes than would be the case under the Proposed Project.

Four impacts related to water resources and hydrology were identified for the Proposed Project. These impacts also would apply to the Tower Relocation Alternative. This alterative overall would be the same as the Proposed Project, with the exception of the relocated transmission towers that are described above and in Appendix 5. The full text of all mitigation measures referenced in this section is presented in Section D.19.3.3, except where otherwise noted.

Impact WR-1: The project would deplete groundwater supplies or interfere with groundwater recharge

SCE has estimated it would use up to a maximum of 250 acre-feet of water per year for construction purposes. The Tower Relocation Alternative would have similar requirements. SCE would not extract groundwater itself to use for dust control; this water would be provided by local or regional water purveyors. If non-potable water is not available, SCE's construction water demand has the potential to affect local water supplies. Based on the best available and most current data, water supply exceeds water use in the area by almost an order of magnitude more than SCE's proposed construction water demand. Therefore, even if non-potable water is not available for dust suppression and soil compaction, the potential adverse effect on local water supplies due to Proposed Project construction water use would be very minor.

Should groundwater be found in excavations, dewatering may be necessary. Most of the groundwater aquifers underlying the project route are deeper than 60 feet and are unlikely to be affected by dewatering activities. Two possible exceptions are the Coachella Valley San Gorgonio Pass Groundwater Basin, which has reported water levels within 47 feet of the surface, and the Upper Santa Ana Valley Rialto-Colton Subbasin, which has groundwater within 56 feet of the ground surface. It is not known whether these depths are at the locations of the Tower Relocation Alternative.

Not all excavations would require dewatering. Also, these impacts would be temporary (occurring during construction only), and the amount of water to be extracted would be small in comparison to the volume of water in the groundwater basin. The groundwater supplies would not be depleted.

Additional shallow subsurface water could be encountered at other locations during construction, possibly requiring dewatering. Although there is a potential for local shallow groundwater to occur anywhere along the route, it is most likely to occur where structures are proposed at or near watercourse crossings, especially in the western portion of the route where rainfall is higher. Temporary dewatering of local groundwater during construction of transmission structures and underground portions of the route would not affect the major aquifers that are used for water supply.

Relocating certain towers approximately 50 feet farther from the southern edge of the ROW would have no effect on the amount of construction water that would be required compared to the Proposed Project. Excavation and auguring would be required for construction of both relocated and non-relocated structures. Dewatering of shallow groundwater may be required during construction of some of the towers (including the relocated towers), especially those that are located within the Coachella Valley San Gorgonio Pass Groundwater Basin. This alternative would not result in a greater need for dewatering compared to the Proposed Project because the relocated towers would be underlain by the exact same groundwater conditions as the Proposed Project structures that they are replacing. These impacts would be temporary (occurring during construction only), and the amount of water to be extracted would be small in comparison to the volume of water in the groundwater basin. The groundwater supplies would not be depleted.

Implementing Mitigation Measure UPS-1a (Use non-potable water for construction) would ensure potential impacts are avoided. (Full text of UPS-1a is provided in Section D.17.)

Impact WR-2: The project would cause erosion and siltation

Project construction would require excavation and grading for access roads and new transmission structures, trenching for underground facilities, and excavation and grading for the removal of existing structures. Disturbance of soil during construction could result in erosion of disturbed areas during rainfall events, with eroded soil potentially transported by runoff to downstream watercourses, streets or other areas.

This impact could also occur during project operation (after construction is complete). Lands disturbed by grading and excavation could continue to erode during rainfall events well after construction has ended. In most cases the risk to water quality would be minimal, though there would be some risk to public safety (e.g., if project-induced siltation were to obstruct traffic lanes in a street or highway).

SCE would develop and adhere to a SWPPP in conformance with the California General Permit for Discharges of Storm Water Associated with Construction Activities and the Federal General Permit for Storm Water Discharges Associated with Construction Activity on Tribal Land. The SWPPP would be required to implement best management practices to control surface erosion. Multiple SWPPPs are expected to be required for project construction. With implementation of Mitigation Measure WR-2a, APMs, and existing regulations, surface erosion impacts are expected to be minimal.

Drainage patterns could be disturbed through grading, construction of structure pads, and placement of structures and other above-ground structures in watercourses. Due to the nature of this project, any drainage pattern disturbance would be local. Local disturbances, for instance a structure constructed in a flow path could cause local scour and erosion that could extend to adjacent property, and result in deposition of eroded material into stream beds downstream of the area of disturbance. The effect could be temporary during construction, or long-term, as would be the case with a structure in a flow path, with similar risks to public safety as described for this impact above.

Access roads would be constructed in watercourses, and some structures may be located directly within major watercourses listed in Table D.19-1. APM HYDRO-1 requires maintaining the existing flow pattern where possible. Mitigation Measure WR-2a (Implement an Erosion Control Plan and demonstrate compliance with water quality permits) is recommended. Compliance with Sections 404 and 401 of the Clean

Water Act, and with Sections 1600–1616 of the California Fish and Game Code, would further reduce impacts to watercourses, and require mitigation. With mitigation, APMs, and compliance with existing regulations, erosion impacts related to disturbance of drainage patterns are expected to be minimal.

Under the Tower Relocation Alternative, most of the relocated structures that would be on level ground, but several structures to be moved would occur in the hills west of Cherry Valley Boulevard. The ground disturbance associated with the relocated structures would not result in more substantial erosion than would occur with the Proposed Project towers, which would also be on slopes. It is unlikely that ground disturbance in this alternative would result in accelerated erosion greater than that of the Proposed Project. As under the Proposed Project, erosion would be greatest for activities that take place on steep slopes. As a component of both the Proposed Project and this alternative, SCE would have to obtain the applicable NPDES General Permit for Storm Water Discharges Associated with Construction Activities.

Implementing Mitigation Measure WR-2a (Implement an Erosion Control Plan and demonstrate compliance with water quality permits) would ensure potential impacts are avoided. (Full text of Mitigation Measure WR-2a is provided in Section D.19.3.3.)

Impact WR-3: The project would cause flood damage

The rate or amount of surface runoff could be increased as a result of changes to the permeability of the ground surface through the construction of new impervious areas, or by removal of vegetation and alteration of natural soil surface characteristics by constructing and compacting new access roads. New impervious surfaces resulting from the project would be small and limited primarily to new structures and their foundations, resulting in negligible increase in runoff. For example, structure footings would be approximately 38 square feet in area. It would take 50 structures to have an equivalent impervious area as one medium-sized house.

Some new access roads in mountainous areas may be paved. Most disturbances that could result in changes in rainfall/runoff characteristics would consist of unpaved access roads, spur roads, temporary construction roads, structure pads, and temporary staging areas. Areas with the largest potential for increased runoff would be in areas currently not disturbed, which consist of most of Segments 2, 3, 4, 5 and 6.

Perceptible local increases in runoff rate and amount could occur as a result of this disturbance. However, the total area is small compared to the size of watersheds capable of producing most flooding. This disturbance is expected to result in minimal increase in runoff and little risk to water quality.

Most of the ground disturbance for roads would be temporary and for the duration of construction only. Minor local increases in runoff rate and volume are probable. In terms of the overall watersheds involved, this disturbance, and associated long-term increases in runoff rate and volume, is minimal.

All of the proposed new above-ground structures are relatively small and widely distributed, such that diversions of flood flows are unlikely with the exception of local minor drainage. None of the proposed structures are located in active channels.

Onsite damages related to channel erosion and vertical scour during a flood could be prevented by design of footings and burial depth to account for erosion and scour. The final design analysis has not been completed, and it is not known at this time if footings and burial depths would take erosion and scour into account. Mitigation Measure WR-3a (Implement flood, erosion, and scour protection for aboveground and belowground improvements) is recommended in order to reduce the potential for damage and interruption of power and communication services due to erosion and scour.

Under the Tower Relocation Alternative, the minor adjustment to the location of specific towers would not increase the amount of new impervious area that is created or the amount of vegetation removal or soil surface alteration. Therefore, adverse effects related to an increased amount or rate of runoff for this alternative would be the same as for the Proposed Project. None of the relocated towers would be sited within known floodplains, and therefore would not result in increased diversion or obstruction of flood flows compared to the Proposed Project. With implementation of APMs and mitigation measures, adverse effects related to flood damage for this alternative would be minor.

Implementing Mitigation Measure WR-3a (Implement flood, erosion, and scour protection for above-ground and belowground improvements) would ensure potential impacts are avoided. (Full text of Mitigation Measure WR-2a is provided in Section D.19.3.3.)

Impact WR-4: The project would degrade water quality, or violate a water quality standard or waste discharge requirement

Construction of the project would require excavation and grading for roads, trenches and structures, and for removal of existing structures. Disturbance of soil during construction could result in soil erosion and lowered water quality through increased turbidity and sediment deposition into local streams. Down-stream beneficial uses could be adversely affected through violation of RWQCB water quality objectives for suspended solids, total dissolved solids, sediment and turbidity. This impact would apply to all watercourses along the route (see list of watercourses in Table D.19-1).

Accidental spills or disposal of harmful materials used during construction could wash into and pollute sur-face waters or groundwater. Downstream beneficial uses could be adversely affected through violation of RWQCB water quality objectives for toxicity and chemical constituents. This impact could affect all watercourses along the route.

As described above under Impact WR-2, construction of the Tower Relocation Alternative could lead to a minor increase in erosion compared to baseline conditions. This would be similar to the Proposed Project. That eroded soil could subsequently pollute downstream receiving waters. Most of the structures that would be relocated in this alternative would be located on level ground, but several relocations would occur in the hills west of Cherry Valley Boulevard. Construction of this alternative could also lead to water quality degradation due to the accidental release of hazardous materials (such as fuel, lubricants, cool-ants, and hydraulic and transmission fluids). The risk of water quality degradation through the accidental release of hazardous materials would be the same for this alternative as for the Proposed Project.

Mitigation Measures WR-2a (Implement an Erosion Control Plan and demonstrate compliance with water quality permits) and WR 3a (Implement flood, erosion, and scour protection for aboveground and below-ground improvements) would require development of and adherence to erosion-control and flood protection plans during construction, conformance to NPDES MS4 Phase I and II requirements for post-construction BMPs, and adherence to applicable Water Quality Management Plans. Development and adherence to the SWPPP in conformance with applicable California or Federal General Permits for Dis-charges of Storm Water Associated with Construction Activity would require best management practices to prevent and control erosion and siltation during construction, prevent, contain and mitigate accidental spills during construction, require post-construction BMPs, and address treatment, if required, and dis-posal of, dewatered groundwater to prevent violation of water quality objectives or damaging beneficial uses. Compliance with Sections 401 and 404 of the Clean Water Act would also minimize this impact. Mit-igation Measure HH-2a (Prepare a hazardous materials and waste management plan), described in Section D.10, Hazards and Hazardous Materials, would further ensure against potential surface and groundwater contamination.

With implementation of mitigation measures, adverse effects related to water quality degradation for this alternative would be minor.

D.19.4.2 Iowa Street 66 kV Underground Alternative

The Iowa Street 66 kV Underground Alternative would place a 1,600-foot segment of subtransmission line underground, rather than overhead.

Four impacts were identified under the Proposed Project for water resources and hydrology. These impacts also would apply to the Iowa Street 66 kV Underground Alternative, which overall would be the same as the Proposed Project, with the exception of the underground portion of the subtransmission line that is described above and in Appendix 5. The full text of all mitigation measures referenced in this section is presented in Section D.19.3.3, except where otherwise noted.

Impact WR-1: The project would deplete groundwater supplies or interfere with groundwater recharge

Under the Iowa Street 66 kV Underground Alternative, the short underground segment would not substantially increase the amount of construction water that would be required compared to the Proposed Project. More extensive dust control or dewatering may be required for the construction of the underground portion of this alternative compared to the Proposed Project in this segment. Although groundwater levels near the underground segment of the 66 kV subtransmission line are generally deeper than 60 feet and the need for additional dewatering compared to the Proposed Project is unlikely, locally elevated groundwater levels may be encountered where the underground line crosses Morey Arroyo and its associated floodplain. Any dewatering that would be required for installation of the underground line at this crossing would be temporary and minor, and would not deplete groundwater supplies.

Implementing Mitigation Measure UPS-1a (Use non-potable water for construction) would ensure potential impacts are avoided. (Full text of UPS-1a is provided in Section D.17.)

Impact WR-2: The project would cause erosion and siltation

The underground segment of subtransmission line in the Iowa Street 66 kV Underground Alternative would be located on level ground and has the potential to result in more siltation than would occur with the Proposed Project, due to the presence of trench spoils on the surface during construction. These soils could wash into surface drainages if not properly treated. Trenching for the underground line would involve more substantial ground disturbance than the excavation for the towers that it would replace, but this disturbance would be temporary and would not occur in an area of high erosion risk.

It is unlikely that ground disturbance in this alternative would result in accelerated erosion greater than that of the Proposed Project. As under the Proposed Project, erosion would be greatest for activities that take place on steep slopes. As a component of both the Proposed Project and this alternative, SCE would have to obtain the applicable NPDES General Permit for Storm Water Discharges Associated with Construction Activities. This permit requires the development of a Storm Water Pollution Prevention Plan (SWPPP), which requires development and implementation of BMPs to identify and control erosion. In addition to compliance with existing regulation, the potential for this alternative to result in accelerated erosion would be reduced by implementing Mitigation Measure WR-2a (Implement an Erosion Control Plan and demonstrate compliance with water quality permits) described in Section D.19.3.3. Compliance with existing regulations and implementation of the mitigation noted above would ensure that the potential adverse effects related to erosion under this alternative would be minor.

Impact WR-3: The project would cause flood damage

This Iowa Street 66 kV Underground Alternative would place a 1,600-foot segment of 66 kV subtransmission line underground instead of on overhead poles. The trenching associated with the underground line would not increase the amount of new impervious area that is created, because the underground segment would be in the paved roadway. Construction of the underground segment of 66 kV subtransmission line could increase slightly the amount of soil surface alteration, but this increased soil surface disturbance would be very minor and would not alter the rate or amount of runoff in the area. Therefore, adverse effects related to an increased amount or rate of runoff for this alternative would be the same as for the Proposed Project. Once the underground segment is installed and the roadway restored, this segment would have no effect on increased flooding. Implementing Mitigation Measure WR-3a (Implement flood, erosion, and scour protection for aboveground and belowground improvements) would ensure potential impacts are avoided. (Full text of Mitigation Measure WR-2a is provided in Section D.19.3.3.)

Impact WR-4: The project would degrade water quality, or violate a water quality standard or waste discharge requirement

Construction of the alternative would require excavation. Disturbance of soil during construction could result in soil erosion and lowered water quality through increased turbidity and sediment deposition into local streams. Accidental spills or disposal of harmful materials used during construction could wash into and pollute surface waters or groundwater. Groundwater basins potentially affected generally have groundwater deeper than 60 feet, which would be below the maximum depth of excavation for the underground segment. With shallow excavation and deeper groundwater, there is little likelihood that groundwater could be affected directly during construction.

As described above under Impact WR-2, construction of this underground alternative could lead to a minor increase in erosion compared to the Proposed Project, due to the more extensive construction required for the underground segment. That eroded soil could subsequently pollute downstream receiving waters. The underground segment of 66 kV subtransmission line in this alternative would be located on level ground and would not result in more substantial erosion than would occur with the Proposed Project.

Construction of this underground alternative could also increase the likelihood of water quality degradation compared with the Proposed Project, due to the accidental release of hazardous materials (such as fuel, lubricants, coolants, and hydraulic and transmission fluids). These hazardous materials could enter receiving waters directly or indirectly through subsequent runoff or infiltration.

This alternative would involve a greater amount of subsurface disturbance than the Proposed Project, which would increase the risk of hazardous materials infiltrating into the groundwater basin. However, this increased risk of groundwater contamination would be temporary and very minor. The risk of water quality degradation through the accidental release of hazardous materials would be the same for this alternative as for the Proposed Project.

Mitigation Measures WR-2a (Implement an Erosion Control Plan and demonstrate compliance with water quality permits) and WR 3a (Implement flood, erosion, and scour protection for aboveground and belowground improvements) would require development of and adherence to erosion-control and flood protection plans during construction, conformance to NPDES MS4 Phase I and II requirements for post-construction BMPs, and adherence to applicable Water Quality Management Plans. Development and adherence to the SWPPP in conformance with applicable California or Federal General Permits for Discharges of Storm Water Associated with Construction Activity would require best management practices to prevent and control erosion and siltation during construction, prevent, contain and mitigate accidental spills during construction, require post-construction BMPs, and address treatment, if required, and disposal of, dewatered groundwater to prevent violation of water quality objectives or damaging beneficial uses. Compliance with Sections 401 and 404 of the Clean Water Act would also minimize this impact. Mitigation Measure HH-2a (Prepare a hazardous materials and waste management plan), described in Section D.10, Hazards and Hazardous Materials, would further ensure against potential surface and groundwater contamination.

With implementation of mitigation measures, adverse effects related to water quality degradation for this alternative would be minor.

D.19.4.3 Phased Build Alternative

The Phased Build Alternative would retain existing double-circuit 220 kV transmission structures to the extent feasible, remove single-circuit structures, add new double 220 circuit structures, and string all structures with higher-capacity conductors.

Four impacts were identified under the Proposed Project for water resources and hydrology. These impacts also would apply to the Phased Build Alternative, which would be located in the same corridor as the Proposed Project and would involve similar although less intense construction activities. The full text of all mitigation measures referenced in this section is presented in Section D.19.3.3, except where otherwise noted.

Impact WR-1: The project would deplete groundwater supplies or interfere with groundwater recharge

Construction Water Usage. SCE has estimated it would use up to a maximum of 250 acre-feet of water per year for construction purposes. The Phased Build Alternative is expected to have a somewhat small requirement because the alternative would involve less ground disturbance. Over the nearly 50-mile right-of-way, the water required could be obtained from any of 14 possible local water districts (see Table B-8 in Section B). These local water districts use a combination of surface water and groundwater for water supply.

SCE would not extract groundwater itself to use for dust control; this water would be provided by local or regional water purveyors. Mitigation Measure UPS-1a (Use non-potable water for construction purposes; see Section D.17) would require SCE to use non-potable water for dust control and soil compaction whenever feasible. If non-potable water is not available, SCE's construction water demand has the potential to affect local water supplies. As shown in Table B-8 in Section B, the total water supply from the 14 identified water districts exceeded total water use within those districts by 22,597 acre-feet in 2010 (the most recent year with complete data). Water supply and water use data was not available for all 14 of the identified districts. However, based on the best available and most current data, water supply exceeds water use in the area by almost an order of magnitude more than SCE's proposed construction water demand. Therefore, even if non-potable water is not available for dust suppression and soil compaction, the potential adverse effect on local water supplies due to Proposed Project construction water use would be very minor.

Dewatering. Construction excavation or augering would be required, up to 60 feet in depth, to construct structures and other underground facilities. Should groundwater be found in these excavations, dewatering may be necessary. This would be a direct impact to the groundwater resource.

Most of the groundwater aquifers underlying the project route are deeper than 60 feet and are unlikely to be affected by dewatering activities. Two possible exceptions are the Coachella Valley San Gorgonio

Pass Groundwater Basin, which has reported water levels within 47 feet of the surface, and the Upper Santa Ana Valley Rialto-Colton Subbasin, which has groundwater within 56 feet of the ground surface. It is not known whether these depths are at the locations of the Tower Relocation Alternative. There is a possibility that some dewatering could occur in the San Gorgonio Pass and Upper Santa Ana Valley Rialto-Colton groundwater basins during construction of structures, particularly those structures within the alluvial floodplains of the watercourses described in Table D.19-1.

The impacts to the San Gorgonio Pass Groundwater Basin and Upper Santa Ana Valley Rialto-Colton Groundwater Basin are expected to be minimal, because the maximum excavation or augering depth extends only a short distance into the highest reported level of the groundwater. Not all excavations would require dewatering. Also, these impacts would be temporary (occurring during construction only), and the amount of water to be extracted would be small in comparison to the volume of water in the groundwater basin. The groundwater supplies would not be depleted.

It is possible that additional shallow subsurface water could be encountered at other locations during construction, possibly requiring dewatering. Although there is a potential for local shallow groundwater to occur anywhere along the route, it is most likely to occur where structures are proposed at or near the watercourse crossings listed in Table D.19-1, especially in the western portion of the route where rainfall is higher. Temporary dewatering of local groundwater during construction of transmission structures and underground portions of the route would not affect the major aquifers that are used for water supply.

The Phased Build Alternative would reduce the amount of construction activity compared to the Proposed Project, and consequently would reduce the amount of water that is required for dust suppression during construction. As with the Proposed Project, the adverse effect on local water supplies due to construction water use for this alternative would be very minor. The severity of the adverse effect of construction water demand for this alternative would be reduced through implementation of Mitigation Measure UPS-1a (Use non-potable water for construction purposes). The full text of this mitigation measure is presented in the analysis for Utilities and Public Services in Section D.17.3.3.

Excavation and auguring would be required for construction of new 220 kV structures in this alternative. Dewatering of shallow groundwater may be required during construction of some of the towers, especially those that would be located within the Coachella Valley San Gorgonio Pass Groundwater Basin. This alternative would result in a lesser need for dewatering compared to the Proposed Project because fewer new structures would be constructed and the new 220 kV towers would be underlain by the exact same groundwater conditions as the Proposed Project structures that they would replace. These impacts would be temporary (occurring during construction only), and the amount of water to be extracted would be small in comparison to the volume of water in the groundwater basin. The groundwater supplies would not be depleted.

Impact WR-2: The project would cause erosion and siltation

Project construction would require excavation and grading for access roads and new transmission structures, trenching for underground facilities, and excavation and grading for the removal of existing structures. Disturbance of soil during construction could result in erosion of disturbed areas during rainfall events, with eroded soil potentially transported by runoff to downstream watercourses, streets or other areas. This would be an indirect impact requiring the action of rainfall and surface runoff to occur. For the Phased Build Alternative, the amount of ground disturbance would be less than the Proposed Project because some structures would be reused. This would reduce disturbance associated with tower disassembly and with tower site preparation.

Land disturbance caused by project construction activities, including existing unpaved access roads, could produce erosion and surface runoff. The highest potential for this impact to occur would be on new access roads and pads to be constructed for the proposed 220 kV structures, and in hilly areas with steep terrain such as the Timoteo Badlands area of Segment 3. San Timoteo Creek and local tributaries in Segment 3 would be potentially affected by sediment eroded from project work areas.

This impact could also occur during project operation (after construction is complete). Lands disturbed by grading and excavation could continue to erode during rainfall events well after construction has ended. In most cases the risk to water quality would be minimal, though there would be some risk to public safety (e.g., if project-induced siltation were to obstruct traffic lanes in a street or highway).

SCE has committed to implementation of three APMs that would reduce erosion: APM HYDRO-2, APM HYDRO-3, and APM BIO-1. While these APMs would reduce many impacts to water quality and would address short-term and long-term soil erosion induced by construction, Mitigation Measure WR-2a (Implement an Erosion Control Plan and demonstrate compliance with water quality permits; full text presented below) adds detail and is required to ensure that erosion is controlled. Mitigation Measure WR-2a supersedes APMs HYDRO-2 and HYDRO-3.

As described in Section B.3.1.2 (Section B, Project Description), SCE would develop and adhere to a SWPPP in conformance with the California General Permit for Discharges of Storm Water Associated with Construction Activities and the Federal General Permit for Storm Water Discharges Associated with Construction Activity on Tribal Land. The SWPPP would be required to implement best management practices to control surface erosion. Multiple SWPPPs are expected to be required for project construction. With implementation of Mitigation Measure WR-2a, APMs, and existing regulations, surface erosion impacts are expected to be minimal.

Drainage patterns could be disturbed through grading, construction of structure pads, and placement of structures and other above-ground structures in watercourses. Due to the nature of this project, with small-footprint structures spread over a large area, any drainage pattern disturbance would be local. Local disturbances, for instance a structure constructed in a flow path could cause local scour and erosion that could extend to adjacent property, and result in deposition of eroded material into stream beds downstream of the area of disturbance. The effect could be temporary during construction, or long-term, as would be the case with a structure in a flow path, with similar risks to public safety as described for this impact above. This impact could occur anywhere along the project route where construction would be in flow paths. The most likely areas of effect are in the vicinity of the watercourses listed in Table D.19-1.

Access roads would be constructed in watercourses, and some structures may be located directly within major watercourses listed in Table D.19-1. APM HYDRO-1 requires maintaining the existing flow pattern where possible. Mitigation Measure WR-2a (Implement an Erosion Control Plan and demonstrate compliance with water quality permits) is recommended. Compliance with Sections 404 and 401 of the Clean Water Act, and with Sections 1600–1616 of the California Fish and Game Code, would further reduce impacts to watercourses, and require mitigation. With mitigation, APMs, and compliance with existing regulations, erosion impacts related to disturbance of drainage patterns are expected to be minimal.

The Phased Build Alternative would reduce the amount of ground disturbance compared to the Proposed Project, and consequently would reduce the potential to cause or accelerate erosion and siltation. As a component of both the Proposed Project and this alternative, SCE would have to obtain the applicable NPDES General Permit for Storm Water Discharges Associated with Construction Activity. This permit requires the development of a Storm Water Pollution Prevention Plan (SWPPP), which requires development and implementation of BMPs to identify and control erosion. In addition to compliance with existing regulations, the potential for this alternative to result in accelerated erosion would be reduced through implementation of Mitigation Measure WR-2a (Implement an Erosion Control Plan and demonstrate compliance with water quality permits). Compliance with existing regulations and implementation of the mitigation noted above would ensure that the potential adverse effects related to erosion under this alternative would be minor.

Drainage patterns could be disturbed through grading, construction of structure pads, and placement of above-ground structures in watercourses. The disturbance of drainage patterns under this alternative would be reduced compared to the Proposed Project because one set of existing 220 kV structures would be left in place and ground disturbance would be reduced. Alterations of existing drainage patterns would be minimized through implementation of APM HYDRO-1, which requires maintaining the existing flow pattern where possible. Adverse effects to drainage patterns would be further reduced through implementation of Mitigation Measure WR-2a (Implement an Erosion Control Plan and demonstrate compliance with water quality permits). With implementation of APMs and mitigation, and compliance with existing regulations, adverse effects related to the disturbance of drainage patterns for this alternative are expected to be minor.

Impact WR-3: The project would cause flood damage

The rate or amount of surface runoff could be increased as a result of changes to the permeability of the ground surface through the construction of new impervious areas, or by removal of vegetation and alteration of natural soil surface characteristics by constructing and compacting new access roads. By retaining some structures rather than removing and replacing them, less ground disturbance and compaction would occur. New impervious surfaces resulting from the project would be small and limited primarily to new structures and their foundations, resulting in negligible increase in runoff. For example, structure footings would be approximately 38 square feet in area. It would take 50 structures to have an equivalent impervious area as one medium-sized house.

Some new access roads in mountainous areas may be paved. Most disturbances that could result in changes in rainfall/runoff characteristics would consist of unpaved access roads, spur roads, temporary construction roads, structure pads, and temporary staging areas. Areas with the largest potential for increased runoff would be in areas currently not disturbed, which consist of most of Segments 2, 3, 4, 5 and 6.

Total disturbance during construction is estimated at less than 5,000 acres, averaging about 104 acres per mile of route. It would be less under the Phased Build Alternative. Perceptible local increases in runoff rate and amount could occur as a result of this disturbance. However, the total area is small compared to the size of watersheds capable of producing most flooding. The San Timoteo Creek watershed, in which roughly half of the disturbance would occur, has an area of 125 square miles at Loma Linda, meaning total project-related ground disturbance in that watershed would be about 2 percent of the total area of the watershed for the Proposed Project, and less for the Phased Build Alternative. This disturbance is expected to result in minimal increase in runoff and little risk to water quality.

Most of the ground disturbance for roads would be temporary and for the duration of construction only. Much of the total disturbance would be restored to natural conditions. Permanent that would be land converted from natural ground to mostly unpaved access roads and pads. Minor local increases in runoff rate and volume are probable. In terms of the overall watersheds involved, this disturbance, and associated long-term increases in runoff rate and volume, is minimal.

APM HYDRO-1 requires maintaining the existing flow pattern where possible, which would minimize the potential for diverting or obstructing flow in a manner that would induce or exacerbate flooding, as would compliance with Clean Water Act Section 404. All of the proposed new above-ground structures are relatively small and widely distributed, such that diversions of flood flows are unlikely with the exception of local minor drainage. None of the proposed structures are located in active channels, but several (as shown in Tables D.19-1 and D.19-3) are within potentially active braided areas of alluvial fans which could become active channels.

Table D.19-3 defines the locations where new structures would be installed within known floodplains. In the event of large floods the structures would cause local flow turbulence, but damaging flow diversions due to the presence of the structure are unlikely because of the small tower footprint relative to the width of the floodplain, and the placement of most structures outside the active channel where the potential for damaging diversions is greatest. Those structures located in braided alluvial fans will be in areas where flow paths are naturally subject to variation and are of much greater extent than the footprint of the towers.

Flood-related damage to project structures is possible in the event that lateral erosion of watercourse banks or vertical scour of the stream bed during a large flood reaches and destabilizes a structure or other underground project feature. Transmission structures could be destabilized if footings are not designed for anticipated stream scour, which may not be considered in the design process for structures not currently in active channels. Direct effects to public safety could occur through scour-related destruction of or damage to the transmission structure, resulting in tower collapse and interruption of electric service. At least four structures (5N34, 5S34, 5N54, 5S35) would be located within 100 feet of the active channel of the San Gorgonio River. The active channel at this point is approximately 450 feet wide. The channel banks in this general area are known to have moved by erosion up to 130 feet in a flood or floods that occurred between 2004 and 2005, and it is possible these four structures could be captured by the channel during future large floods. Other structures within the active braided area of the alluvial fans emanating from the San Bernardino Mountains could also be at risk (see Tables D.19-1 and D.19-2).

As described in Section D.19.1.2.10 (Telecommunications Facilities), a portion of a new underground telecommunications line would be within the designated floodway of Smith Creek. The proposed line would not obstruct flow, and would therefore be compatible with floodway uses, but the line could be uncovered and damaged by vertical scour during a large flood, resulting in possible communication outages.

Onsite damages related to channel erosion and vertical scour during a flood could be prevented by design of footings and burial depth to account for erosion and scour. The final design analysis has not been completed, and it is not known at this time if footings and burial depths would take erosion and scour into account. Mitigation Measure WR-3a (Implement flood, erosion, and scour protection for aboveground and belowground improvements) is recommended in order to reduce the potential for damage and interruption of power and communication services due to erosion and scour.

Under the Phased Build Alternative, any structures that are placed in active channels or floodplains could be destabilized or destroyed by scour from floodwater. These structures also could divert or obstruct flood flows, resulting in changes to patterns of off-site flooding. Some of the new 220 kV structures would be sited within known floodplains, but these structures would not differ substantially in type or location compared to the Proposed Project and therefore would not result in increased diversion or obstruction of flood flows. The potential for this alternative to cause flood damage would be similar to the Proposed Project. This adverse effect would be reduced through implementation of APM HYDRO-1, which requires maintenance of the existing flow pattern where possible. This adverse effect would be further reduced through implementation of Mitigation Measure WR-3a (Implement flood, erosion, and scour protection for aboveground and belowground improvements). With implementation of APMs and mitigation measures, adverse effects related to flood damage for this alternative would be minor.

Impact WR-4: The project would degrade water quality, or violate a water quality standard or waste discharge requirement

Construction of the project would require excavation and grading for roads, trenches and structures, and for removal of existing structures. Disturbance of soil during construction could result in soil erosion and lowered water quality through increased turbidity and sediment deposition into local streams. Downstream beneficial uses could be adversely affected through violation of RWQCB water quality objectives for suspended solids, total dissolved solids, sediment and turbidity. This impact would apply to all watercourses along the route (see list of watercourses in Table D.19-1). However, with less ground disturbance under the Phased Build Alternative, there would be less potential erosion.

Accidental spills or disposal of harmful materials used during construction could wash into and pollute surface waters or groundwater. Materials that could contaminate the construction area or spill or leak include lead-based paint flakes, diesel fuel, gasoline, lubrication oil, cement slurry, hydraulic fluid, antifreeze, transmission fluid, lubricating grease, and other fluids. Downstream beneficial uses could be adversely affected through violation of RWQCB water quality objectives for toxicity and chemical constituents. This impact could affect all watercourses along the route.

The dry nature of most of the surface streams is such that should material spills occur during construction, these could easily be cleaned up prior to water being contaminated (because water is not generally flowing). Groundwater basins potentially affected generally have groundwater deeper than 60 feet, which in nearly all cases would be below the maximum depth of excavation (see the description of Impact WR-1). With shallow excavation and deeper groundwater, there is little likelihood that groundwater could be affected directly during construction.

Mitigation Measures WR-2a (Implement an Erosion Control Plan and demonstrate compliance with water quality permits) and WR 3a (Implement flood, erosion, and scour protection for aboveground and belowground improvements) would require development of and adherence to erosion-control and flood protection plans during construction, conformance to NPDES MS4 Phase I and II requirements for post-construction BMPs, and adherence to applicable Water Quality Management Plans. Development and adherence to the SWPPP in conformance with applicable California or Federal General Permits for Discharges of Storm Water Associated with Construction Activity would require best management practices to prevent and control erosion and siltation during construction, prevent, contain and mitigate accidental spills during construction, require post-construction BMPs, and address treatment, if required, and disposal of, dewatered groundwater to prevent violation of water quality objectives or damaging beneficial uses. Compliance with Sections 401 and 404 of the Clean Water Act would also minimize this impact. Mitigation Measure HH-2a (Prepare a hazardous materials and waste management plan), described in Section D.10, Hazards and Hazardous Materials, would further ensure against potential surface and groundwater contamination.

As described above under Impact WR-2, construction of the Phased Build Alternative could lead to a minor increase in erosion compared to baseline conditions, but would be less than the Proposed Project. That eroded soil could subsequently pollute downstream receiving waters. This alternative would result in a decreased amount of construction activity and consequently a decreased use of hazardous materials. Hazardous materials would not be handled or stored differently compared to the Proposed Project. The risk of water quality degradation through the accidental release of hazardous materials would be slightly reduced for this alternative compared to the Proposed Project.

The risk of water quality degradation through erosion and sedimentation or the accidental release of hazardous materials would be slightly reduced for this alternative compared to the Proposed Project. The severity of this adverse effect would be further reduced through implementation of Mitigation Measure WR-2a (Implement and Erosion Control Plan and demonstrate compliance with water quality permits) and Mitigation Measure HH-2a (Prepare a hazardous materials and waste management plan). The full text of this mitigation measure is presented in the analysis for Hazards and Hazardous Materials in Section D.10.3.3. With implementation of mitigation measures, adverse effects related to water quality degradation for this alternative would be minor.

D.19.5 Environmental Impacts of No Action Alternative

D.19.5.1 No Action Alternative Option 1

The No Action Alternative Option 1 is described in Section C.6.3.1. It would consist of a new 500 kV circuit, primarily following the Devers-Valley transmission corridor and extending 26 miles between Devers Substation. It would also require a new 40-acre substation south of Beaumont, and 4 new 220 kV circuits extending 7 miles from the new Beaumont Substation to El Casco Substation, primarily following the existing El Casco 115 kV ROW. The remainder of the No Action Alternative, from El Casco Substation to the San Bernardino and Vista Substations, would be identical to the Proposed Project. Information on environmental resources and project impacts is derived from the Devers–Palo Verde 500 kV No. 2 Project EIR/EIS (CPUC and BLM, 2006) and the El Casco System Project Draft EIR (CPUC, 2007); which include nearly all of the No Action alignment.

Devers to Beaumont Substation. The 500 kV alignment crosses the Whitewater River near I-10 and makes several crossings of the San Gorgonio River in locations where the river is in a braided condition with potential for flow to follow several channel paths. Groundwater in the area is deep; therefore, groundwater quality degradation is not likely. The route between Devers and Beaumont Substations is particularly sensitive to erosion and sedimentation because of the steep terrain crossed along the lower elevations of the San Jacinto Mountains south of I-10. Construction can affect water quality through soil erosion and sedimentation as well as through the spill of harmful materials used during constructions, such as fuels, lubricants, and solvents. Measures to reduce or prevent impacts include implementation of a Storm Water Pollution and Prevention Plan, a Spill Prevention, Countermeasure, and Control Plan, a hazardous materials management and emergency response plan, training of workers, construction monitoring, revegetation of disturbed areas, and installation of permanent erosion control structures as needed. In the Devers to Valley segment of DPV2, the EIR/EIS identified that construction of the transmission line would have less than significant impacts on water resources with the implementation of mitigation.

Beaumont Substation. The substation would be located on 40 acres of the gently rolling topography, which would need to be levelled through cutting and filling of the ground surface. This could result in extensive exposed bare ground that would be susceptible to erosion in the event of a storm. The water quality and erosion control measures required for construction of the 500 kV line would be applicable to the substation site as well. Typically, the area within substations is covered with crushed rock to allow infiltration of water and prevent erosion. Surfaces required for movement of vehicles and equipment area paved and, based on local rainfall history, runoff detention basins are provided. Other areas disturbed by earthwork and grading are revegetated.

Beaumont to El Casco Substation. Much of the land between Beaumont and El Casco Substations is hilly, with largely grass covered slopes and ridges. Part of the route parallels San Timoteo Creek, but would be outside of the floodplain. Similar erosion, sedimentation, and spill impacts could occur on the 220 kV route as could occur on the 500 kV line and at the Beaumont Substation, and similar protective measures would be required during construction.

D.19.5.2 No Action Alternative Option 2

No Action Alternative Option 2 would require the construction of over 40 miles of new 500 kV transmission line, following the existing Valley-Serrano 500 kV line. The alternative is described in Section C.6.3.2, and illustrated on Figure C-6b. The route traverses two groundwater basins: the San Jacinto Groundwater Basin in the Perris Valley and the Elsinore Groundwater Basin between approximately MP 20 and MP 22, near the Temescal Wash. Although locally elevated pockets of groundwater may be encountered (especially near Temescal Wash), groundwater in both basins is generally encountered below the depth of excavation for transmission structures and no required dewatering is expected. Also, the total area of new impervious surface in this alternative would be small and dispersed throughout the corridor so no interference with groundwater recharge is expected.

Water would be required during construction of this alternative for dust suppression and soil conditioning, but this water demand would be temporary and is not expected to substantially deplete groundwater resources. Mitigation measures such as groundwater monitoring, the use of non-potable water, and the importation of water from outside of the basin would reduce the severity of adverse effects to groundwater levels. Disturbance of soil during construction could result in erosion of disturbed areas during rainfall events, with eroded soil potentially transported by runoff to downstream watercourses, streets or other areas. The highest potential for this impact to occur would be on new or improved access roads and pads to be constructed for the proposed 500 kV structures, and in hilly areas with steep terrain such as the foothills surrounding Steele Peak and Estelle Mountain, and in the Cleveland National Forest (CNF).

Portions of the new 500 kV route would be located within 100-year floodplains, including floodplains in the Perris Valley and near Temescal Wash. Transmission structures that are sited in floodplains could block or divert flood flows or be subject to damage or collapse from scour. In areas where floodplains cannot be avoided, transmission structures would be designed and engineered so as not to block or divert flood flows and to withstand damage from scour. Construction and operation of this alternative could lead to water quality degradation or the violation of water quality standards through accelerated erosion and sedimentation or the accidental release of hazardous materials. Although no impaired waterbodies are crossed by this alternative, several impaired waterbodies lie downstream of the corridor, including: Railroad Canyon Reservoir approximately 1 mile south of MP 6, Temescal Creek approximately 1 mile south of MP 12.5, and Silverado Creek approximately 0.25 to 1 mile south of the corridor from MP 24 to MP 32 in the CNF. Measures to reduce or prevent impacts include implementation of a Storm Water Pollution Prevention Plan, a Spill Prevention, Countermeasure, and Control Plan, a hazardous materials management and emergency response plan, training of workers, construction monitoring, revegetation of disturbed areas, and installation of permanent erosion control structures as needed.

D.19.6 Mitigation Monitoring, Compliance, and Reporting

Table D.19-4 presents the mitigation monitoring, compliance, and reporting actions for water resources and hydrology.

Table D.19-4. Mitigation Monitoring Program – Water Resources and Hydrology

MITIGATION MEASURE	**WR-2a: Implement an Erosion Control Plan and demonstrate compliance with water quality permits.** SCE shall develop and submit an Erosion Control Plan to the CPUC and BLM for approval at least 60 days prior to construction. The Erosion Control Plan may be part of the Stormwater Pollution Prevention Plan, and kept onsite and readily available on request. Soil disturbance at structures and access roads is to be minimized and designed to prevent long-term erosion. The Erosion Control Plan shall include: ▪ The location of all soil-disturbing activities, including but not limited to new and/or improved access and spur roads ▪ The location of all streams and drainage structures that would be directly affected by soil-disturbing activities (such as stream crossings or public storm drains by the right-of-way and access roads). ▪ BMPs to protect drainage structures, such as public storm drains, downstream of soil disturbance activities. ▪ Design features to be implemented to minimize erosion during construction and during operation (if the project feature is to remain permanent after construction). ▪ If soil cement is proposed, the specific locations must be defined in the Plan, and evidence of approval by the appropriate jurisdiction shall be submitted to the CPUC and BLM prior to its use. ▪ If design features include the use of retaining structures and/or walls, the design of the features shall be consistent with Mitigation Measure VR-3a (Reduce color contrast of retaining walls and land scars). ▪ The location and type of all BMPs that would be installed to prevent off-site sedimentation and to protect aquatic resources. ▪ Specifications for the implementation and maintenance of erosion control measures and a description of the erosion control practices, including appropriate design and installation details. ▪ Proposed schedule for inspection of erosion control/SWPPP measures and schedule for corrective actions/repairs, if required. Erosion control/SWPPP inspection reports shall be provided to the CPUC EM. Locations requiring erosion control/SWPPP corrective actions/repairs shall be tracked, including dates of completion, and documented during inspections. Inspections and monitoring shall be performed in compliance with the Federal and California Construction General Permits. The inspection reports shall be maintained and kept in their respective SWPPP, be kept on site as required by the Federal and State Construction General Permits, and be made available to the RWQCB, CPUC, BLM, counties, local municipalities, and tribal governments, on request. Additionally, an Annual Report shall be filed for each reporting period in compliance with Federal and California Construction General Permit reporting requirements. SCE shall submit to the CPUC and BLM Grading Plans that define the locations of the specific features listed above. SCE shall submit to the CPUC and BLM evidence of possession of applicable required permits for the representative land disturbance prior to engaging in soil-disturbing construction/demolition activities. Such permits may include, but are not limited to, a CWA Section 402 NPDES California General Permit for Storm Water Discharges Associated with Construction Activities (General Permit) from the applicable Regional Water Quality Control Board(s) (RWQCBs), and the Federal General Permit for Storm Water Discharges Associated with Construction Activities on Tribal Land. Prior to ground disturbance in stream channels or other waters jurisdictional to the State of California or the Federal Government, SCE shall obtain a Streambed Alteration Agreement from the California Department of Fish and Wildlife, a Section 404 permit from the USACE, and a CWA Section 401 certification from the SWRCB.
Location	Entire project ROW
Monitoring / Reporting Action	CPUC/BLM monitor to verify that the applicable SWPPP (Including Erosion Control Plan) has been prepared and permitted prior to the start of soil disturbing activities of the applicable construction project components. The SWPPPs will be prepared in compliance with Mitigation Measure WR-2a and the applicable Federal and California Construction General Permit Requirements.

Table D.19-4. Mitigation Monitoring Program – Water Resources and Hydrology

Effectiveness Criteria	Erosion and sedimentation are minimized.
Responsible Agency	CPUC; BLM Palm Springs–South Coast Field Office.
Timing	At least 60 days prior to construction.
MITIGATION MEASURE	**WR-3a: Implement flood, erosion, and scour protection for aboveground and belowground improvements.** SCE shall make a determination during final project design phase as to the lateral erosion and 100-year scour potential for watercourses near proposed structures and other above-ground features, as well as new underground conduits. This determination shall be made by a registered professional engineer with expertise in river mechanics. If the determination identifies specific structures or underground conduits that may be subject to scour or lateral movement of a stream channel, these structures shall be protected against 100-year scour and/or lateral erosion through modifications of the foundation design, or otherwise in a manner determined to be appropriate by the river mechanics engineer. SCE shall provide the determination of lateral erosion and scour potential, and documentation of corrective actions and the engineering basis thereof, to the CPUC and BLM prior to the start of construction (as defined in Mitigation Measure EM-1a (Prepare monitoring plan). SCE shall evaluate and conform to NPDES MS4 Phase I and II requirements for post-construction BMPs and, in consultation with San Bernardino and Riverside Counties and applicable local jurisdictions and agencies, prepare or conform to existing Water Quality Management Plans where determined necessary.
Location	Entire project ROW
Monitoring / Reporting Action	CPUC/BLM monitor to verify that determination meets defined requirements.
Effectiveness Criteria	Flood and scour damage is minimized.
Responsible Agency	CPUC; BLM Palm Springs–South Coast Field Office.
Timing	At least 60 days prior to construction.

D.19.7 References

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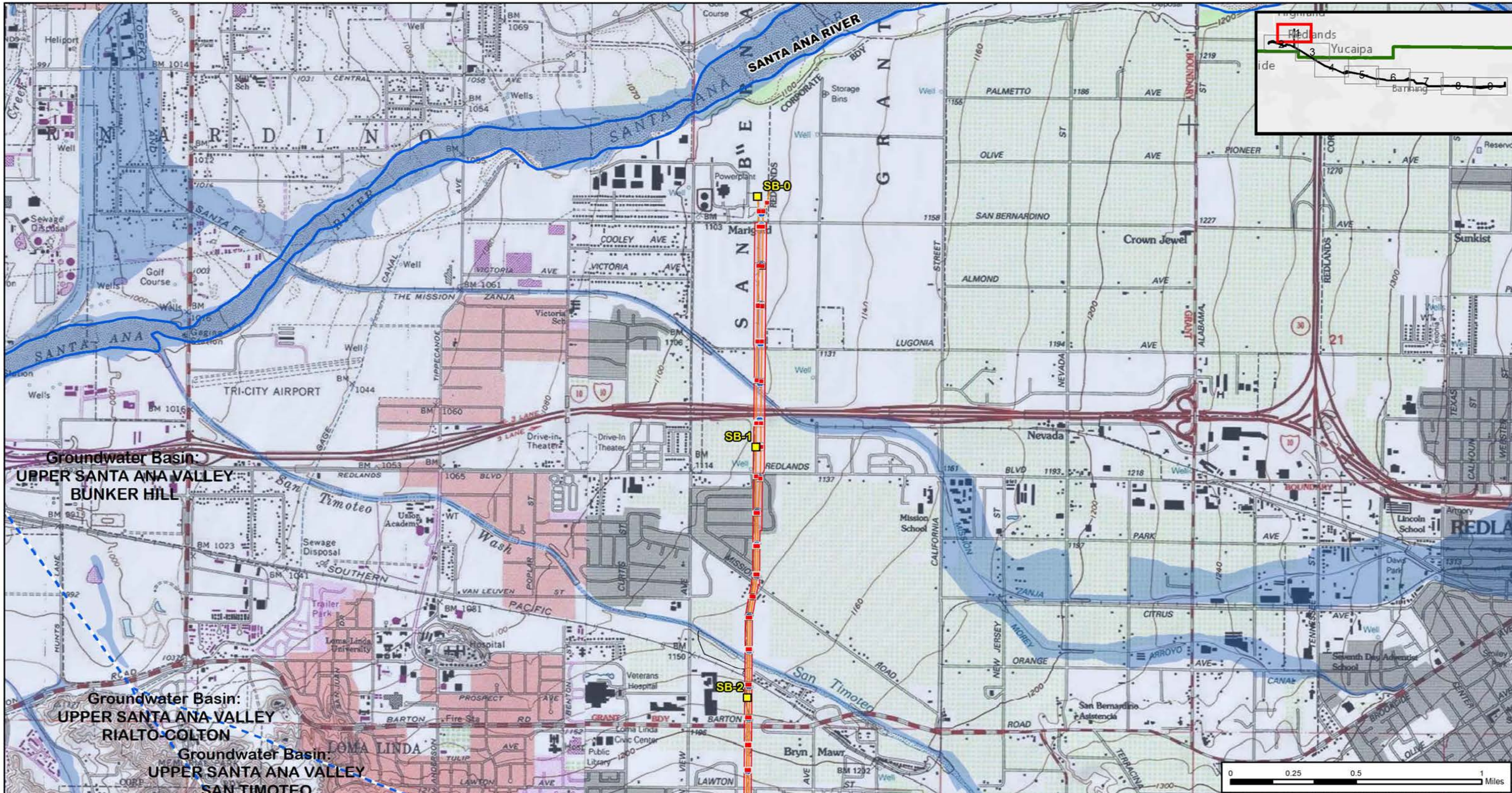

Sources: SCE 2013,
CA Bulletin 118,
CA Dept. of Cons.

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Legend

Mileposts (e.g., MP 1, SB-3)	Access Roads	Transmission Line ROW
Proposed 220 kV Structures	Proposed Transmission Line	FEMA 100-Yr. Flood Zone
Existing 220 kV Structures to be Removed	Streams	Groundwater Basins

West of Devers Upgrade Project

Figure D.19-1a

Hydrologic Features: Groundwater Basins, Floodplains, and Streams

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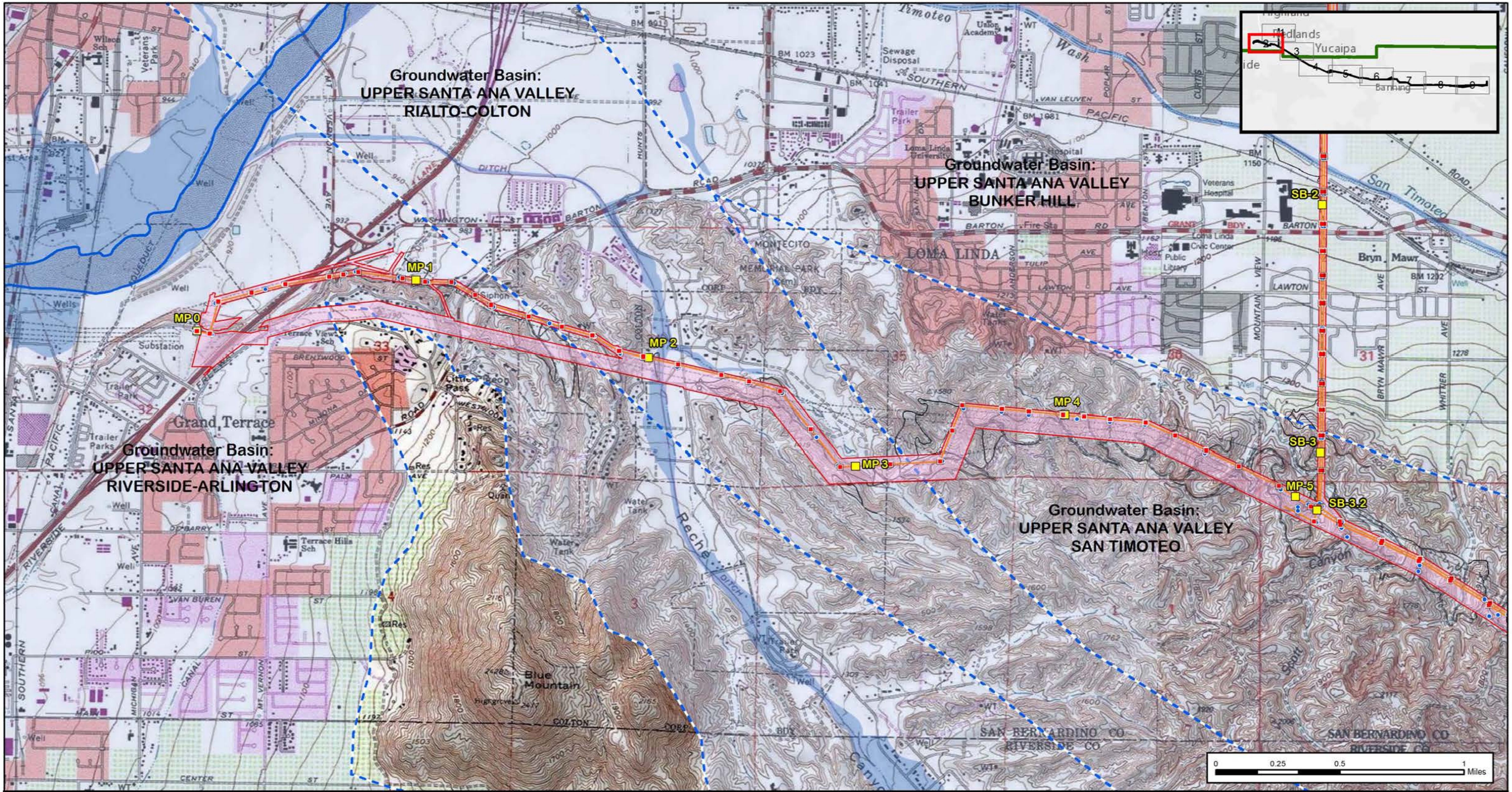

Sources: SCE 2013,
CA Bulletin 118,
CA Dept. of Cons.

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Legend

Mileposts (e.g., MP 1, SB-3)	Access Roads
Proposed 220 kV Structures	Proposed Transmission Line
Existing 220 kV Structures to be Removed	Streams
Transmission Line ROW	FEMA 100-Yr. Flood Zone
Groundwater Basins	

West of Devers Upgrade Project

Figure D.19-1b

Hydrologic Features: Groundwater Basins, Floodplains, and Streams

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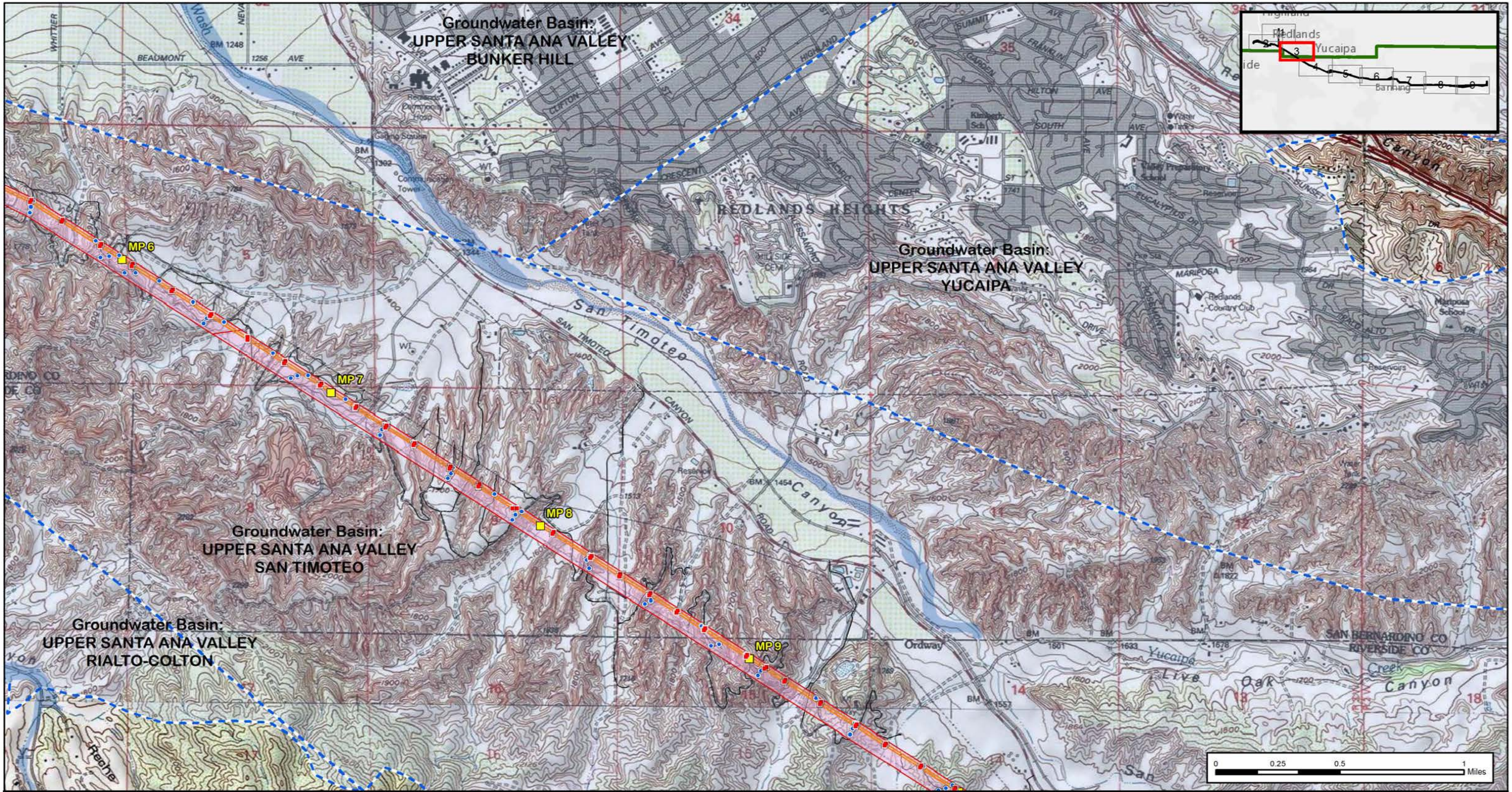

Sources: SCE 2013,
CA Bulletin 118,
CA Dept. of Cons.

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Legend

- Mileposts (e.g., MP 1, SB-3)
- Proposed 220 kV Structures
- Existing 220 kV Structures to be Removed
- Access Roads
- Proposed Transmission Line
- Streams
- Transmission Line ROW
- FEMA 100-Yr. Flood Zone
- Groundwater Basins

West of Devers Upgrade Project

Figure D.19-1c

Hydrologic Features: Groundwater Basins, Floodplains, and Streams

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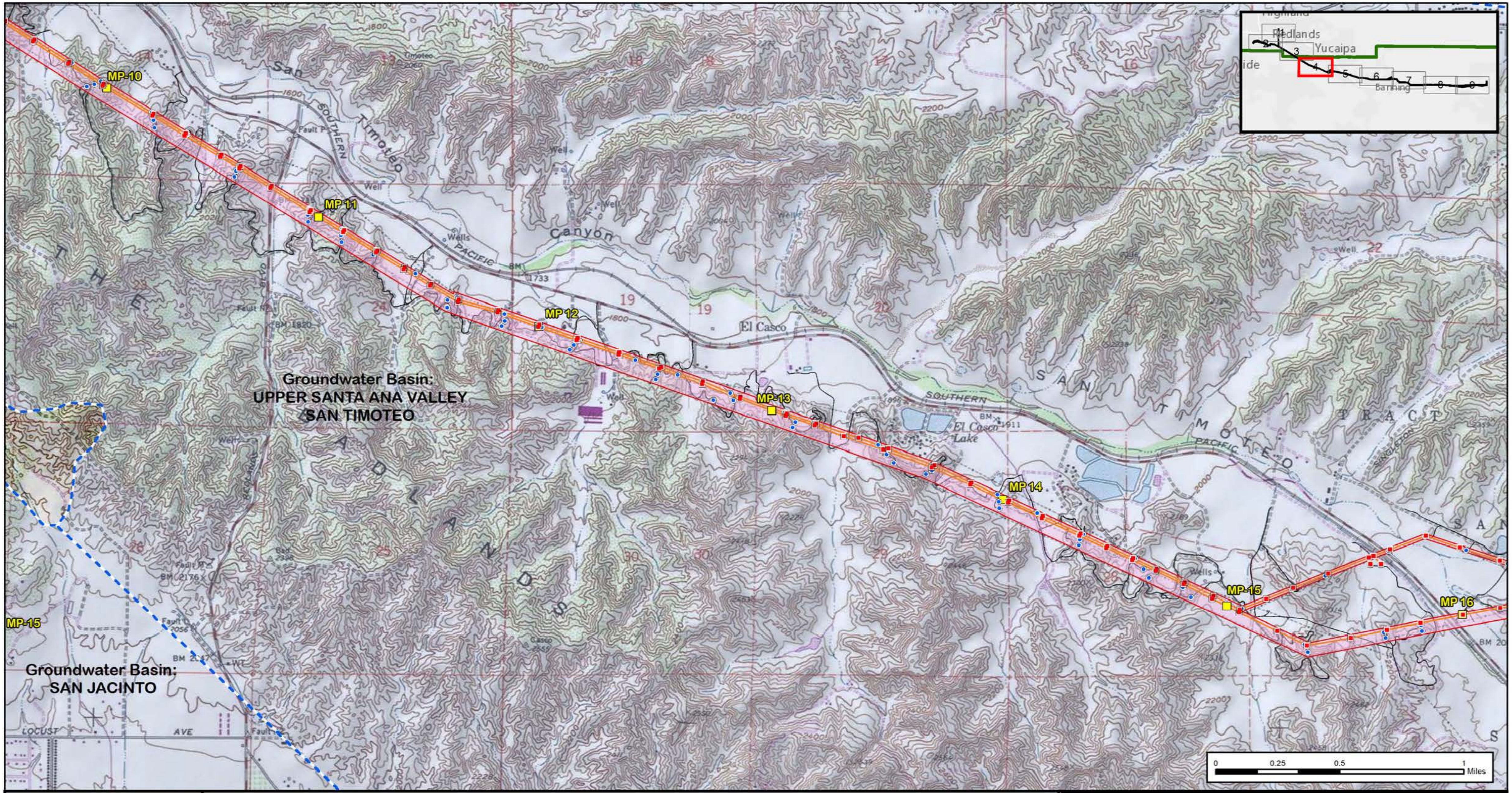

Sources: SCE 2013,
CA Bulletin 118,
CA Dept. of Cons.

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Legend

Mileposts (e.g., MP 1, SB-3)	Access Roads	Transmission Line ROW
Proposed 220 kV Structures	Proposed Transmission Line	FEMA 100-Yr. Flood Zone
Existing 220 kV Structures to be Removed	Streams	Groundwater Basins

West of Devers Upgrade Project

Figure D.19-1d

Hydrologic Features: Groundwater Basins, Floodplains, and Streams

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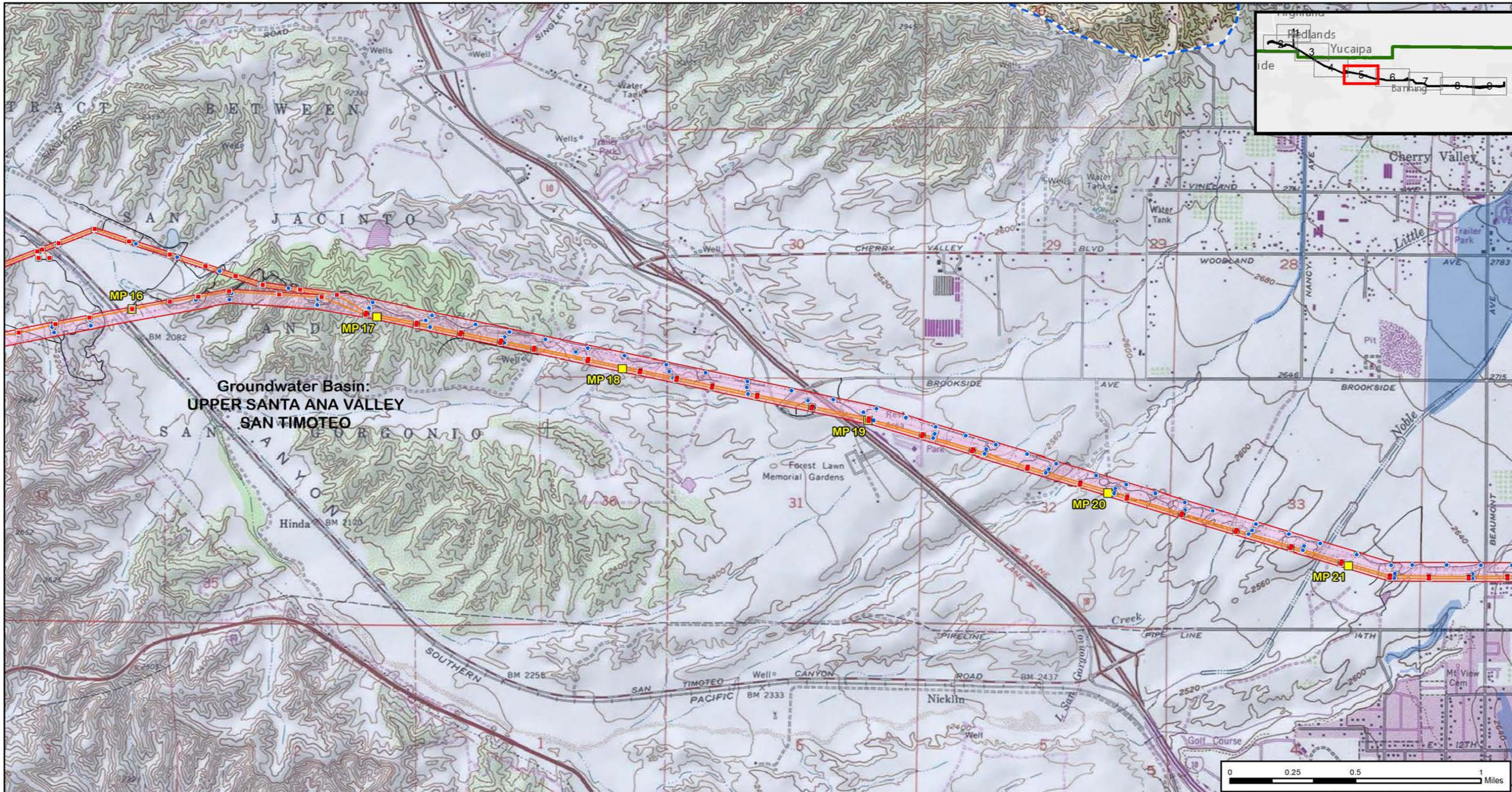

Sources: SCE 2013,
CA Bulletin 118,
CA Dept. of Cons.

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Mileposts (e.g., MP 1, SB-3)	Access Roads	Transmission Line ROW
Proposed 220 kV Structures	Proposed Transmission Line	FEMA 100-Yr. Flood Zone
Existing 220 kV Structures to be Removed	Streams	Groundwater Basins

West of Devers Upgrade Project

Figure D.19-1e

Hydrologic Features: Groundwater Basins, Floodplains, and Streams

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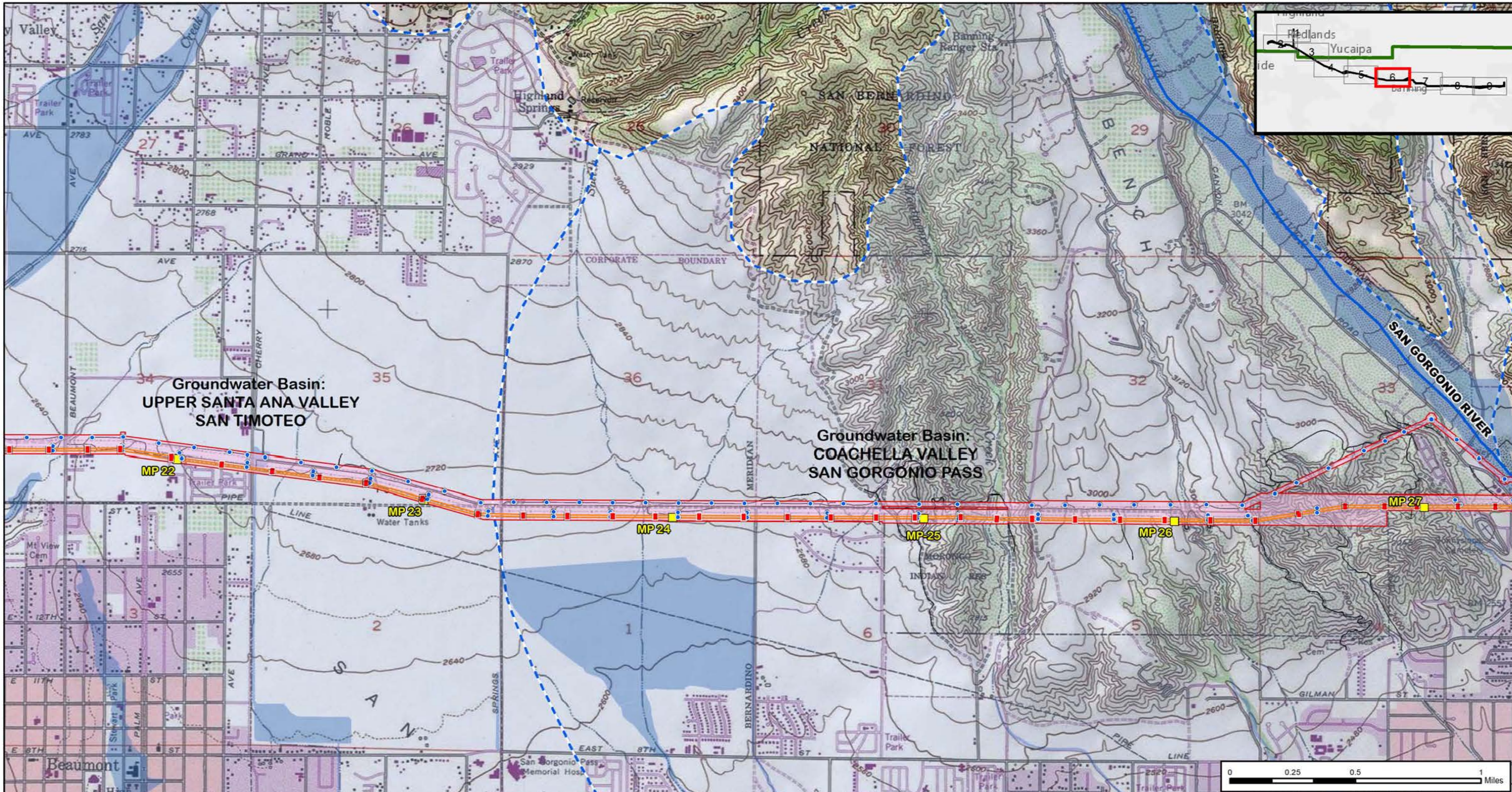

Sources: SCE 2013,
CA Bulletin 118,
CA Dept. of Cons.

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Legend

- Mileposts (e.g., MP 1, SB-3)
- Proposed 220 kV Structures
- Existing 220 kV Structures to be Removed
- Access Roads
- Proposed Transmission Line
- Streams
- Transmission Line ROW
- FEMA 100-Yr. Flood Zone
- Groundwater Basins

West of Devers Upgrade Project

Figure D.19-1f

Hydrologic Features: Groundwater Basins, Floodplains, and Streams

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Sources: SCE 2013,
CA Bulletin 118,
CA Dept. of Cons.

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Legend

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- Proposed 220 kV Structures
- Existing 220 kV Structures to be Removed
- Access Roads
- Proposed Transmission Line
- Streams
- Transmission Line ROW
- FEMA 100-Yr. Flood Zone
- Groundwater Basins

West of Devers Upgrade Project

Figure D.19-1g
Hydrologic Features: Groundwater Basins, Floodplains, and Streams

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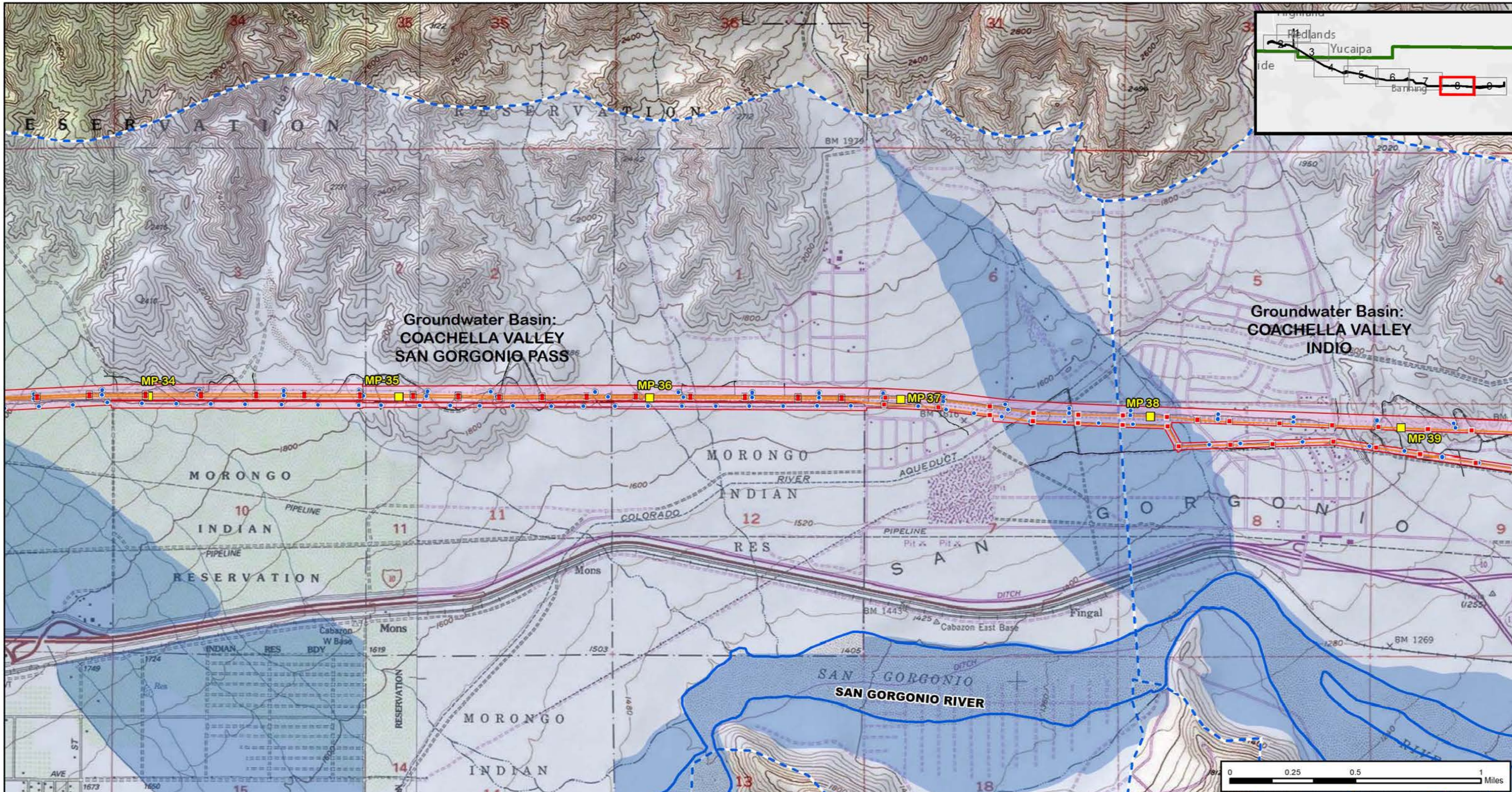

Sources: SCE 2013,
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CA Dept. of Cons.

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Legend

Mileposts (e.g., MP 1, SB-3)	Access Roads	Transmission Line ROW
Proposed 220 kV Structures	Proposed Transmission Line	FEMA 100-Yr. Flood Zone
Existing 220 kV Structures to be Removed	Streams	Groundwater Basins

West of Devers Upgrade Project

Figure D.19-1h

Hydrologic Features: Groundwater Basins, Floodplains, and Streams

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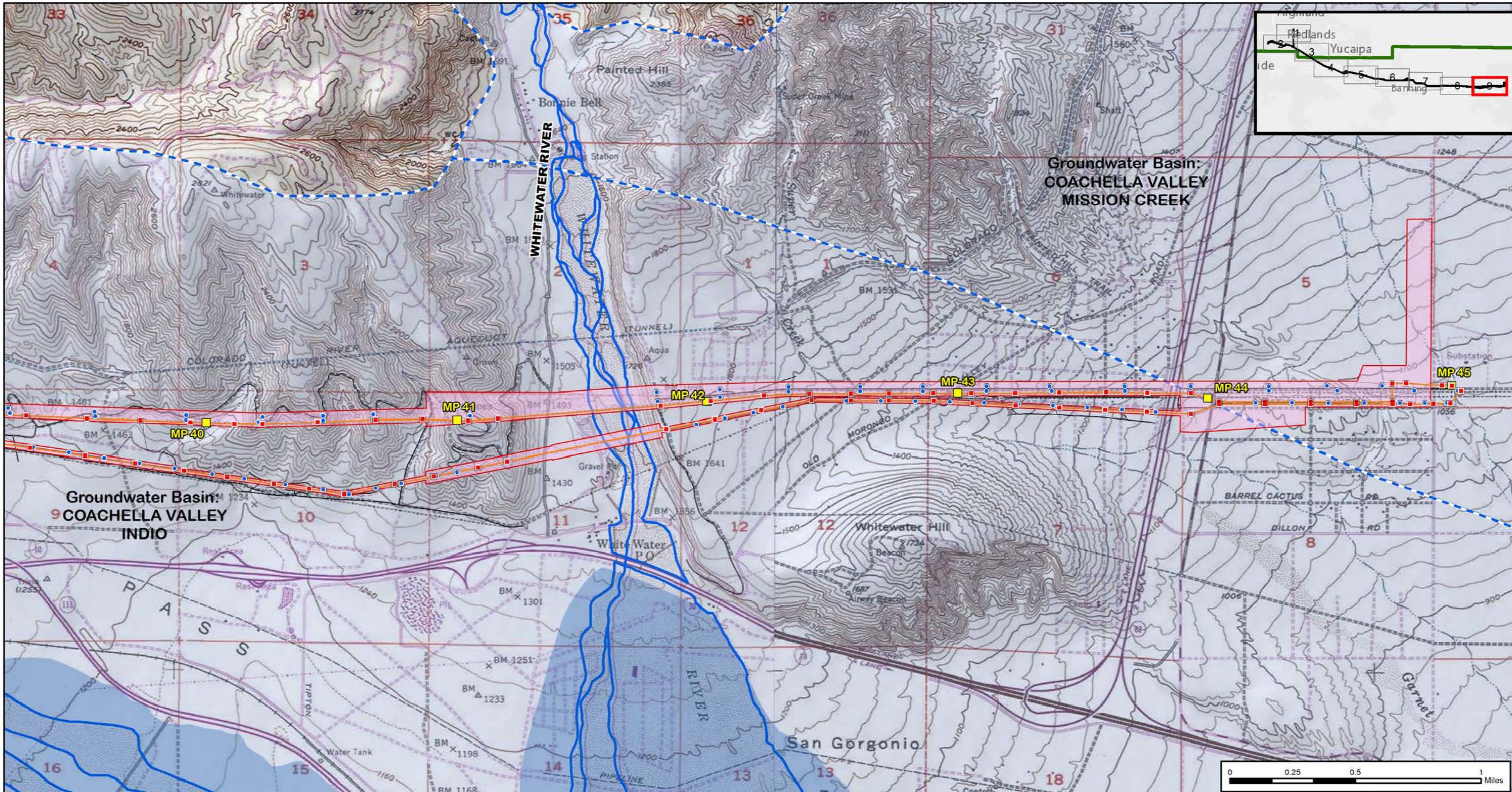

Sources: SCE 2013,
CA Bulletin 118,
CA Dept. of Cons.

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- Mileposts (e.g., MP 1, SB-3)
- Proposed 220 kV Structures
- Existing 220 kV Structures to be Removed
- Access Roads
- Proposed Transmission Line
- Streams
- Transmission Line ROW
- FEMA 100-Yr. Flood Zone
- Groundwater Basins

West of Devers Upgrade Project

Figure D.19-1i

Hydrologic Features: Groundwater Basins, Floodplains, and Streams

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