3.12 HYDROLOGY AND WATER RESOURCES

This section addresses the potential impacts of the No Build and Build Alternatives related to hydrology and water resources. Water resources analyzed include floodplains, surface waters, and groundwater.

3.12.1 REGULATORY REQUIREMENTS

Federal

Clean Water Act

The Clean Water Act (CWA) was enacted by Congress in 1972 and subsequently amended several times. It is the primary federal law regulating water quality in the United States, and has formed the basis for several state and local laws throughout the country. The key objective of the CWA is to protect water quality by regulating pollution in the nation's rivers, stream, lakes, and coastal waters. The CWA prescribed the basic federal laws for regulating discharges of pollutants as well as set minimum water quality standards for all "waters of the United States." The CWA makes the discharge of pollutants into waters of the United States unlawful without a proper permit.

Several additional mechanisms are employed to control domestic, industrial, and agricultural pollution under the CWA. At the federal level, the CWA is administered by the U.S. Environmental Protection Agency (EPA). In California, the CWA is administered and enforced by the State Water Resources Control Board (SWRCB) and the Regional Water Quality Control Boards (RWQCBs). The state of California has developed a number of water quality laws, rules, and regulations, in part to assist in the implementation of the CWA and related federally mandated water quality requirements. In many cases, the federal requirements set minimum standards and policies; the laws, rules, and regulations adopted by the state and regional boards often exceed the federal requirements.

Important sections of the CWA include:

- Section 303 and 304: Require states to promulgate water quality standards, criteria, and guidelines. Section 303(d) specifically regulates impaired water bodies and requires each state to identify waters that will fail to achieve water quality standards even after maintaining effluent standards, and to enact improvement plans. Each state must develop load-based (rather than concentration based) limits called total maximum daily loads (TMDL) for each water body and pollutant for which water quality is considered impaired. It is up to the state to prioritize development of TMDLs based on the severity of the pollution and the beneficial uses of the water body.

- Section 401: Requires a federal permit to conduct any activity that may result in a discharge to waters of the U.S. The applicant must obtain certification from the state that the discharge will comply with other provisions of the act.
- Section 402: Establishes the National Pollutant Discharge Elimination System (NPDES), a permitting system for point source discharges (except for dredge or fill material) of any pollutant into waters of the United States, as authorized by the CWA. RWQCBs administer this permitting program in California. The entirety of the Coast Corridor under review here (Salinas to San Luis Obispo) is within the Central Coast RWQCB based in San Luis Obispo. Section 402(p) requires NPDES permits for discharges of storm water from industrial/construction and municipal sources into storm sewer systems. The permit ensures the receiving waters will meet water quality standards.
- Section 404: Establishes a permit program for the discharge of dredge and fill materials into waters of the United States. This permit program is administered by the U.S. Army Corps of Engineers (USACE).

Rivers and Harbors Act

Section 10 of the Rivers and Harbors Act prohibits the unauthorized obstruction or alteration of any navigable water of the United States. The construction of any structure in or over any navigable water of the United States, the excavation from or depositing of material in such waters, or the accomplishment of any other work affecting the course, location, condition, or capacity of such waters is unlawful unless the work has been recommended by the Chief of Engineers and authorized by the Secretary of the Army. The instrument of authorization is designated a Section 10 permit.

Flood Disaster Protection Act

The Flood Disaster Protection Act of 1973 requires flood insurance for the protection of property located in Special Flood Hazard Areas (SHFAs). Flood-prone areas are identified and flood insurance is provided to residents and businesses in those areas.

Executive Order 11988

Executive Order 11988 (Floodplain Management) addresses floodplain issues related to public safety, conservation, and economics. The Executive Order requires federal agencies to avoid short- and long-term impacts resulting from the modification and development of floodplains to the maximum extent feasible.

State

Porter-Cologne Water Quality Control Act

The Porter-Cologne Act, enacted in 1969, provides the legal basis for water quality regulation within California. The law gives responsibility to the SWRCB and the RWQCBs to establish the water quality standards (objectives and beneficial uses) required by the CWA. Additionally, the SWRCB and RWQCBs regulate discharges to ensure compliance with water quality standards. In California, Regional Boards designate the beneficial uses for all water body segments in their jurisdictions, and then set criteria necessary to protect these uses.

California Fish and Game Code, Section 1602

Pursuant to Section 1602 of the California Fish and Game Code, California Department of Fish and Wildlife (CDFW) regulates activities that divert, obstruct, or alter stream flow, or substantially modify the bed, channel, or bank of a stream, which CDFW typically considers to include riparian vegetation. Any proposed activity in a natural stream channel that would adversely affect an existing fish and/or wildlife resource, would require entering into a Streambed Alteration Agreement (SBAA) with CDFW prior to commencing work in the stream. However, prior to authorizing such permits, CDFW typically reviews an analysis of the expected biological impacts, any proposed mitigation plans that would be implemented to offset biological impacts and engineering and erosion control plans.

Local

City of Salinas General Plan

The City of Salina General Plan sets forth policies intended to ensure a safe and adequate water supply for community uses and to encourage the conservation of water resources. Specific policies aim to maintain and restore natural watersheds to recharge the aquifers and ensure the viability of the ground water resources. Cooperation with the SWRCB and the RWQCB is encouraged to address poor water quality in the area. The General Plan also promotes regional efforts to protect and enhance water quality.

City of Soledad General Plan

The City of Soledad General Plan sets forth policies requiring projects to allocate land as necessary for the purpose of retaining flows and/or for the incorporation of mitigation measures for water quality and supply impacts related to runoff. Mitigation related to controlling pollutant loads in urban storm water runoff must be coordinated with responsible agencies, such as the RWQCB.

City of King (King City) General Plan

The City's General Plan includes goals and policies assuring groundwater resources are available to the city and that their quality is not degraded. Specific policies aim to preserve and protect all groundwater recharge areas from sources of pollution, and to regulate development in such areas to ensure that recharge capabilities are not significantly diminished.

City of El Paso de Robles (Paso Robles) General Plan

The City of El Paso de Robles General Plan contains goals and policies aiming to ensure the city has an adequate supply of water. Specifically, the development and implementation of innovative water provision and conservation programs is encouraged, particularly through non-traditional methods, such as storm drainage system design integrating Low-Impact Development features to reduce hydromodification from development and other improvements to recharge groundwater.

City of San Luis Obispo General Plan

The City of San Luis Obispo General Plan includes goals, policies, and programs related to water supply and demand, with a focus on ensuring a long-term, reliable water supply to meet both current and future water demand associated with development envisioned by the General Plan.

3.12.2 METHODS OF EVALUATION

The components of the Build Alternative would have varying potential to result in environmental effects related to hydrology and water resources. The study area for hydrology and water resources is defined as the existing railroad right-of-way, the potential locations of the physical improvements, as well as conservative buffer areas around the proposed physical improvements. Below, this section discusses how each component was evaluated and what study area was considered.

Impact Evaluation by Resource

Surface Waters

To determine potential impacts to hydrologic features, including streams, rivers, canals, etc. by the proposed physical improvements, national hydrography data from the United States Geologic Survey (USGS) was used.

Permanent and temporary impacts were located by identifying where proposed physical improvements would intersect known flowlines. From this, the size of the impact was computed in linear feet in the jurisdictional areas.

Groundwater

Impacts to groundwater resources were evaluated qualitatively by examining the potential for the proposed physical improvements to interfere with groundwater recharge or to deplete groundwater supplies. Groundwater resources serving communities along the alignment were identified, along with any potential impacts the physical improvements may have. For this analysis, it is assumed that among all proposed physical improvements, only proposed new station areas would have any significant potential to impact groundwater resources due to the likely addition of impervious surface area. Other proposed improvements, such as new tracks, would not introduce substantial new impervious areas.

Floodplain

To determine the extent to which proposed physical improvements could be located within areas of subject to heightened flood risk (i.e. 100-year floodplains or other SFHAs), Federal Emergency Management Agency (FEMA) flood maps were consulted. The analysis computes acreages of proposed improvements within such areas.

Impaired Bodies

Impacts to impaired bodies of water within the exiting alignment and resulting from the proposed physical improvements were identified by using the US EPA 303(d) list. Any impacted surface waters were cross-checked with the 303(d) to determine if they are currently considered impaired. The linear feet of impaired water body were calculated for each of the Build Alternative physical improvements.

Erosion

Potential erosion impacts were evaluated by using GIS data and aerial mapping to identify proposed improvements that could occur in areas with steep slopes. Areas near steep slopes are more likely to experience erosion, particularly if proposed improvements would require substantial grading in such areas.

3.12.3 AFFECTED ENVIRONMENT

Hydrological Resources in the Study Area

Surface Waters

Surface waters, including streams, lakes, rivers, ponds, and reservoirs, provide critical habitat for fish and wildlife, offer locations for groundwater recharge as well as direct pathways connecting resources. They also help convey flood waters, facilitating and maintaining water supply. (See **Section 3.13, Biological Resources and Wetlands**, for a discussion of wetlands and native species habitats).

The major surface water resource within and immediately adjacent to the study area is the Salinas River. The Salinas River stretches approximately 184 miles north/northwest, from the Santa Lucia and La Panza Mountain Ranges in San Luis Obispo County, through the Salinas Valley, and finally terminating in Monterey Bay near Castroville. The river meanders amidst 230,000 acres through the Salinas Valley floor, fed by several tributaries along the way. The river flow averages approximately 282,000 acre feet per year (AFY). Surface waters in the study area are shown in **Figure 3.12-1**.

Between Salinas and San Luis Obispo, the existing railroad crosses or is in close proximity to a number of other named streams, including the San Antonio River, Nacimiento River, Jack Creek, Santa Margarita Creek, Paso Robles Creek, Atascadero Creek, Chualar Creek, Stonewall Creek, Chalone Creek, Pancho Rico Creek, Sargent Creek, San Lorenzo Creek, Pine Creek, San Marcos Creek, Yerba Buena Creek, Paloma Creek, Graves Creek, Brizzolara Creek, Stenner Creek, and several unnamed creeks.

Groundwater

Rainfall, snowmelt, and other types of water infiltration may penetrate the ground surface moving downward through spaces between soil particles, eventually encountering an impermeable layer. At this impermeable layer water begins to build up, ultimately becoming an aquifer. A groundwater basin contains one large aquifer or several connected and interrelated aquifers. Groundwater basins are distinguished by natural or artificial divides, such as impermeable layers, in the water table. Precipitation as well as artificial infiltration can serve to recharge the groundwater basin. Groundwater recharge is most effective in areas where surface water is easily able to penetrate into the ground, such as along undeveloped river channels or beneath lakes.

Groundwater is an important resource to Monterey County. Overall, the groundwater is considered to be of good quality; however, localized groundwater quality issues exist, resulting from seawater intrusion in northern Monterey County (not an issue for the inland Salinas Valley) and nitrate contamination. Through Monterey County and parts of San Luis Obispo County, the Coast Corridor study area lies within the Salinas River Basin, extending a length of approximately 130 miles. The Salinas River Basin consists of one large hydrologic unit consisting of four subareas, each containing their own hydrogeological and recharge characteristics. Water can move freely between them as they are not separated by any horizontal flow barrier. Groundwater resources in the study area are shown in **Figure 3.12-2**.

Groundwater is the primary water resource in the Salinas Valley and supplies a variety of uses, including irrigation, as well as domestic, municipal, and industrial purposes. In the Salinas Valley, groundwater recharge occurs primarily through the Salinas River, Arroyo Seco River, and some infiltration from rainfall. Lake San Antonio serves in part to collect water to recharge the San Antonio River, a tributary to the Salinas River. Some infiltration from small streams and inflow from bedrock areas adjoining the basin does occur, but to a much lesser extent.[1]

San Luis Obispo County obtains approximately 80 percent of its water supply from groundwater.[2] As of 2014, Paso Robles relies entirely on groundwater, drawn from a large aquifer known as the Paso Robles Basin and the Salinas River Underflow. However, in 2015, Paso Robles is scheduled to begin receiving surface water (4,000 AFY) from the Lake Nacimiento Water Project.[3]

The City of San Luis Obispo obtains water from Santa Margarita Lake, Whale Rock Reservoir, Nacimiento Reservoir, recycled water from the city's Water Reclamation Facility (WRF), and groundwater. The city's groundwater basin is relatively small and recharges quickly after rainfall events. Currently, the city operates one potable and one non-potable well. Two of the city's largest producing wells were shut down after elevated nitrate levels were detected. The potable well produces

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[1] County of Monterey, 2006, pp. 4.3-2-4.3-6

[2] County of San Luis Obispo,, 2009, p. 3.7-1

[3] City of Paso Robles, 2014

approximately 11 AFM, about 2 percent of the city's total water use. The non-potable well serves construction activities in the area, such as soil compaction and dust control. Two additional wells are operated by the Laguna Lake Golf Course that serve to help meet irrigation demands at the course. The remainder of the irrigation demand for the golf course is met by the WRF.[4]

Floodplains

Floodplains are flatlands adjacent to rivers, lakes, and oceans that are subject to flooding when the nearby water body overflows, resulting in a variety of geomorphic and hydrological processes. A total of 49 acres of SFHAs have been designated within the Coast Corridor study area, and are shown in **Figure 3.12-3**.

Water Quality Issues

Impaired Bodies

Impaired water bodies are those that do not meet water quality standards after application of effluent limits under the Clean Water Act (CWA). Water bodies with impaired water quality in the vicinity of the Coast Corridor study area include Atascadero Creek, Chualar Creek, Salinas River, San Lorenzo Creek, and Stenner Creek.[5] These water bodies are considered impaired because they exceed the limits for fecal coliform, e. coli, low dissolved oxygen, boron, chloride, electrical conductivity, sodium, pH, chlordane, pesticides, total dissolved solids, toxaphene, nitrate, polychlorinated biphenyls (PCBs), enterococcus, diazinon, chlorpyrifos, dichlorodiphenyldichloroethane (DDD), and a number of other pollutants.

Erosion Potential

Erosion is the slow deterioration of land surface by flowing water, wind, waves, and corrosion, typically leading to soil loss and degraded water quality. Soil erosion can occur in areas near steep slopes, and during construction activities that involve grading and other earth moving activities. See **Section 3.11 Geology, Soils, and Minerals** for an in-depth discussion of soil erosion in Monterey and San Luis Obispo Counties.

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[4] City of San Luis Obispo, , 2010, pp. 8.1-8.4

[5] California EPA, 2013

Most of the Coast Corridor study area has low soil erosion potential; very few areas are identified as having moderate to severe erosion potential. The topography of the existing Coast Corridor study area is predominately flat; however, several portions of the alignment run adjacent to areas with steeper topography, where any ground disturbance would increase the potential for erosion and sedimentation.

3.12.4 ENVIRONMENTAL CONSEQUENCES

No Build Alternative

The No Build Alternative represents the continuation of existing rail operations and physical components, and assumes the perpetuation of existing freight and passenger service between Salinas and San Luis Obispo. The only physical improvement expected under the No Build Alternative would be the installation of positive train control (PTC), which would provide increased safety for freight and passenger trains. PTC equipment would likely be installed within the existing railroad right-of-way or would modify existing signaling equipment, and train operations would continue as it currently does. As a result, impacts to hydrology and water resources would not change under current operation, and no new impacts would occur.

Build Alternative

Surface Waters/Impaired Water Bodies

The Build Alternative could result in potential proximity impacts to surface waters through runoff during construction activities, operation-related pollution in areas immediately adjacent to surface waters, and potential surface water crossings. **Table 3.12-1** below shows potential impacts to surface waters resulting from the various elements of the Build Alternative. Potential temporary and permanent surface water impacts are reported as linear feet, which represents areas in which Build Alternative components would come within close proximity to surface water resources. For example, construction activities occurring to upgrade existing alignment #1 would temporarily be in close proximity to 83 linear feet of surface waters. Once operational, these upgrades would be within the existing railroad right-of-way and would not be in close proximity to any water resources. As such, no permanent impacts are reported.

Table 3.12-1 Potential Proximity Impacts to Surface Waters

Build Alternative Components	Surface Water Impacts (linear feet)	
	Temporary	Permanent
Salinas Powered Switch	0	0
Upgrades to Existing Alignment Section #1	83	0
Spence Siding Extension	130	83
Upgrades to Existing Alignment Section #2	2,411	0
Gonzales Powered Switch	0	0
Soledad Powered Switch	0	0
Soledad New Passenger Station	0	0
Harlem/Metz Curve Realignments	302	0
Chalone Creek New Siding	0	0
Upgrades to Existing Alignment Section #3	120	0
Coburn Curve Realignments	61	0
King City Siding Extension	133	100
King City New Passenger Station	0	0
King City Powered Switch	0	0
Upgrades to Existing Alignment Section #4	0	0
MP 165 Curve Realignment	403	100
San Lucas New Siding	0	0
Upgrades to Existing Alignment Section #5	1,732	0
MP 172 Track Realignment	785	150
San Ardo Powered Switch	0	0

Build Alternative Components	Surface Water Impacts (linear feet)	
Getty/Bradley Curve Realignments	1,636	417
Bradley Siding Extension	109	109
Bradley Powered Switch	0	0
Upgrades to Existing Alignment Section #6	1,076	0
Upgrades to Existing Alignment Section #7	287	0
McKay/ Wellsona Curve Realignments	0	0
McKay East Powered Switches	0	0
Wellsona New Siding	123	124
Upgrades to Existing Alignment Section #8	612	0
Wellsona/ Paso Robles Curve Realignments	0	0
Templeton Siding	267	227
Templeton/ Henry Curve Realignments	0	0
Upgrades to Existing Alignment Section #9	1,846	0
Henry/Santa Margarita Curve Realignment	5,719	305
Santa Margarita Powered Switch	0	0
Cuesta Second Main Track	5,986	749
Upgrades to Existing Alignment Section #10	3,620	0
Totals[a]	**27,442[a]**	**2,264[a]**

Note: a) Rounded to the nearest whole number.
Source: ICF, 2013

The Build Alternative would result in some potential proximity impacts to surface waters, including potential crossings of 17 streams and rivers on 117 occurrences.[6] More specific construction-period and operational impact discussions are provided below.

Construction-Period Effects

Construction activities could result in potential proximity impacts to approximately 5.2 miles of surface waters in the study area. Construction activities may also result in potential proximity impacts to water quality along the corridor. During construction, erosion and runoff could result in an increased risk of sedimentation in nearby surface waters. This mainly results from the proximity of construction work and associated staging areas, vehicle ingress/egress, etc. to surface waters. The Henry/Santa Margarita Curve Realignment and the Cuesta Second Main Track would both affect approximately 1 mile of surface waters each during construction activities. Construction of the King City Siding Extension could result in a potential temporary impact to the San Lorenzo Creek; however, this impact would extend for only 133 linear feet. Upgrades to Existing Alignment section #10 would potentially impact just over a half mile (3,620 linear feet) of surface waters during construction activities. Following construction work, these impacted areas would be restored back to their original condition.

Operational Effects

Five of the 17 streams and/or rivers that would be crossed by one or more of the elements of the Build Alternative are considered impaired. Of the impaired water bodies in the Corridor, San Lorenzo Creek is the only body of water that is not currently crossed by the existing alignment. The proposed King City Siding Extension is the only proposed physical improvement that would add a new crossing of San Lorenzo Creek.

Once operational, the number of daily trains on the corridor would increase, as such there would be increased potential for operation-related pollutants to enter the environment. Potential permanent proximity impacts could occur to approximately 0.4 miles (2,264 linear feet) of surface waters. Like construction-period effects, these impacts would result from the proximity of the various proposed improvements (new sidings, siding extensions, etc.) and subsequently, close proximity of trains to surface waters. The King City Siding Extension has the potential to result in impacts to the San Lorenzo Creek for approximately .02 mile

[6] More than 17 streams may be crossed; however, of all the streams crossed in the study area, only 17 are named.

(100 linear feet) once operational. Operation of the Cuesta Second Main Track could result in approximately 0.15 mile (749 linear feet) of potential impacts to surface waters. All of the remaining proposed new sidings/siding extensions would have potential impacts to already affected surface waters in a length of less than one tenth of a mile in the vicinity of the alignment.

Erosion Potential

Construction-Period Effects

Several elements of the Build Alternative could result in potential erosion impacts during construction. Particularly the Harlem/Metz Curve Realignment, New Chalone Creek Siding, Coburn Curve Realignments, Bradley Siding, and Getty/Bradley Curve Realignments are located near steep slopes and could result in potential erosion impacts. The Cuesta Second Main Track is proposed in an area near steep topography; however, potential for soil erosion is low in this area as it is forested and agricultural uses are negligible. The Harlem/Metz and Coburn Curve Realignments would move the track further away from sloping hillside areas. These realignments, along with the Chalone Creek New Siding, would be located on relatively flat land, thus reducing the potential for erosion and potentially creating a beneficial effect.

Operational Effects

Once operational, the Build Alternative would have minimal potential to result in erosion as erosion is typically associated with grading, and other land disturbing activities that occur during construction.

Groundwater

Construction-Period Effects

Little groundwater use is anticipated for construction of all of the proposed physical improvements. Curve realignments, siding extensions, new power switches, and the second main track will have little to no impact to groundwater as construction activity associated with these improvements does not require water. Construction of the new stations, as well as concrete platforms would require water. Water use may also be needed during construction activities for dust control and other best management practices (BMPs); however, this use would be minimal and temporary. Furthermore, construction activities would truck water to the sites rather than need to draw it from wells, which would have no impact to groundwater resources located within the study area. Since permanent sources of water are not needed for construction, new wells would not be developed; thus study area groundwater would not be depleted.

Operational Effects

Both Soledad and King City get municipal water from groundwater. The new station areas proposed in Soledad and King City will require some new water use to operate restroom facilities and offer drinking water. Water use at existing stations (Salinas, San Luis Obispo, and Paso Robles) may increase as ridership is projected to increase (add 124,000 annual riders by 2020)[7] with the improved Coast Corridor service. Salinas draws at least a portion of its water from groundwater resources and Paso Robles relies completely on groundwater for its municipal water as of 2014. However, water use is minimal as the existing stations do not offer shower facilities and only supply water for restroom and drinking water amenities. Therefore, although increased operational demand for groundwater may occur with the proposed physical improvements, no significant increase in use is anticipated.

Floodplain

In the study area, 100-year flood hazard areas (or SFHAs) exist around flat lands surrounding the Salinas River and creeks in San Luis Obispo County. Portions of the existing alignment are within the 100-year floodplain. Portions of the railway within the floodplain are at risk of being inundated and potentially impassible during a storm event. Table **3.12-2** below lists the elements of the Build Alternative that would be located within the designated 100-year floodplain.

Table 3.12-2 Acreage of Proposed Improvements within 100-Year Floodplain

Build Alternative Components	100yr Floodplain (Acres)	
	Temporary	**Permanent**
Salinas Powered Switch	0	0
Upgrades to Existing Alignment Section #1	0	0
Spence Siding Extension	0	0
Upgrades to Existing Alignment Section #2	5	0
Gonzales Powered Switch	0	0
Soledad Powered Switch	0	0
Soledad New Passenger Station	0	0

[7] Caltrans Division of Rail, 2013b

Build Alternative Components	100yr Floodplain (Acres)	
Harlem/Metz Curve Realignments	61	14
Chalone Creek New Siding	0.5	.03
Upgrades to Existing Alignment Section #3	1	0
Coburn Curve Realignments	20	1.5
King City Siding Extension	1	1
King City New Passenger Station	0	0
King City Powered Switch	0	0
Upgrades to Existing Alignment Section #4	8	0
MP 165 Curve Realignment	6	1
San Lucas New Siding	0	0
Upgrades to Existing Alignment Section #5	6	0
MP 172 Track Realignment	6	.01
San Ardo Powered Switch	0	0
Getty/Bradley Curve Realignments	19	3
Bradley Siding Extension	0	0
Bradley Powered Switch	0	0
Upgrades to Existing Alignment Section #6	2	0
Upgrades to Existing Alignment Section #7	2	0
McKay/ Wellsona Curve Realignments	10	0.2
McKay East Powered Switches	0	0
Wellsona New Siding	1	0.2
Upgrades to Existing Alignment Section #8	13	0

Build Alternative Components	100yr Floodplain (Acres)	
Wellsona/ Paso Robles Curve Realignments	0.9	0
Templeton Siding	6	3
Templeton/ Henry Curve Realignments	0	0
Upgrades to Existing Alignment Section #9	10	0
Henry/Santa Margarita Curve Realignment	19	4
Santa Margarita Powered Switch	0	0
Cuesta Second Main Track	0	0
Upgrades to Existing Alignment Section #10	2	0
Totals[a]	**200**	**29**

Note: a Rounded to the nearest whole number.
Source: ICF, 2013

Elements of the Build Alternative would be located within approximately 229 acres of the 100-year flood zone, putting them at risk of inundation by flooding. Temporary inundation can result in travel delays. Over time, frequent temporary inundations could result in damage to tracks or other rail facilities.

Construction-Period Effects

200 of the acres potentially affected would be within SFHAs only during construction activities. Temporary staging areas associated with construction of the Coburn, Getty/Bradley, Harlem/Metz, and Henry/Santa Margarita Curve Realignments would result in the majority of temporary acreage identified as potentially within SFHAs. These areas would only be at risk of flood impacts during the construction period, and measures could be taken to reduce the likelihood of such impacts (storing equipment on high ground, etc.).

Operational Effects

The remaining 29 acres identified within the flood zone would be required for implementation of specific physical improvements. Almost half of this amount (14 acres) is associated with the potential construction of the several segments of the Harlem-Metz curve realignment, near a stretch of the Salinas River. Given the relatively small amount of land that would be permanently affected within the existing 100-year flood zone and that impacts to the flood zone would be spread across a relatively wide geography within the study area, the Build Alternative would not result in substantial increase in flood elevations nor substantially shift the location of flood zones. These areas would however be at risk of flood inundation during a severe weather event.

3.12.5 AVOIDANCE, MINIMIZATION, AND MITIGATION STRATEGIES

The Build Alternative will be designed to minimize impacts to biological resources along the Corridor. The following strategies have been identified at this preliminary stage to avoid, minimize, and/or mitigate any potentially significant impacts.

Surface Waters

Strategies to reduce potential impacts on surface waters include the following:

A-BIO-1. Many of the potential impacts to water resources could be avoided through project-level design. For example, siding extension impact areas were analyzed assuming one mile extension areas could occur entirely on one side or the other. In the event that one end of a siding extension will impact a surface water body, the siding extension could be designed on the opposite side and away from the water resource area, thus removing the impact altogether.

MIN-BIO-2. National Pollutant Discharge Elimination System (NPDES) permits and Storm Water Pollution Prevention Plans (SWPPP) should be obtained prior to implementing elements of the Build Alternative. California NPDES permit requirements would be followed and BMPs would be implemented as mandated. These may include measures to provide permeable surfaces where feasible and to retain and treat stormwater onsite using catch basins and treatment wetlands. These measures will be particularly valuable in areas where new stations would be constructed and/or paved parking areas would be developed or expanded. The SWPPP would include BMPs to minimize potential sediment transport due to construction activities, including obligatory erosion control techniques, stormwater management, and channel dewatering for all stream/river crossings. The SWPPP should also include measures to control the overall amount and quality of stormwater runoff to regional systems. Potential BMPs may include the following:

- Practices that minimize contact between construction materials, equipment, and maintenance supplies with stormwater;

- Practices that reduce soil erosion including watering for dust control, perimeter silt fences, placement of rice straw bales, sediment basins, and soil stabilization; and
- Practices that maintain water quality including filtration, detention, and retention systems, constructed wetland systems, biofiltration/bioretention systems, grass buffer strips, ponding areas, organic mulch layers, planting soil beds, sand beds, or vegetated systems (biofilters) such as vegetated swales and grass strips designed to convey and treat either shallow flow (swales) or sheerflow (filter strips) runoff.

MM-BIO-3. Obtain permits as required under Sections 401 and 404 of the CWA and comply with mitigation measures required in the permits. Mitigation measures may include compensation for habitat loss involving habitat restoration, reconstruction onsite, or habitat replacement offsite, with the ultimate goal of ensuring minimal impact to surface water quality.

MIN-BIO-4. For any water body designated as Navigable, permit conditions required under Section 10 of the Rivers and Harbors Act would be adhered to.

MIN-BIO-5. A Lake or Streambed Alteration Agreement would need to be obtained for any work that would take place along the banks of surface water bodies.

MIN-BIO-6. To manage potential fuel or other spills a spill prevention and emergency response plan would be developed and implemented.

Floodplains

Strategies to reduce potential impacts on floodplains should include the following:

A-BIO-7. Prior to implementing physical improvements that would introduce new structures in the study area, such as curve realignments, further evaluation of potential 100 year flood risk areas should be conducted. Construction of facilities within floodplains should be avoided where feasible, and floodplains temporarily impacted by construction activities should be restored as much as possible so they can function as before.

MIN-BIO-8. Where avoidance is infeasible, the footprint of facilities within the floodplain should be minimized to the extent possible. All opportunities for redesign or modification to minimize flooding risk and potential harm to or within the floodplain should be assessed. For instance, siding extensions can be designed to either extend from the north or south end of the existing siding, thus potentially avoiding a flood-prone area.

Groundwater

Strategies to reduce potential impacts from construction and operation of the physical improvements on groundwater resources should include the following:

A-BIO-9. Design facilities that are elevated and/or permeable so as to not affect recharge potential where construction is required in areas of potentially substantial groundwater discharge or recharge.

MIN-BIO-10. Minimize development of facilities in areas that have substantial groundwater discharge or that would affect recharge.

MM-BIO-11. Obtain waste discharge permits where required.

MIN-BIO-12. Obtain a NPDES permit and implement permit requirements as well as BMPs that would control the release of contaminants near areas of surface water or groundwater recharge.

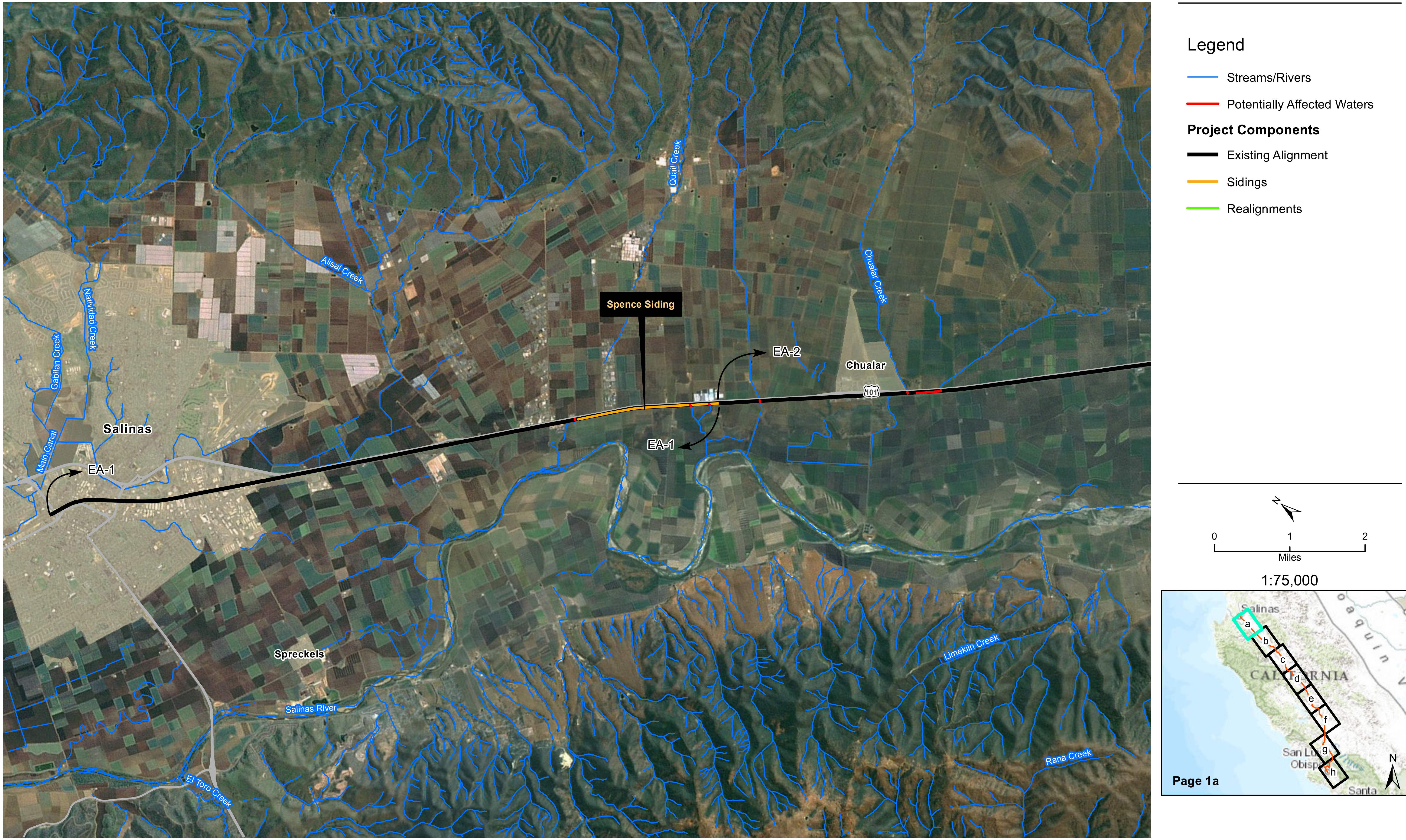
MIN-BIO-13. Consider use and retention of native materials with high infiltration potential at the ground surface in areas that are critical to infiltration for groundwater recharge.

3.12.6 SUBSEQUENT ANALYSIS

Additional analysis to further identify potential impacts on hydrology and water resources should be needed. The subsequent analysis should include the following;

- Further assessment of potential construction and facility impacts on surface waters and hydrology.
- As specific locations and facility designs are developed, further analysis of potential impacts on floodplains.
- Field surveys of potential water impacts to further analyze potential impacts on water quality, obtain required permits from the appropriate agencies, and develop suitable BMPs.
- Assessment of significant alteration in water-flow and drainage patterns, including increased stormwater runoff, or changes to groundwater discharge or recharge.
- Analysis of potential impacts of the physical improvements on groundwater recharge and infiltration systems.
- Identification of shallow groundwater areas to determine potential impacts from dewatering during construction.

- Assessment of how the various physical improvements would contribute to additional impervious surface and the subsequent potential additional impacts to surface runoff. This assessment would include potential mitigation measures.
- Field surveys of groundwater discharge/recharge conditions including additional analysis of groundwater conditions with information from other geotechnical studies.



Surface Waters in the Project Area

Figure 3.12-1a

Source: ICF International, 2013

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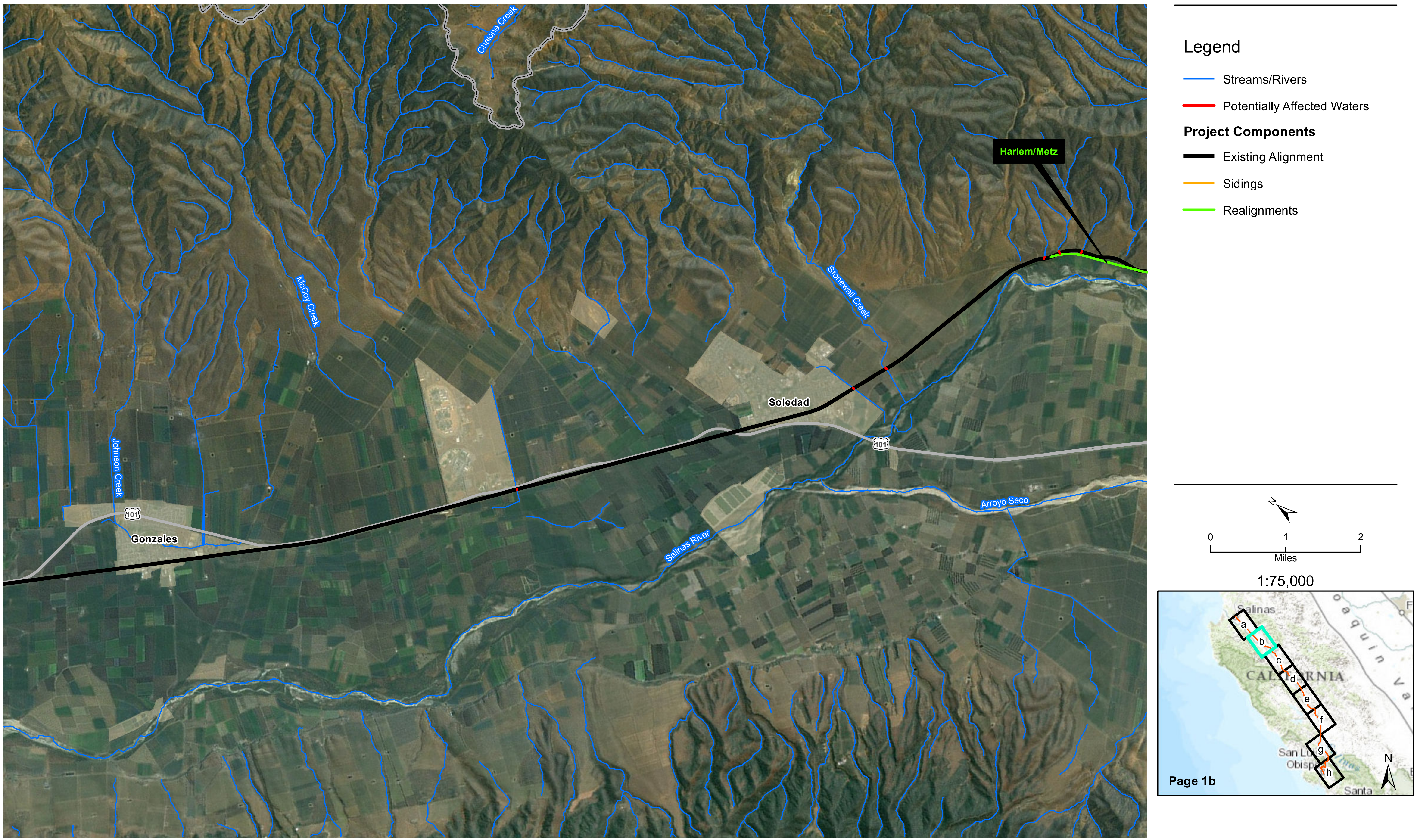

Surface Waters in the Project Area

Figure 3.12-1b

Source: ICF International, 2013

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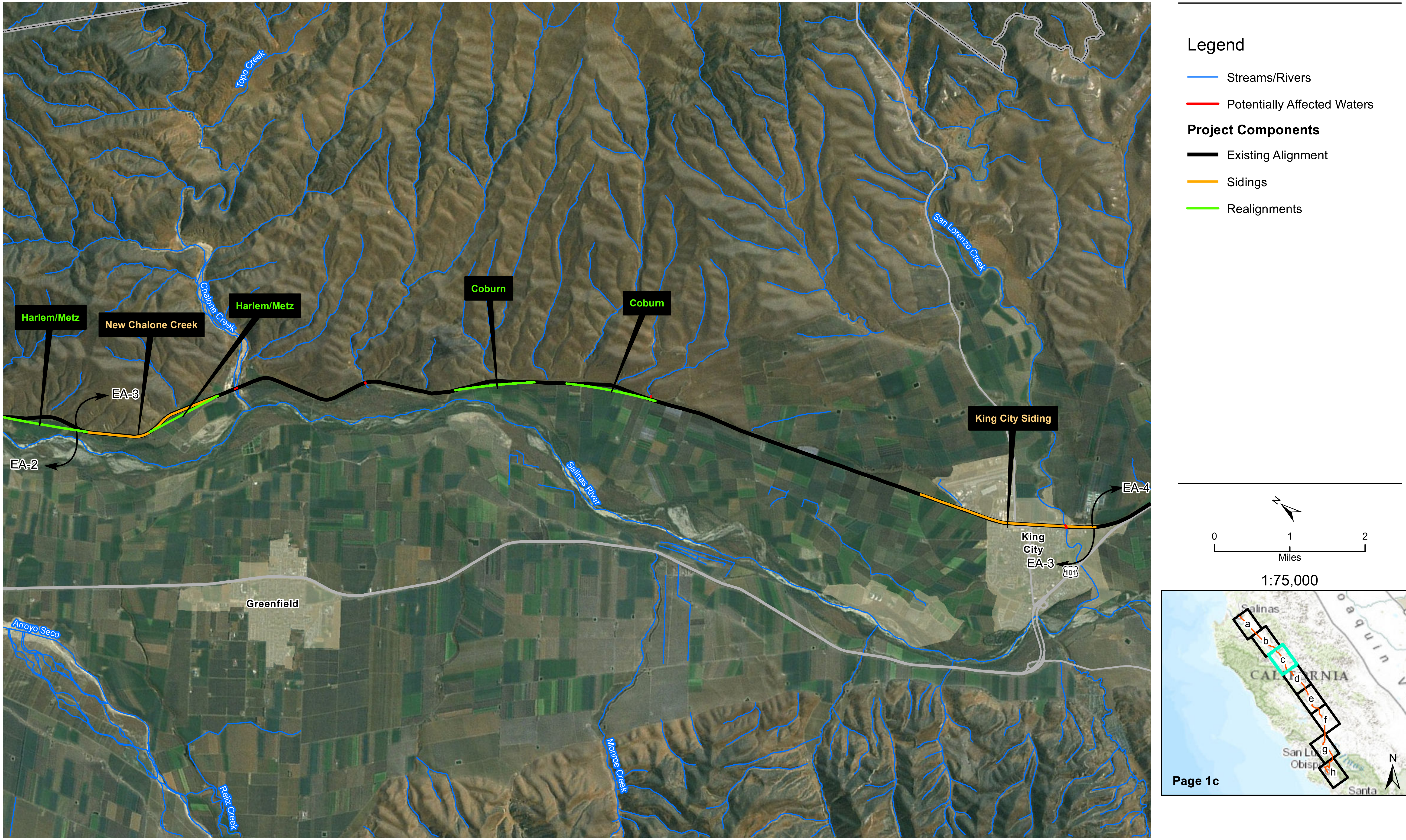

Surface Waters in the Project Area

Figure 3.12-1c

Source: ICF International, 2013

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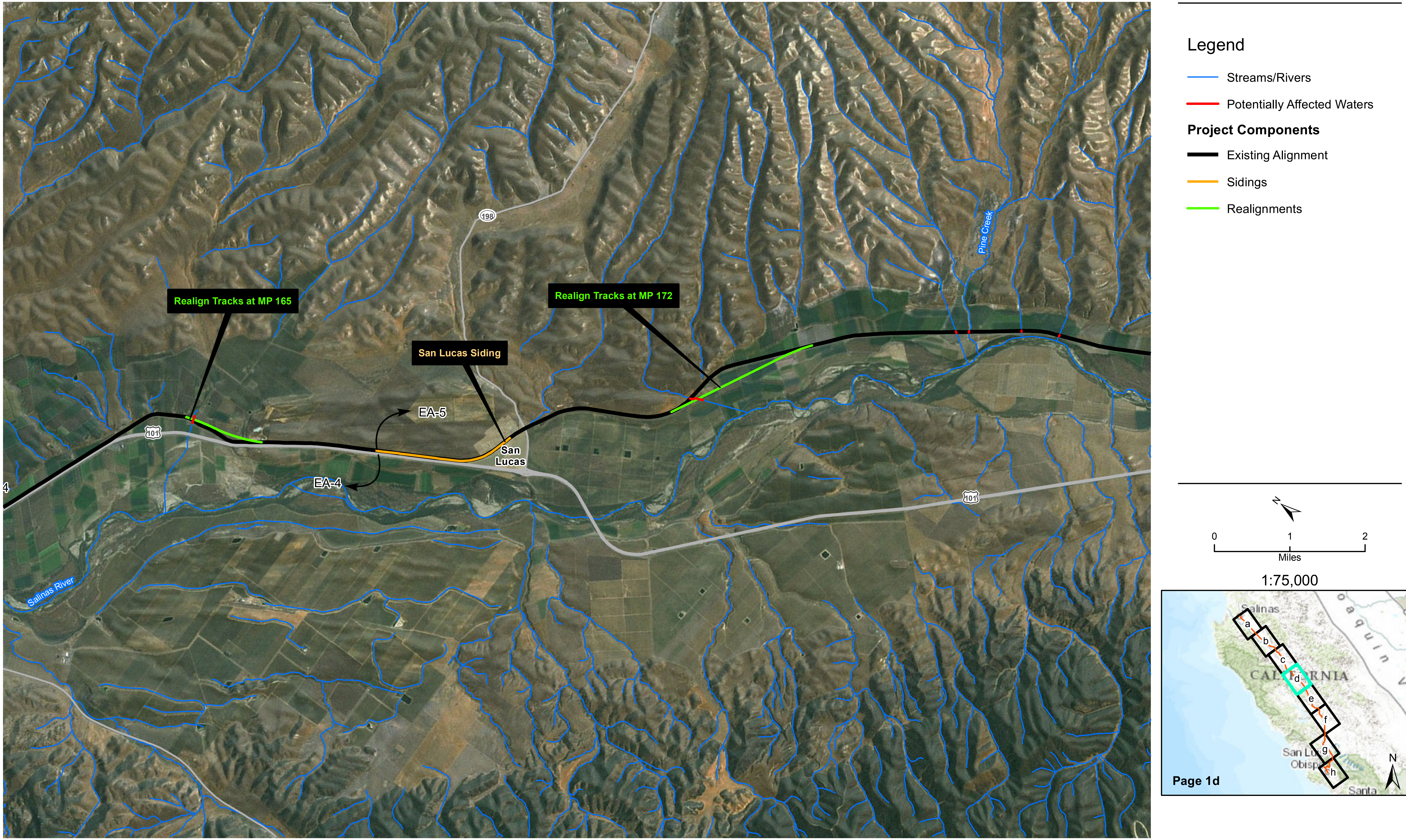
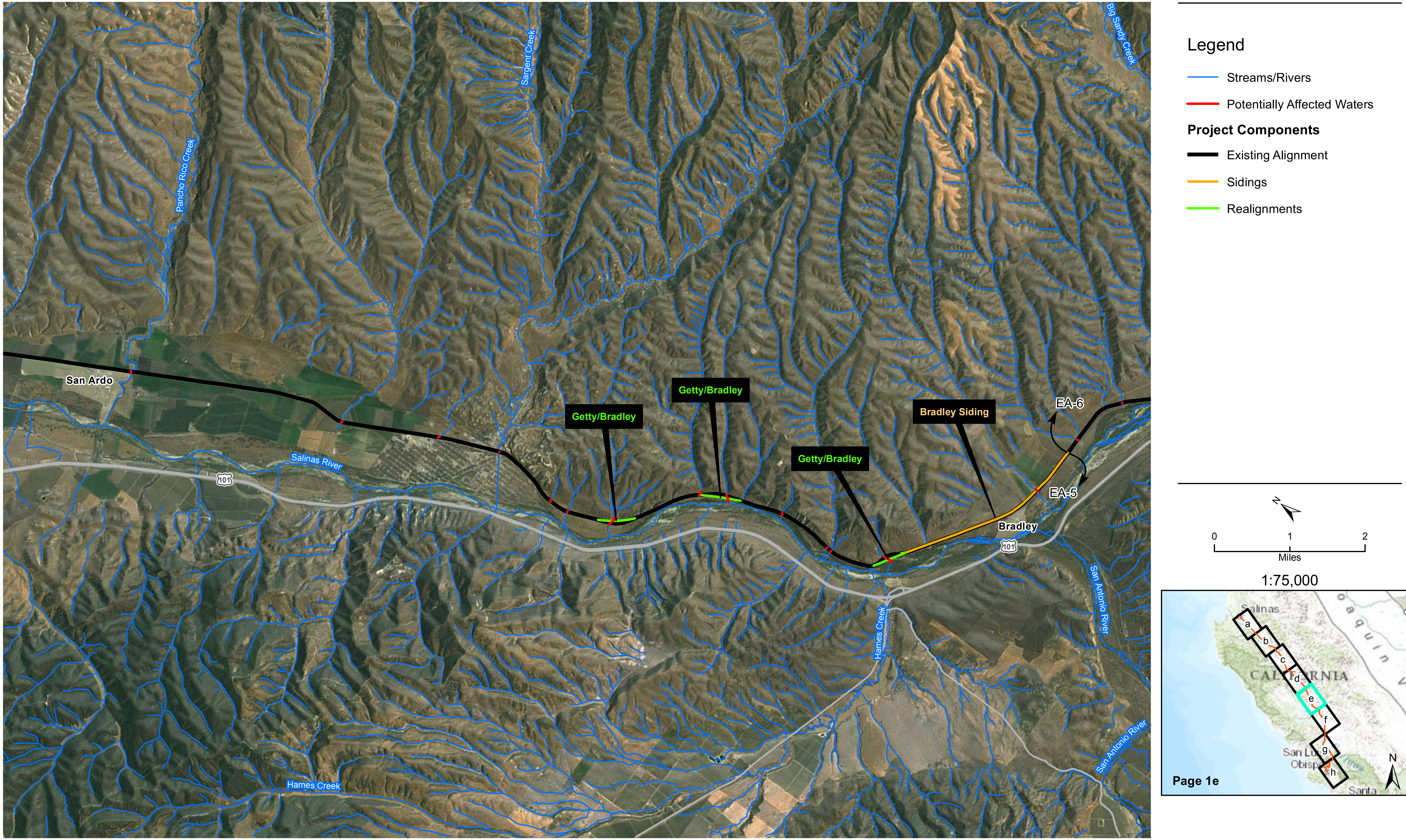


Surface Waters in the Project Area

Figure 3.12-1d

Source: ICF International, 2013



Surface Waters in the Project Area Figure **3.12-1e**

Source: ICF International, 2013

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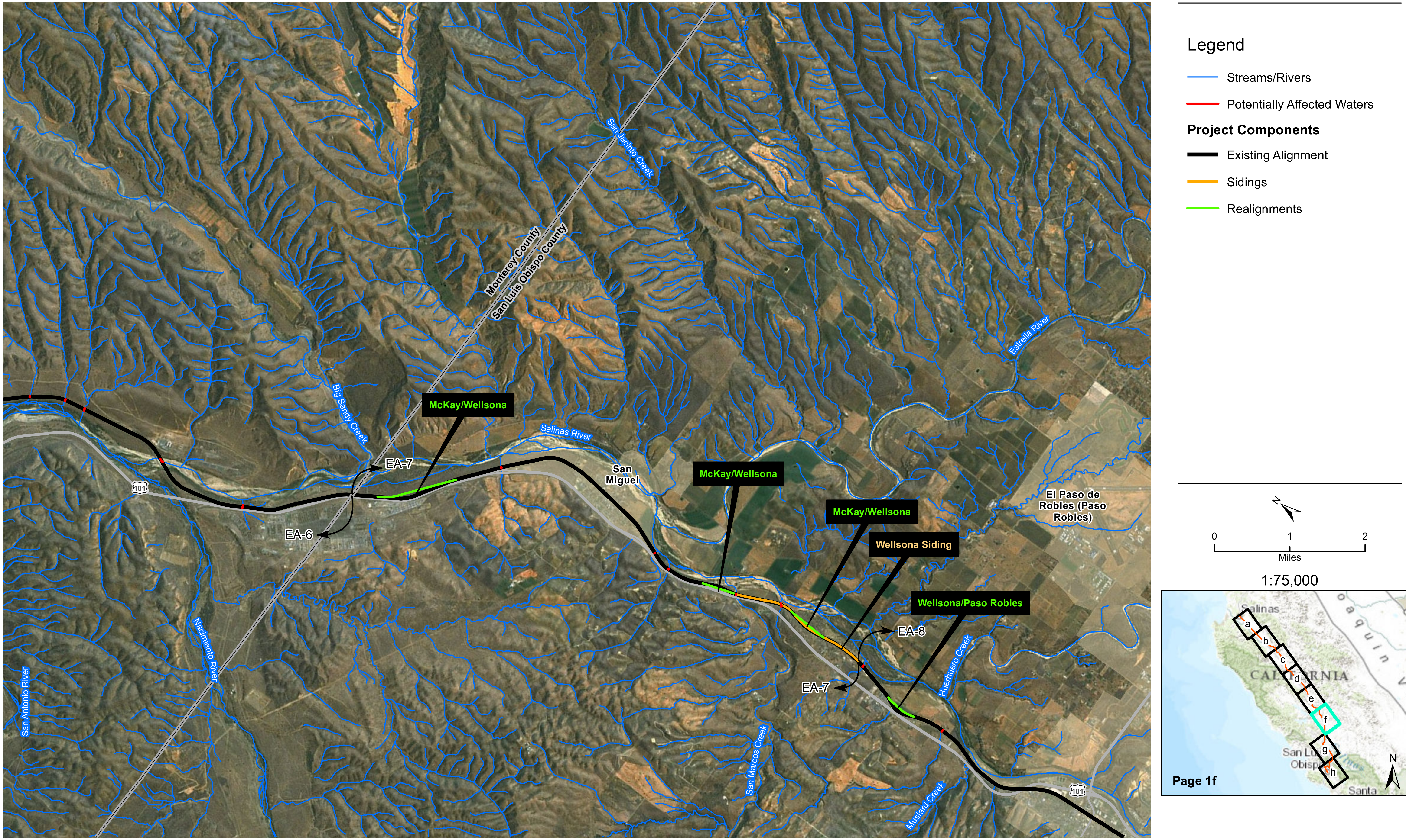

Surface Waters in the Project Area

Figure 3.12-1f

Source: ICF International, 2013

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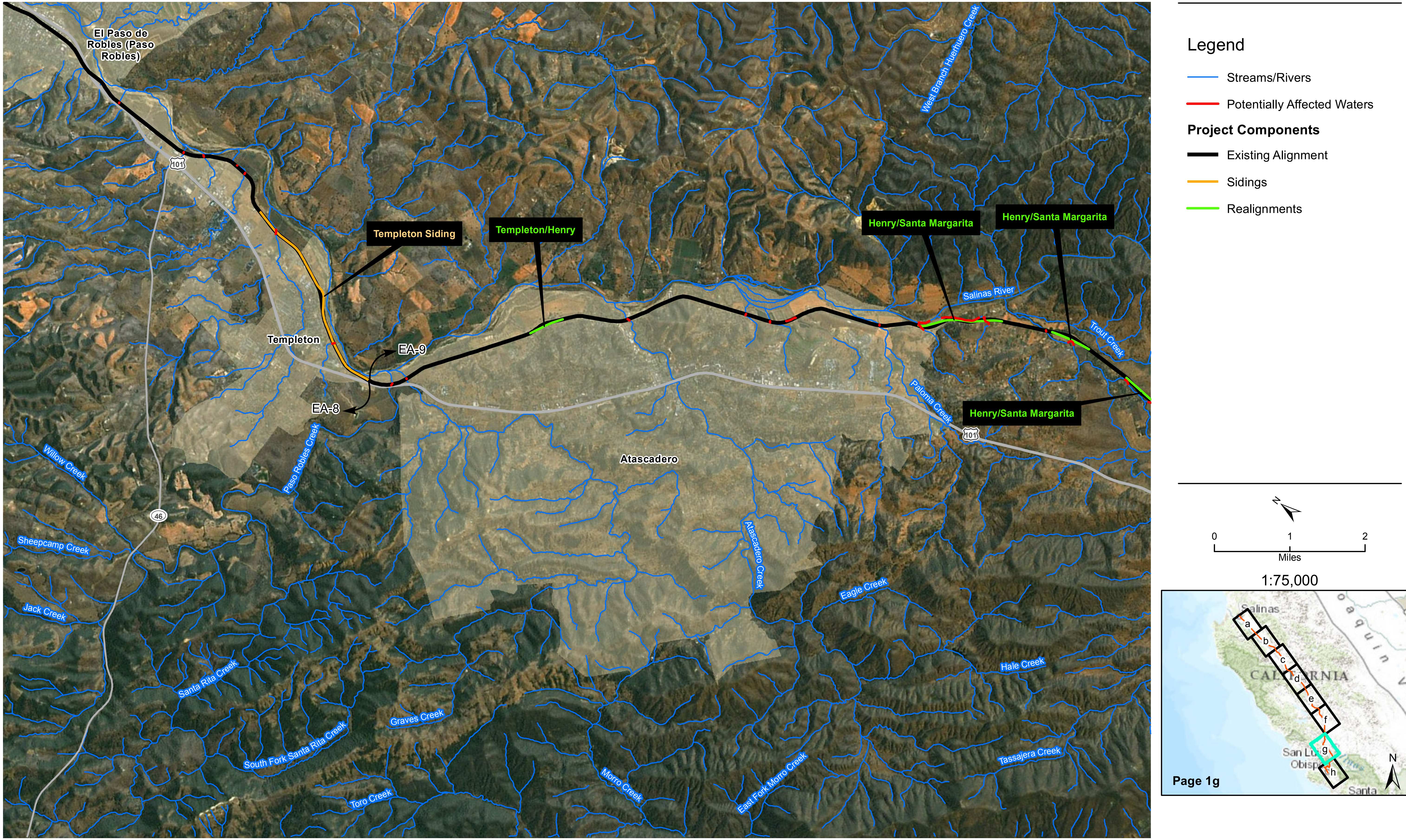

Surface Waters in the Project Area

Figure 3.12-1g

Source: ICF International, 2013

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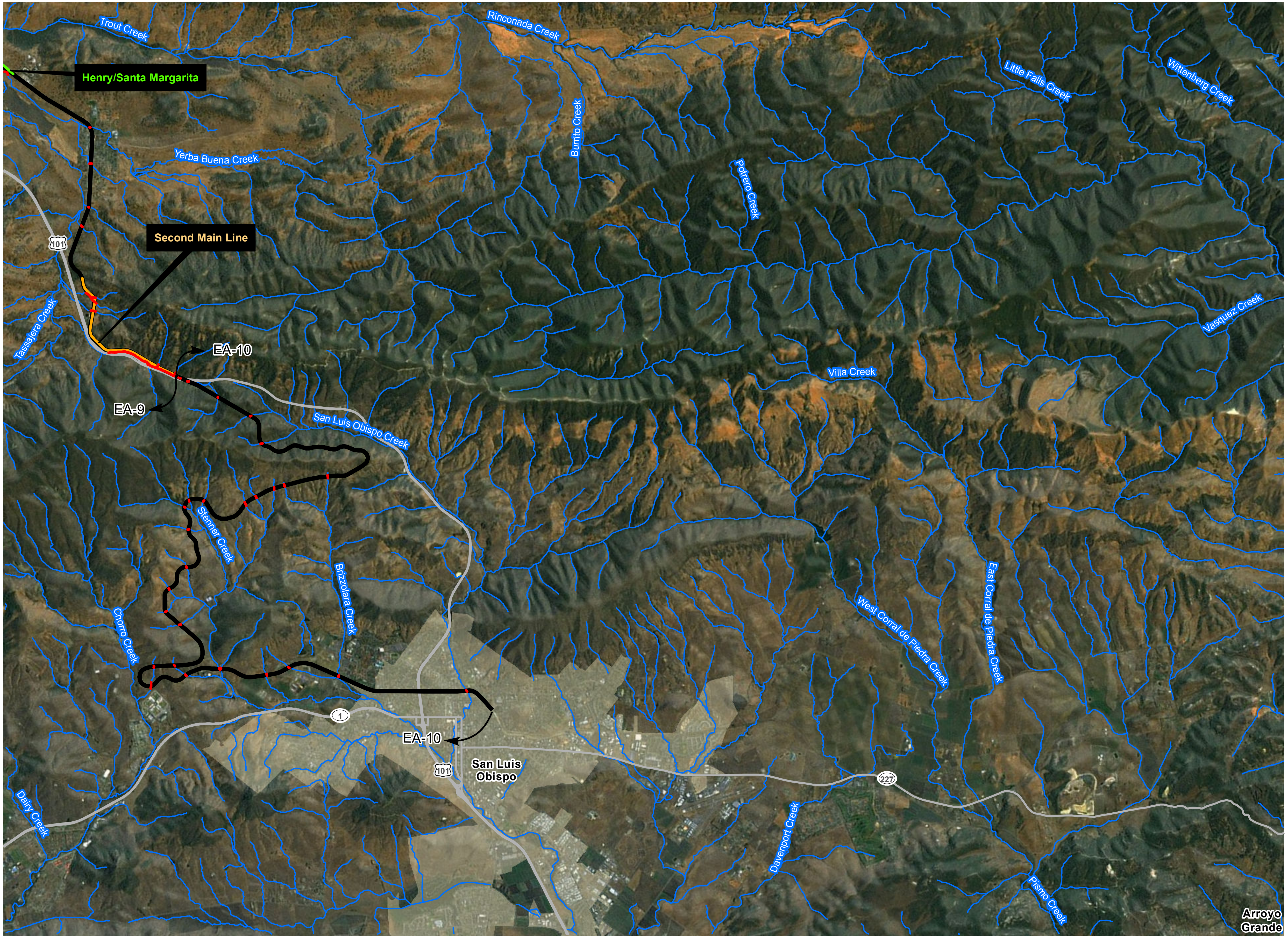


Legend

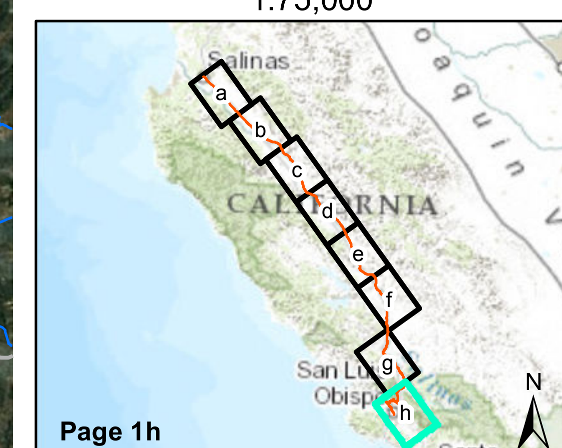
- Streams/Rivers
- Potentially Affected Waters

Project Components

- Existing Alignment
- Sidings
- Realignments

0 1 2
Miles

1:75,000



Surface Waters in the Project Area

Figure 3.12-1h

Source: ICF International, 2013

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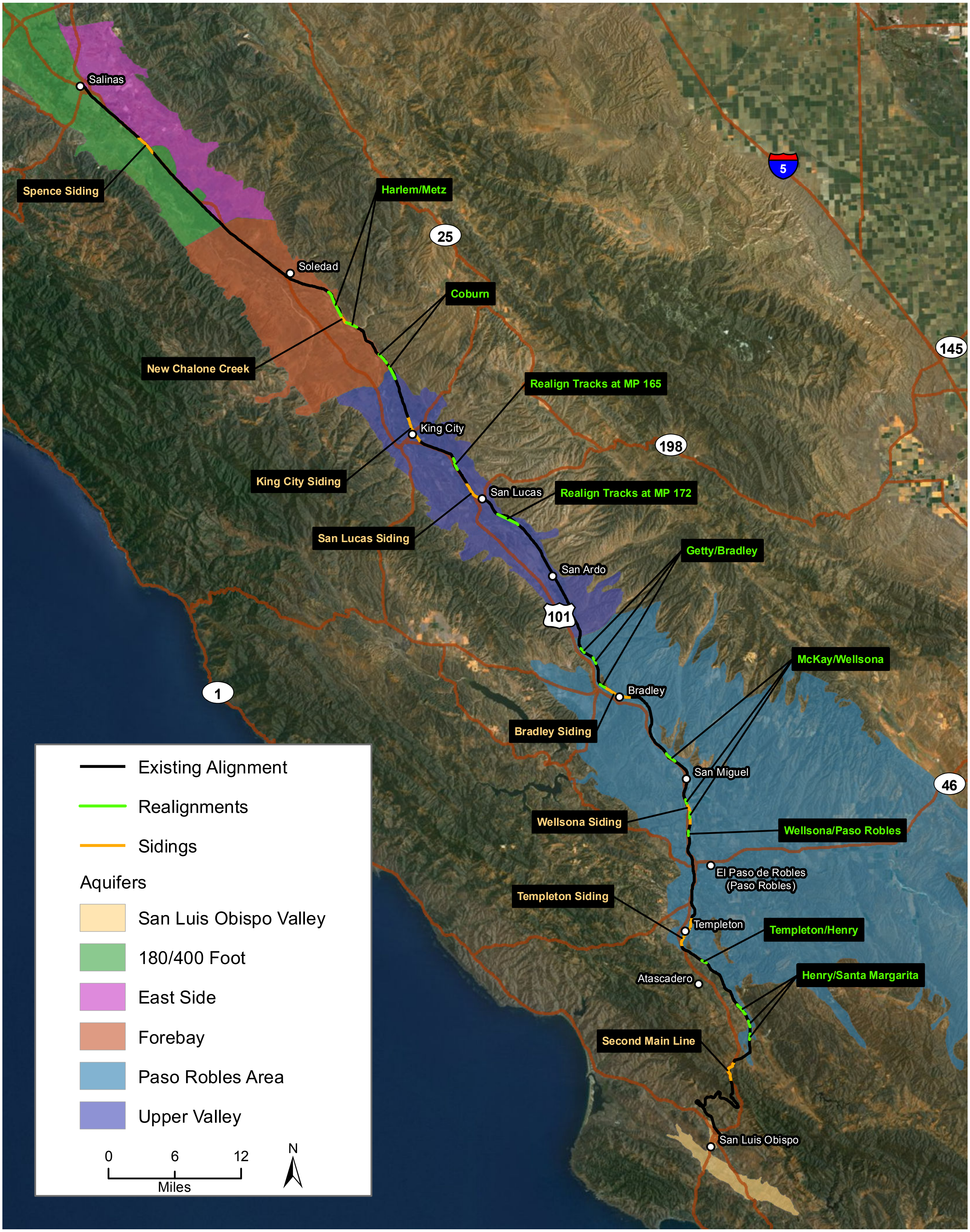

Groundwater Resources in Project Area

Figure 3.12-2

Source: ICF International, 2013

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Special Flood Hazard Areas

Figure 3.12-3a

Source: ICF International, 2013

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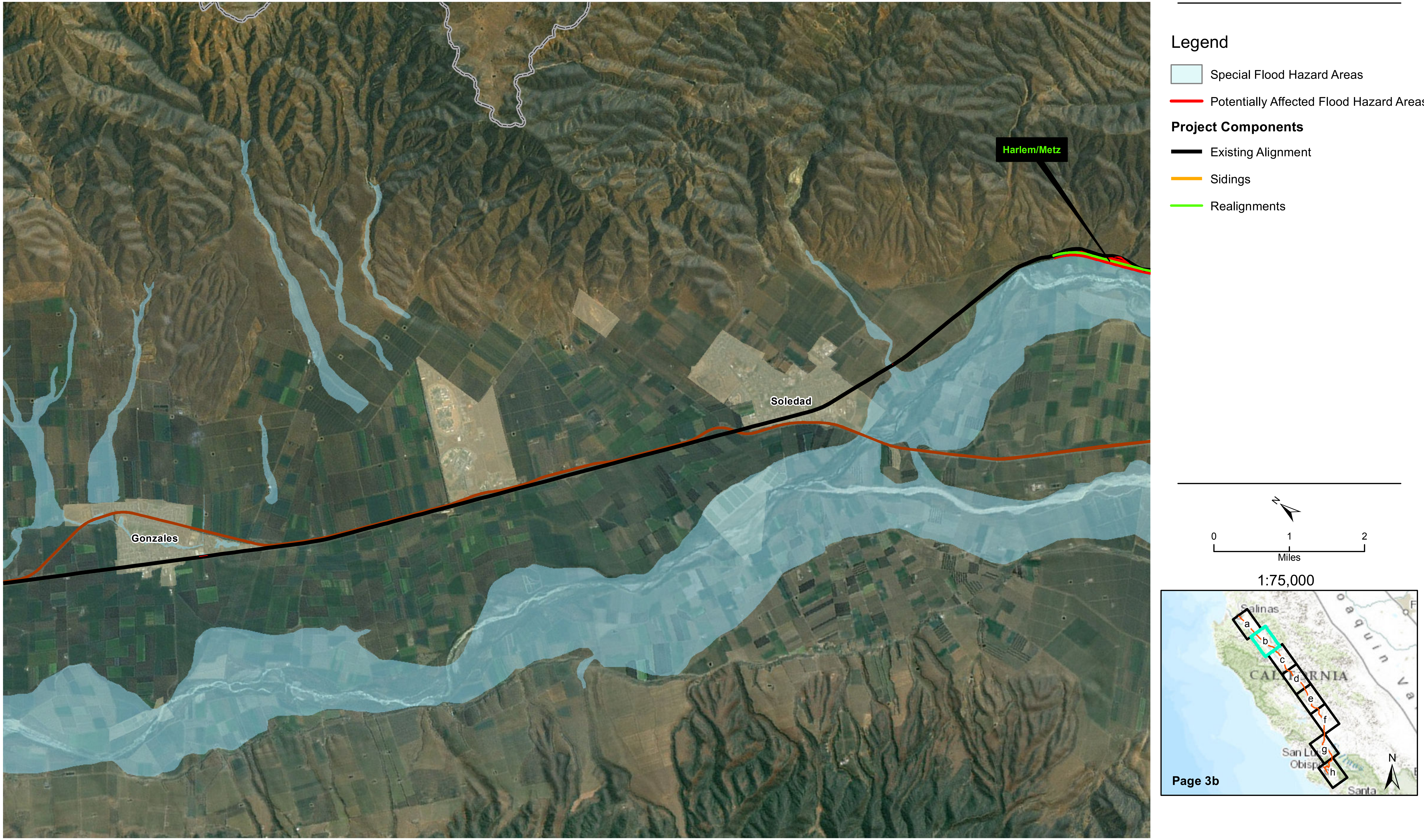

Special Flood Hazard Areas

Figure 3.12-3b

Source: ICF International, 2013

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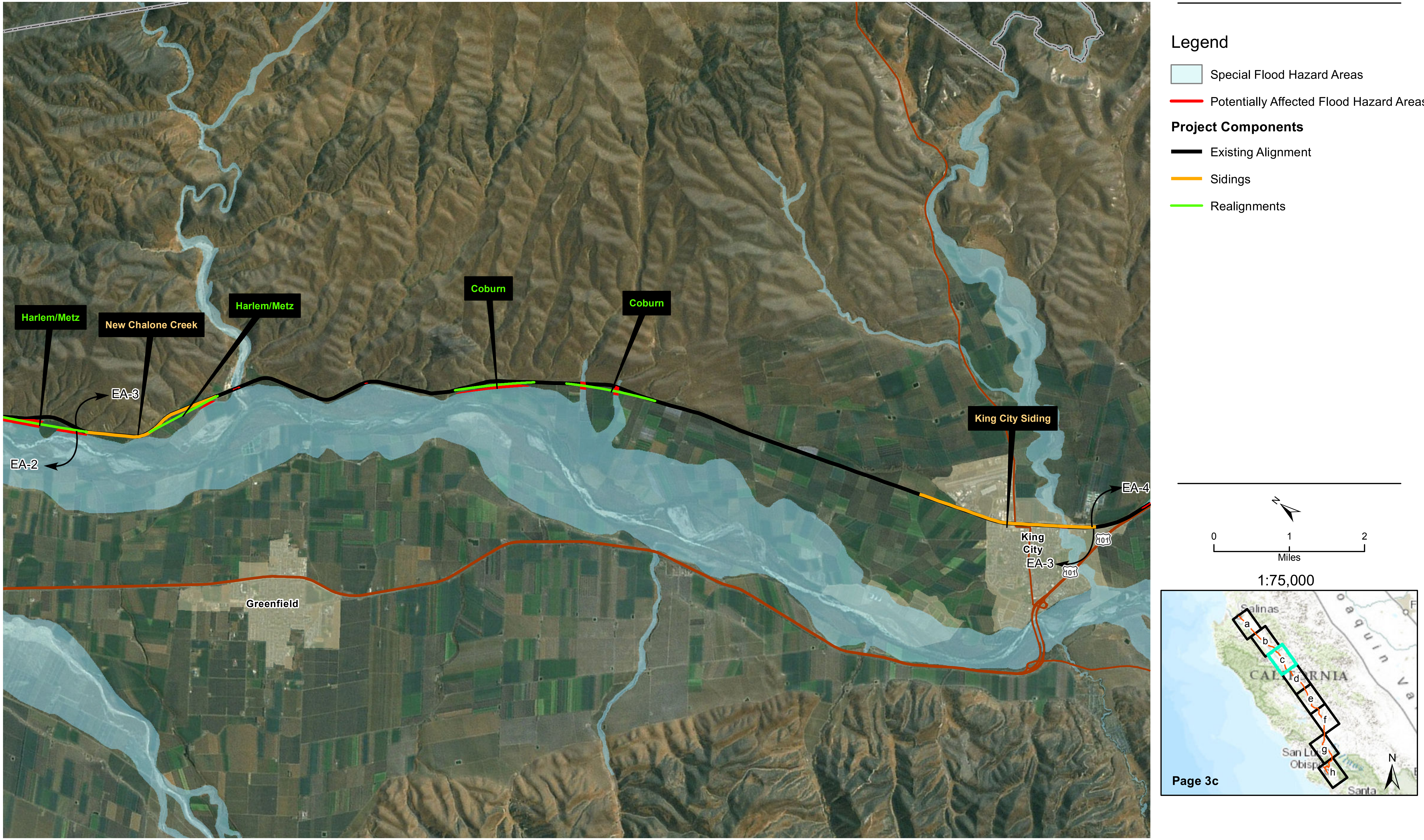
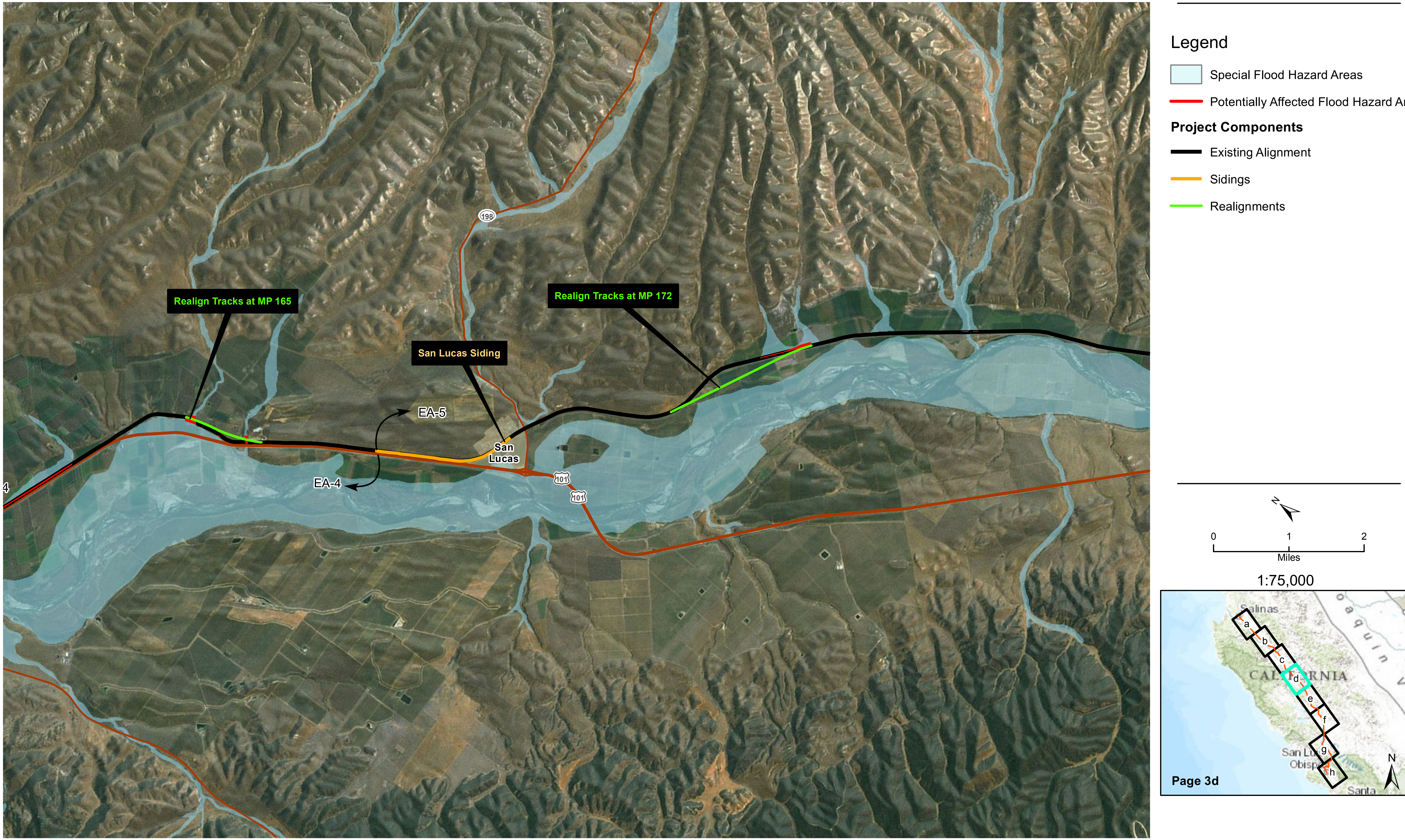


Special Flood Hazard Areas

Figure 3.12-3c

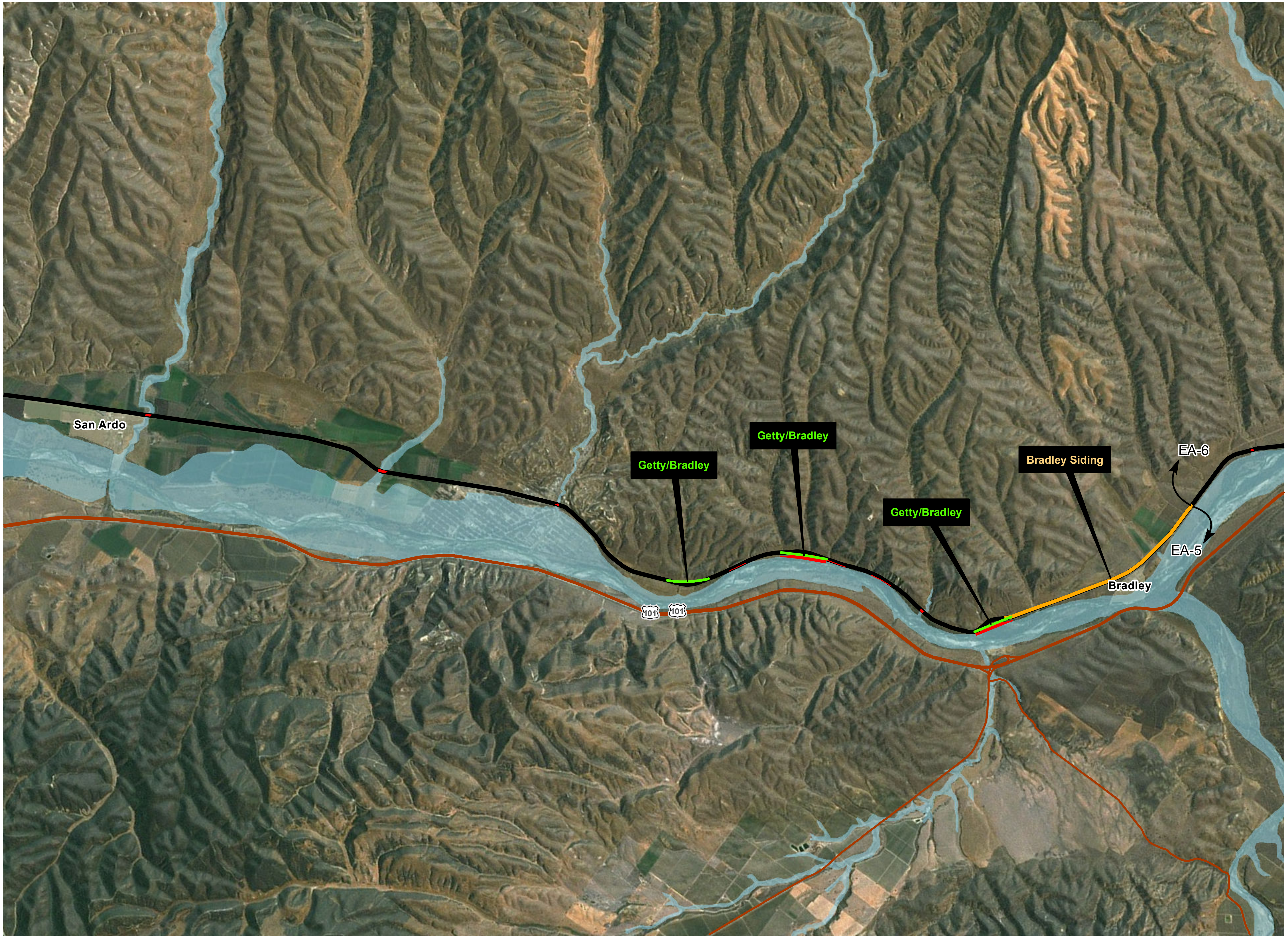
Source: ICF International, 2013



Special Flood Hazard Areas

Figure 3.12-3d

Source: ICF International, 2013



Legend

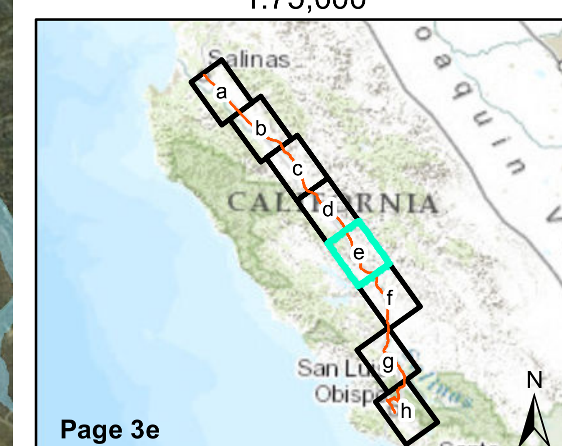
- Special Flood Hazard Areas
- Potentially Affected Flood Hazard Areas

Project Components

- Existing Alignment
- Sidings
- Realignments

0 1 2
Miles

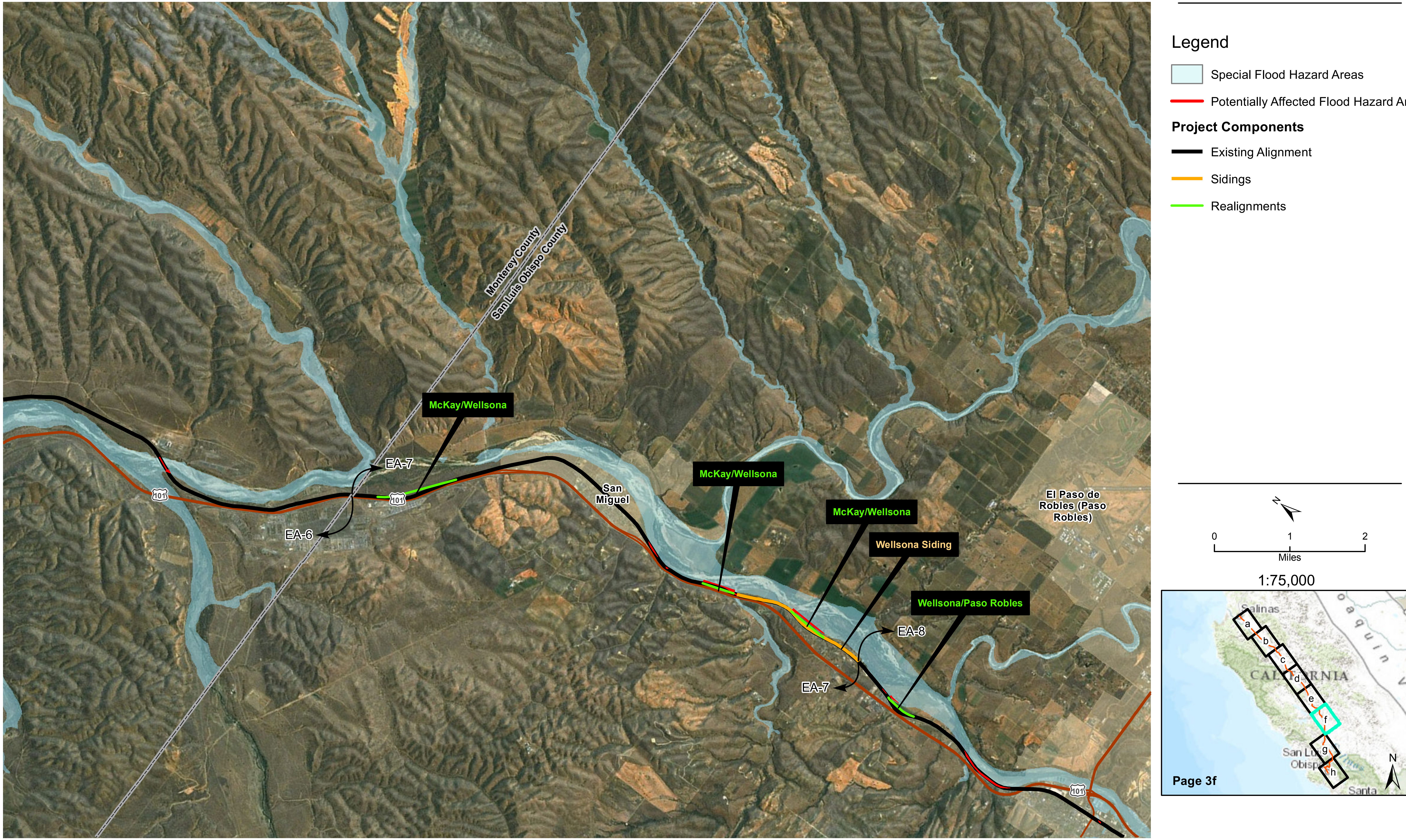
1:75,000



Special Flood Hazard Areas

Figure 3.12-3e

Source: ICF International, 2013



Special Flood Hazard Areas

Figure 3.12-3f

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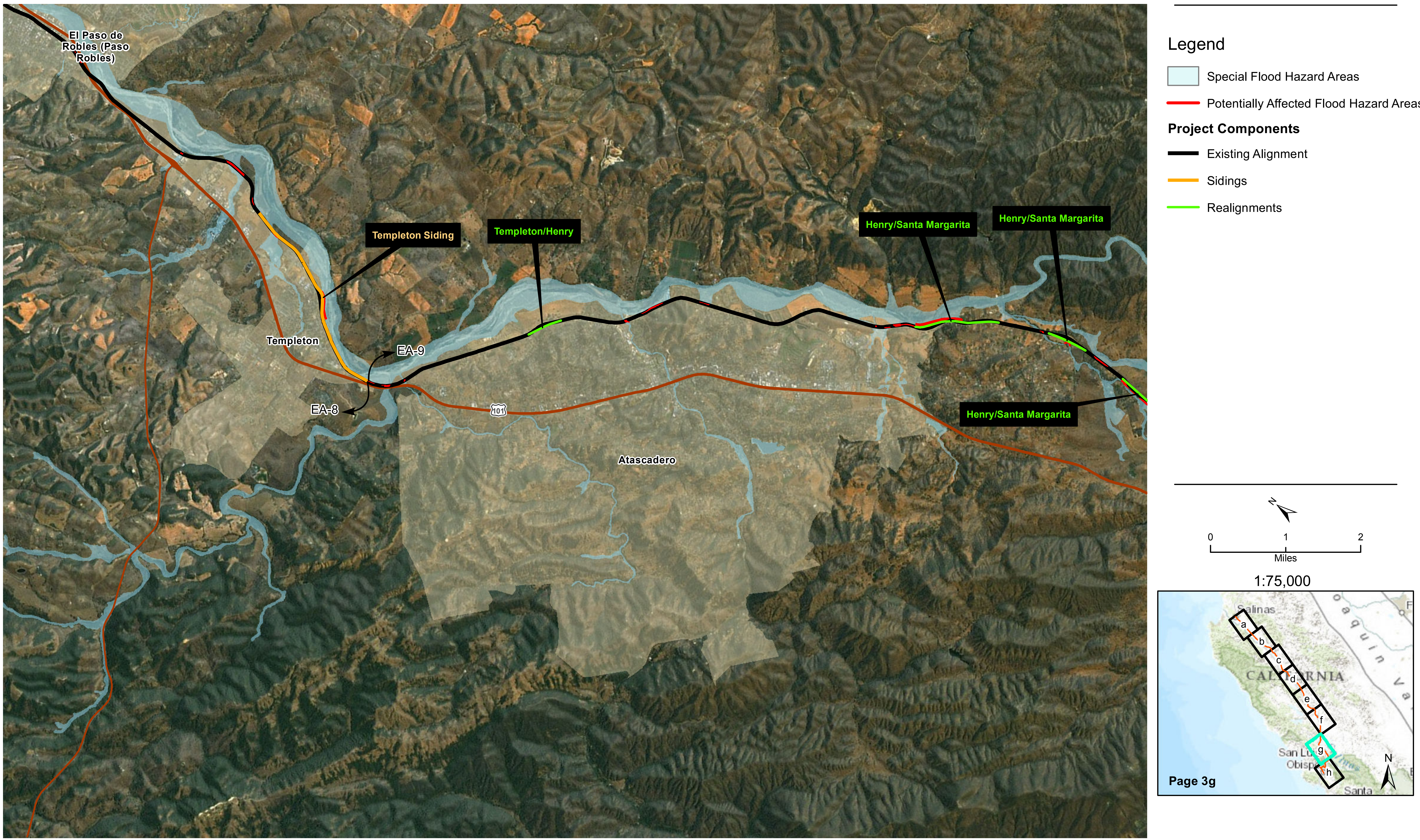

Special Flood Hazard Areas

Figure 3.12-3g

Source: ICF International, 2013

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Legend

- Special Flood Hazard Areas
- Potentially Affected Flood Hazard Areas

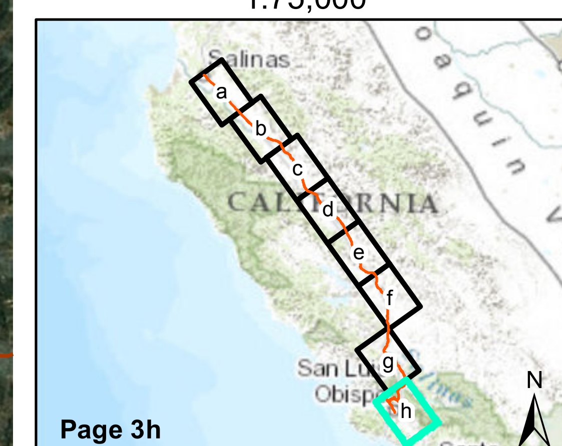
Project Components

- Existing Alignment
- Sidings
- Realignments

N

0 1 2
Miles

1:75,000



Special Flood Hazard Areas

Figure 3.12-3h

Source: ICF International, 2013

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