3.9 Hydrology and Water Quality

This section of the Draft EIR evaluates potential impacts to hydrology and water quality associated with implementation of the proposed Golden State Natural Resources Forest Resiliency Demonstration Project (proposed project). This section describes the existing hydrology and water quality conditions at feedstock source locations (Sustainable Forest Management Projects), proposed pellet processing facility sites in Northern California (Lassen Facility) and the Central Sierra Nevada foothills (Tuolumne Facility), and the export terminal in Stockton, California (Port of Stockton). This section evaluates the potential for project-related hydrology and water quality impacts, considering proposed project design features that could reduce or eliminate associated impacts. Five comment letters contained scoping comments that pertained at least in part to hydrology and water quality in response to the Notice of Preparation (NOP) (see Appendix A). These comments generally related to potential impacts to groundwater levels and water supplies; impacts to aquifer recharge rates; and impacts to surface and groundwater quality.

The following environmental setting and impact evaluation is based in part on the following project-specific technical reports, included as appendices to this EIR:

1. **Appendix G1 –** Lassen Hydrology and Hydraulics Technical Study, prepared by Dudek, November 2023
2. **Appendix G2 –** Lassen Water Supply Assessment, prepared by Dudek, April 2024
3. **Appendix G3 –** Lassen Groundwater Well Evaluation, prepared by Dudek, April 2024
4. **Appendix G4 –** Tuolumne Water Supply Assessment, prepared by Dudek, April 2024
5. **Appendix G5 –** Tuolumne Groundwater Well Assessment, prepared by Dudek, March 26, 2024
6. **Appendix E2 –** Lassen Supplemental Geotechnical Investigation, prepared by Universal Engineering Sciences, November 2023
7. **Appendix E3 –** Tuolumne Geotechnical Report, prepared by Wallace Kuhl & Associates, June 2021

3.9.1 Environmental Setting

3.9.1.1 Sustainable Forest Management Projects

Feedstock destined to the Lassen and Tuolumne facilities for manufacturing of wood pellets will be wood byproducts sourced from Sustainable Forest Management Projects such as hazardous fuel reduction projects, construction of shaded fuel breaks, and salvage harvests (see Chapter 2, Project Description, for a full description). The feedstock would originate from private, state, tribal, and federal timberlands located within the Working Area of the two wood pellet production facilities, as described in Chapter 2 (see Figures 2-1 and 2-2).

Lassen Facility Feedstock Area

According to the U.S. Geological Survey (USGS) National Hydrography Dataset, the Lassen Facility feedstock area intersects 157 watersheds and 42,476 linear miles of streams, rivers, canals, and ditches (USGS 2023). (See Section 3.3, Biological Resources for additional information.) More regionally, the feedstock area includes the Sacramento River, Klamath-Northern California Coastal, and North Lahontan Hydrologic Regions (Figure 3.9-1, Feedstock Area Hydrologic Regions).

Sacramento River Hydrologic Region

The Sacramento River Hydrologic Region, which is within the jurisdiction of the Central Valley Regional Water Quality Control Board (RWQCB), covers 27,210 square miles (roughly 17% of California) and includes the entire area drained by the Sacramento River. This hydrologic basin includes all watersheds tributary to the Sacramento River that are north of the Cosumnes River Watershed. It also includes the closed basin of Goose Lake and drainage sub-basins of Cache and Putah Creeks. The principal streams to this 400-mile long river are the Sacramento River and its larger tributaries: the Pit, Feather, Yuba, Bear, and American Rivers to the east; and Cottonwood, Stony, Cache, and Putah Creeks to the west. Major reservoirs and lakes include Shasta, Oroville, Folsom, Clear Lake, and Lake Berryessa. Modern influences on the Sacramento Watershed include large-scale farming and mining operations, major water supply and flood control systems, a deep-water shipping channel, and several large urban centers. Californians depend on this critical watershed for agriculture, timber harvesting, hydroelectric power generation, fishing and recreation, potable water, and many other diverse and competing needs (Central Valley RWQCB 2019; RegionalSan 2023).

California Department of Water Resources (DWR) Bulletin 118-80 identifies 63 groundwater basins in the Sacramento Watershed area. The Sacramento Valley floor is divided into two groundwater basins. Other basins are in the foothills or mountain valleys and there are areas other than those identified in the DWR Bulletin with groundwaters that have beneficial uses (Central Valley RWQCB 2019).

Klamath-Northern California Coastal Hydrologic Region

The Klamath-Northern California Coastal Region, which is within the jurisdiction of the North Coast RWQCB, extends from the California-Oregon state line southerly, to the southern boundary of the watershed of the Estero de San Antonio and Stemple Creek in Marin and Sonoma Counties, and encompasses all basins draining into the Pacific Ocean, including Lower Klamath Lake and Lost River basins. The North Coast Region is divided into two natural drainage basins, the Klamath River Basin and the North Coastal Basin. The North Coast Region covers all of Del Norte, Humboldt, Trinity, and Mendocino Counties, major portions of Siskiyou, and Sonoma Counties, and small portions of Glenn, Lake, Modoc, and Marin Counties (North Coast RWQCB 2018).

The North Coast Region is abundant in surface water and groundwater resources. Although the North Coast Region constitutes only about 12% of the area in California, it produces about 41% of the annual runoff. This runoff contributes to flow in surface water streams, storage in lakes and reservoirs, and replenishment of groundwater. DWR has identified 62 groundwater basins in the North Coast Region. Groundwater may also exist where groundwater basins have not been identified (North Coast RWQCB 2018).

North Lahontan Hydrologic Region

The jurisdiction of the Lahontan RWQCB extends from the Oregon border to the northern Mojave Desert and includes all of California east of the Sierra Nevada crest. The name of the region is derived from prehistoric Lake Lahontan, which once covered much of the State of Nevada. The Lahontan Region has historically been divided into North and South Lahontan Basins at the boundary between the Mono Lake and East Walker River watersheds. This region is about 570 miles long and has a total area of 39,210 square miles. Most of the waters of the North Lahontan Basin drain into closed basins which were previously part of Lake Lahontan. Waters of the South Lahontan Basin also drain into closed basin remnants of prehistoric lakes (Lahontan RWQCB 2021).

The Lahontan Region includes over 700 lakes, 3,170 miles of streams, and 19,710 square miles of groundwater basins. There are twelve major watersheds (called "hydrologic units" under the DWR mapping system) in the North Lahontan Basin. Among these are the Eagle Lake, Susan River/Honey Lake, Truckee, Carson, and Walker River Watersheds. Very little quantitative information is available on most of the water bodies in the region. Consumptive municipal and agricultural use of water is relatively low in most parts of the Lahontan Region compared to other parts of California, due to the low resident population and the agricultural emphasis on range livestock grazing rather than crops. Irrigation is mostly for pasture, rather than for row crops and orchards. Large volumes of water are exported for consumptive use outside the Lahontan Region (Lahontan RWQCB 2021).

Tuolumne Facility Feedstock Area

The Tuolumne facility feedstock area includes the Sacramento River, San Joaquin River, Tulare-Buena Vista Lakes, and Central Lahontan regions (Figure 3.9-1, Feedstock Area Hydrologic Regions). The Sacramento River and Lahontan Hydrologic Regions are described above.

San Joaquin River Hydrologic Region

The San Joaquin River Basin, which is within the jurisdiction of the Central Valley RWQCB, covers 15,880 square miles and includes the entire area drained by the San Joaquin River. It includes all watersheds tributary to the San Joaquin River and the Delta south of the Sacramento River and south of the American River Watershed. The principal streams in the basin are the San Joaquin River and its larger tributaries: the Cosumnes, Mokelumne, Calaveras, Stanislaus, Tuolumne, Merced, Chowchilla, and Fresno Rivers. Major reservoirs and lakes include Pardee, New Hogan, Millerton, McClure, Don Pedro, and New Melones. DWR Bulletin 118-80 identifies 39 groundwater basins in the San Joaquin Watershed area. The San Joaquin Valley floor is divided into 15 separate groundwater basins, largely based on political considerations. Other basins are in the foothills or mountain valleys. There are areas other than those identified in the DWR Bulletin with groundwaters that have beneficial uses (Central Valley RWQCB 2019).

Tulare-Buena Vista Lakes Hydrologic Region

The Tulare-Buena Vista Lakes Hydrologic Region, which is within the jurisdiction of the Central Valley RWQCB, encompasses about 16,400 square miles, about 10% of California, within the southern San Joaquin Valley. The lowland area encompasses about 8,400 square miles. The Kings River Watershed is included in the Tulare Lake Basin hydrologic unit because the majority of its runoff flows south toward Tulare Lake, though some Kings River water periodically flows into the San Joaquin River. Elevations in the basin range from a low of about 175 feet above mean sea level (amsl) in the Tulare Lake bottom to the 14,496-foot summit of Mt. Whitney, the highest point in California. Lake and stream deposits cover much of the lowlands, and create a flat, smooth land surface with very low gradients. In the Tulare Lakebed, minimal gradients allow bidirectional movement of canal water. Peripheral lowland areas are highly dissected by small drainages, although these drainages seldom carry water. Along the east side of the basin, the Sierra Nevada mountains rise steeply, with the highest peaks over 14,000 feet amsl and in the south, the Tehachapi Mountains rise to over 8,000 feet amsl. Historically, river runoff in the Tulare Lake Basin collected in terminal lakes on the basin floor. The terminal lakes complex fluctuated in size from a few square miles during extended dry periods, to over 800 square miles in wet years, and supported an extensive, fringing tule marsh Tulare Lake, by far the largest of the basin's terminal lakes, received runoff from several rivers, including the South Fork Kings, Kaweah, Tule and Kern Rivers (USEPA 2007).

3.9.1.2 Northern California (Lassen Facility) Site

Precipitation

According to the PRISM Climate Group annual precipitation dataset, which uses average monthly and annual conditions from 1991 to 2020, the project site receives an average of 20 inches of precipitation annually (PRISM 2023; Appendix G1 - Lassen Hydrology and Hydraulics Technical Study). Rainfall depths for various storm durations and recurrence intervals at the project site were obtained using National Oceanic and Atmospheric Administration (NOAA) Atlas 14 precipitation estimates (NOAA 2023: Appendix G1), as summarized in Table 3.9-1, Rainfall Depths, Lassen Site.

Table 3.9-1. Rainfall Depths, Lassen Site

	Precipitation (inches)	
	Average Recurrence Interval (years)	
Duration	10	100
1-hour	0.64	1.19
3-hour	0.98	1.75
6-hour	1.32	2.33
24-hour	2.49	4.20

Source: NOAA 2023

Site Hydrology

The project site is located in the southern portion of the Upper Pit Watershed (Figure 3.9-2, Upper Pit River Watershed), which begins in the Warner Mountains of northeast California and flows in a southwesterly direction toward Shasta Lake. Flow gaging on the Pit River at Canby (mid-watershed location, approximately 28 miles northeast of the project site; Figure 3.9-2) has been maintained since 1904, and average daily flow at this location is approximately 250 cubic feet per second (cfs). Summer season flows typically range from 0 to 20 cfs with a peak flow of 9,100 cfs in 1986 (SRWP 2023; Appendix G1). The production facilities would be located on a parcel approximately 65 acres in size, Assessor's Parcel Number (APN) 001-270-086. Log decking (storage) would occur on approximately 51 acres of the ~225-acre property immediately south of the production site (APNs 001-270-26, 001-270-29, and 013-040-13) (the "woodyard").

Runoff across the site primarily occurs as sheetflow to the south and southeast toward drainage ditches, including one ditch that coincides with the western property boundary, and two other ditches that merge in the southern portion of the site and connect with a culvert beneath the railroad in the southeast portion of the site. Numerous small streams, sloughs, and marshy areas are present east of the project site. The Pit River is approximately 2.9 miles east of the site; Bull Run Slough is approximately 0.7 mile to the east; and an unnamed tributary creek to Bull Run Slough is approximately 500 feet to the east, at the closest point (Figure 3.9-3, Lassen Surface Water Features). Stormwater runoff emanating from the hilly areas to the west and southwest flows in the direction of the southern proposed project area.

The production facility parcel contains one seasonal wetland and one seasonal wetland swale, located in the southeastern portion of the project site. These features collect water seasonally and are discernible from the adjacent upland areas by a distinct change in vegetation. Five upland ditches located throughout the project site

are unlined, earthen water conveyance systems that were constructed in upland habitat and exhibit a mild break in slope and change in vegetation. Ditches within the project site are generally 5 to 6 feet wide at the top of bank and have an ordinary high water mark width of 1 to 2 feet (Appendix G1).

Water Quality

As previously discussed for site hydrology, stormwater runoff from the project site flows to the east toward an unnamed, intermittent stream (Figure 3.9-3), which is a tributary to the Pit River, a perennial river. Based on the Central Valley RWQCB Basin Plan (Central Valley RWQCB 2019), beneficial uses of water bodies form the cornerstone of water quality protection. Once beneficial uses are designated, appropriate water quality objectives can be established and programs that maintain or enhance water quality can be implemented to ensure the protection of beneficial uses. Beneficial uses are defined as the uses of water necessary for the survival or well-being of humans, plants, and wildlife. These uses of water serve to promote the tangible and intangible economic, social, and environmental goals of mankind.

Beneficial uses of the Pit River include agricultural supply, cold freshwater habitat, commercial and sport fishing, municipal and domestic supply, non-contact water recreation, spawning/reproduction/early development, warm freshwater habitat, water contact recreation, and wildlife habitat. The Upper Pit River Watershed is generally in good condition with respect to water quality; however, the Pit River, from the confluence of the north and south forks to Shasta Lake, is impaired with respect to low dissolved oxygen, metals (aluminum, iron), and nutrients (nitrogen and/or phosphorus), per Section 303(d) of the Clean Water Act (USEPA 2022). As discussed below in Section 3.9.2, Regulatory Framework, the State Water Resources Control Board (SWRCB) maintains and updates a list of impaired water bodies (i.e., water bodies that do not meet state and federal water quality standards). The state is required to prioritize waters/watersheds for development of total maximum daily loads (TMDLs), which are established at the level necessary to implement applicable water quality standards.

Flood Zones

Floods within Lassen County are classified into three types. The first consists of those that occur during late fall and winter, primarily as a result of prolonged rainstorms. The second type occurs during spring and early summer, mainly as a result of snowmelt from the Sierra Nevada Mountains or Cascade Mountains. The third type occurs during summer as a result of intense convective rainstorms. The most significant flood-producing rainstorms are those that occur during fall and winter. Lassen County does not have a well-developed flood protection system. As a result, flooding often occurs along many streams, damaging agricultural and urban properties and causing channel and bank erosion (Lassen County 2018).

Federal Emergency Management Agency (FEMA) Flood insurance Rate Maps (FIRM) identify flood zones and areas that are susceptible to 100-year and 500-year floods. Figure 3.9-4, Lassen FEMA Flood Zone, shows that the project site is within the 100-year Zone A floodplain. Zone A is defined as a Special Flood Hazard Area with a 1% annual chance of flooding, but because no detailed analysis has been performed in this area, no depths or base flood elevation (BFE) has been determined for this zone (FEMA 2023a).

Groundwater

The project site overlies the Big Valley Groundwater Basin (Department of Water Resources Basin 5-004) (Figure 3.9-5, Groundwater Basins – Lassen Processing Facility). The basin covers approximately 144 square miles and is located in both Lassen and Modoc Counties. The basin is bounded to the north and south by Pleistocene and

Pliocene basalt and Tertiary pyroclastic rocks of the Turner Creek Formation, to the west by Tertiary rocks of the Big Valley Mountain volcanic series, and to the east by Turner Creek.[1] The underlying geology at the project site is mapped as marine and nonmarine (continental) sedimentary rocks, and numerous northwest-southeast trending fault traces are documented near the project site (Appendix G2, Water Supply Assessment).

Primary sources of recharge in the Big Valley Groundwater Basin include Butte Creek, Willow Creek, and Ash Creek, as well as water diverted into unlined drainage ditches, canals, and agricultural farmland. In water year 2022, the estimated volume of groundwater extracted from the basin was 50,400 acre-feet (AF), accounting for approximately 38% of the total water used in the basin. Based on a review of well completion reports for wells drilled near the project site, well yields are reported to range from 5 gallons per minute (GPM) to 1,500 GPM (Appendix G2).

A desktop study and site reconnaissance of the project site by Dudek in October 2023 identified one existing groundwater well at the project site, referred to as Well 1, and one existing off-site well located near the project site, referred to as Well 2 (Figure 3.9-6, On-Site Wells – Lassen Processing Facility). Well 1 is an active well that was onsite 20 years ago when the property was purchased. Well 2 is also an active well that is currently used for domestic drinking water supply use for a neighboring property. Information about the wells gathered during the site reconnaissance and well condition assessment is presented in Table 3.9-2, Groundwater Well Information (Appendix G2; Appendix G3, Lassen Groundwater Well Assessment).

Table 3.9-2. Groundwater Well Information

Well Name	Use Type	Casing Diameter (inches)	Casing Material Type	Depth (feet bgs)	Yield (GPM)	Depth to Water (feet bgs)	Status
Well 1	Industrial	12,10[a]	Steel	337	180	63.93, 47.00[b]	Active
Well 2	Domestic	6	Steel	N/A	N/A	N/A	Active

Source: Appendix G2; Appendix G3
Note: bgs = below ground surface, GPM = gallons per minute; N/A = not available.
[a] Well 1 was observed with 72.5 feet of 12-inch internal diameter steel casing from ground surface to 72.5 feet bgs, and 264.3 feet of approximately 10-inch steel casing from 72.5 feet to 336.8 feet bgs.
[b] Depths to water as measured in September 2023 (63.93 feet bgs) and March 2024 (47.00 feet bgs).

The static depth to groundwater measured in Well 1 in September 2023 was 63.93 feet below ground surface (bgs) and in March 2024 was 47.00 feet bgs. This rise in the groundwater level in Well 1 between September 2023 and March 2024 indicates seasonal variability in the water table. An additional well (Well 38N07E32A002M) located to the west of the Project (Figure 3.9-6, On-Site Wells – Lassen Processing Facility) has a long-term well history. Based on data recorded between 1959 and 2023, groundwater levels in this well have generally ranged from near ground surface to approximately 12 feet bgs, with the lower groundwater levels recorded in the fall and higher groundwater levels recorded in the spring following winter precipitation. The hydrograph for Well 38N07E32A002M indicates a stable, long-term trend in groundwater levels. Groundwater levels within the Big Valley Groundwater Basin have generally risen overall in recent years in response to significant recharge in water years 2022 and 2023 (Appendix G2; Appendix G3).

Groundwater within the Big Valley Groundwater Basin is considered to be good to excellent quality. Naturally occurring constituents such as sodium bicarbonate and sodium magnesium bicarbonate do exist at slightly elevated

[1] The Pleistocene epoch lasted from about 2.6 million years ago to 11,700 years ago, the Pliocene epoch lasted from about 5.3 million to 2.6 million years ago, and the Tertiary Period lasted from about 66 million to 2.6 million years ago.

levels. These constitutes are associated with volcanic formations and thermal waters found throughout the basin. Groundwater quality data for the project site is not available at this time (Appendix G2).

The Big Valley Groundwater Basin has been classified by the DWR as a medium priority basin, with respect to the Sustainable Groundwater Management Act (SGMA). Four public supply wells and 413 total wells are within the Big Valley Basin. Groundwater provides 65% of water supply in the basin (California DWR 2024a. SGMA requires the preparation and implementation of a Groundwater Sustainability Plan (GSP) for high and medium priority groundwater basins. As a result, the Big Valley Groundwater Basin was required to be managed under a GSP by January 31, 2022. Lassen and Modoc Counties have created Groundwater Sustainability Agencies (GSAs) for their respective portions of the basin, as the basin overlaps both counties, and agreed to work cooperatively to develop a single GSP for the groundwater basin (GEI Consultants 2021).

The GSP was adopted by both GSAs and submitted to DWR in December 2021; however, the GSP was marked as incomplete in October 2023 due to three main factors:

- The GSP does not include a reasonable assessment of overdraft conditions and reasonable means to mitigate overdraft.
- The GSP does not establish sustainable management criteria for chronic lowering of groundwater levels in a manner sustainably complaint with GSP regulations. The GSP lacks a thorough explanation and justification regarding the selection of the sustainable management criteria for groundwater levels, particularly undesirable results and minimum thresholds. The GSP also lacks quantitative descriptions of the effects of those criteria on the interest of beneficial uses and users of groundwater.
- The GSP does not develop sustainable management criteria for degraded water quality.

The basin GSAs were instructed to resubmit the revised GSP for evaluation no later than April 23, 2024 (Appendix G2). As of October 1, 2024, a revised GSP has been submitted to DWR, but not yet approved (California DWR 2024b).

Based on the SWRCB Notice of Preparation letter, the SWRCB, Division of Drinking Water (DDW) is responsible for issuing water supply permits pursuant to the Safe Drinking Water Act. The project is within the jurisdiction of DDW Lassen District and DDW Merced District. DDW Lassen District and DDW Merced District issue domestic water supply permits to new public water systems pursuant to Waterworks Standards (Title 22 CCR chapter 16 et. seq.).

3.9.1.3 Central Sierra Nevada (Tuolumne Facility) Site

Precipitation

According to the PRISM Climate Group annual precipitation dataset, which uses average monthly and annual conditions over the most recent three full decades (1991-2020), the project site receives an average of 20 to 24 inches of precipitation annually (PRISM 2023).

Rainfall depths for various storm durations and recurrence intervals at the project site were obtained using NOAA Atlas 14 precipitation estimates (NOAA 2023), as summarized in Table 3.9-3, Rainfall Depths.

Table 3.9-3. Rainfall Depths, Tuolumne Site

Duration	Precipitation (inches)	
	Average Recurrence Interval (years)	
	10	100
1-hour	0.78	1.26
3-hour	1.26	2.00
6-hour	1.74	2.73
24-hour	3.53	5.49

Source: NOAA 2023

Site Hydrology

The USGS Watershed Boundary Dataset indicates the project site is located in the southern portion of the Green Spring subwatershed of the Upper Stanislaus River watershed (Figure 3.9-7, Tuolumne Surface Water Features). This subwatershed extends to the south to Hetch Hetchy Junction, extends to the northeast in the vicinity of Yosemite Junction, and terminates downstream at Tulloch Reservoir. This reservoir flows into the Stanislaus River, which flows southwest toward the San Joaquin River, which in turn flows north to the Sacramento-San Joaquin River Delta.

The Tuolumne facility project site is located on relatively flat to gently sloping topography. An east-west trending drainage divide is present in the northern portion of the project site, resulting in surface runoff in the southern portion to the west and southwest toward off-site Green Spring Run and runoff in the northern portion to the west and northwest toward an on-site, unnamed tributary creek to Green Spring Run, located approximately 1,200 feet southwest of the site. A wetlands area is located in the northern portion of the site (Figure 3.9-7, Tuolumne Surface Water Features). A perennial pond is present in this area, within the east-west-trending, unnamed blue-line creek, which is a tributary to Green Spring Run. In addition, a stormwater detention area is present immediately south of this wetland area and north of the existing paved area, which was previously used by Sierra Pacific Industries for a former wood mill facility.

Water Quality

Surface water quality at the project site is regulated under the Tuolumne County Water Quality Plan, which includes a comprehensive program, including regulatory and non-regulatory components, that addresses a wide range of water quality concerns in the County. The Water Quality Plan addresses elements of the U.S. Environmental Protection Agency (USEPA) Phase II National Pollutant Discharge Elimination System (NPDES) Program, including illicit discharge detection and elimination; construction and post-construction activities; and new development and planning. The Water Quality Plan includes recommended Best Management Practices (BMPs), with the intent of reducing the concentration of pollutants in urban runoff to the maximum extent practicable, through pollution prevention, source control BMPs, and treatment control BMPs. The latter includes BMPs for temporary construction and long-term operation.

Water quality at the project site is also regulated under the Central Valley RWQCB Basin Plan, which has established beneficial uses and water quality objectives for the Stanislaus River and downstream San Joaquin River (Central Valley RWQCB 2019 In addition, beneficial uses have been established for the large on-site pond and associated tributary creeks, in the northern portion of the site, and Green Spring Run, located approximately 1,200 feet

southwest of the site. Green Spring Run and the Upper Stanislaus River are not considered impaired water bodies under Clean Water Act Section 303(d) (SWRCB 2023. However, the Green Spring Run watershed flows into the Tulloch Reservoir, which is considered an impaired water body for mercury. This reservoir is approximately 3 miles northwest of the project site. Beneficial uses of this reservoir include commercial and sport fishing, warm freshwater habitat, and wildlife habitat. No plans are currently in place for waterbody restoration (USEPA 2022, SWRCB 2023).

Flood Zones

The project site is not located within a 100-year Special Flood Hazard Area, as designated by FEMA. The project site is within Flood Zone X, which is an area outside the 0.2% annual floodplain (i.e. 500-year floodplain). In addition, the project site is not within an area subject to seiches or dam failure inundation (Tuolumne County Community Resources Agency 2018a; FEMA 2023b).

Groundwater

The Tuolumne project site does not overlie a groundwater basin, as designated by DWR. The closest basin is the San Joaquin Valley-Modesto Groundwater Basin (DWR Basin No. 5-022.02), located approximately 6 miles west of the project site (Figure 3.9-8, Public Water Systems – Tuolumne Processing Facility). The surficial geology at the Tuolumne project site is mapped as the Copper Hill Formation, which consists of andesitic to basaltic metavolcanic rocks. The area around the project site includes similar hard rock geology consisting of metasedimentary rocks, the Gopher Ridge Formation, the Penon Blanco Formation, metavolcanic rocks, granitic rocks, ultramafic rocks, and mélange. Alluvium is not mapped on or near the project site (Appendix G4, Tuolumne Water Supply Assessment).

The lithology documented in well completion reports from wells drilled near the Tuolumne project site consists of fractured “greenstone”, slate, and schist. Groundwater is contained within the fractures of these hard rocks. The presence and connectivity of water-bearing fractures are unpredictable and the yields from these fractures can vary dramatically. Based on a review of well completion reports for wells drilled near the project site, well yields are reported to range from 1 GPM to 60 GPM, with the exception of one well located at the project site, Well 1, which had an estimated yield of 400 GPM. Groundwater is the primary water supply for small communities and private property owners not located within the service area of a public water system in the Project vicinity (Appendix G5, Tuolumne Groundwater Well Assessment).

Dudek performed a desktop study and site reconnaissance of the Tuolumne project site in October 2023 to identify and inspect existing on-site groundwater wells. Following the initial desktop study and site reconnaissance, Dudek conducted a well condition assessment and performed a pumping test at one of the on-site wells. The desktop study and site reconnaissance identified three existing groundwater wells at the project site, referred to as Wells 1, 2, and 3 (Figure 3.9-9 – Tuolumne On-Site Wells). Well 1 is currently used to fill a water storage tank for fire supply, Well 2 is inactive, and Well 3 is assumed to be actively used by the adjacent parcel owner to the west. Information about the wells gathered during the site reconnaissance and well condition assessment is presented in Table 3.9-4 (Appendix G4; Appendix G5).

Table 3.9-4. On-Site Groundwater Well Information

Well Name	Use Type	Casing Diameter (inches)	Casing Material Type	Depth (feet bgs)	Yield (GPM)	Pump Size (horsepower)	Depth to Water (feet btoc)[a]	Status
Well 1	Industrial	8	Steel	412	137	15	23.70	Active
Well 2	N/A	6	Steel	N/A	N/A	N/A	9.74	Inactive
Well 3	N/A	6	PVC	N/A	N/A	N/A	16.59	Active

Source: Appendix G4; Appendix G5
Note: bgs – below ground surface, GPM – gallons per minute, btoc – below top of casing
[a] Depth to water as measured in February 2024 (in Wells 1 and 2) and November 2023 (in Well 3)

Groundwater level data for wells located on and nearby the Tuolumne project site is limited. Based on a review of well completion reports for wells drilled within the two public land survey system sections the project site falls within, depth to groundwater ranges from approximately 10 feet below ground surface (bgs) to 95 feet bgs. One well completion report (Legacy Log Number 247908) showed matching characteristics to construction features observed during the site reconnaissance at Well 1. The static depth to groundwater measured in Well 1 when the well was drilled in February 1984 was 35 feet bgs. The static depth to groundwater measured during a pumping test in February 2024 was 23.7 feet bgs. Based on these two data points, it appears that the groundwater table has remained stable over time (Appendix G4; Appendix G5).

Groundwater quality data for wells located on and nearby the Tuolumne project site is also limited. The quality of groundwater from wells in the project vicinity is reported to vary significantly depending on a number of factors including well depth, geology, and proximity to point sources of contamination. Iron and manganese are naturally occurring constituents that are commonly detected at elevated concentrations. Based on groundwater quality results for two nearby public water systems (CA5500148 and CA550360; Figure 3.9-8, Public Water Systems – Tuolumne Processing Facility), groundwater in the project vicinity is good quality with all constituents below drinking water maximum contaminant levels, except for iron, which has been detected at slightly elevated levels (Appendix G4).

Other Water Sources

Imported water and recycled water infrastructure are not currently available in the vicinity of the Tuolumne project site (Appendix G4).

3.9.1.4 Port of Stockton

Precipitation

The Stockton area has a typical Mediterranean climate with wet, cool winters, and warm, dry summers. Most of the rainfall occurs between November and April, with an average annual rainfall of 13.7 inches (Port of Stockton 2003). Rainfall depths for various storm durations and recurrence intervals at the project site were obtained using NOAA Atlas 14 precipitation estimates (NOAA 2023), as summarized in Table 3.9-5, Rainfall Depths.

Table 3.9-5. Rainfall Depths, Port of Stockton

Duration	Precipitation (inches)	
	Average Recurrence Interval (years)	
	10	100
1-hour	0.66	1.02
3-hour	0.99	1.51
6-hour	1.30	1.97
24-hour	2.44	3.58

Source: NOAA 2023

Site Hydrology

The Port of Stockton project site is located on Rough and Ready Island, which is bound by the San Joaquin River to the east, the Burns Cutoff to the west and south, and the Stockton Deepwater Ship Channel (SDWC) to the north (Figure 3.9-10, Port of Stockton Surface Water Features). These waterways generally flow from east to west, with water levels subject to variations in river flows within the San Joaquin River and its tributaries, and tidal action extending upstream from the San Francisco Bay. The San Joaquin River, in the reach upstream of Stockton, is typically about 8 to 12 feet deep, and experiences a three-foot tidal range. In the project vicinity, delta flows moving upstream during a flood tide can be as much as several thousand cubic feet per second, and non-tidal flows during summer and fall are highly regulated, with net flow at Stockton sometimes becoming negative due to upstream diversions at Old River. Average monthly flows in the San Joaquin River during 2000 varied between 345 and 5,800 cfs. The DWSC is a maintained portion of the San Joaquin River that begins in the San Francisco Bay and terminates in Stockton (Port of Stockton 2003).

Rough and Ready Island contains no streams but includes 8.4 acres of engineered ponds, including an excavated pond in the wildlife area on the western portion of the island, and two ponds within the golf course located in the northeastern portion of the island. Runoff from most of the island is collected in a series of culverts and ditches and is conveyed to a single outfall on the western side of the island. The warehouse and dock area located along the DWSC drain directly into the channel via sheetflow. The areas draining to the internal ponds have no outfalls; in the event of increased pond levels, excess water is pumped to a stormwater overflow area. The developed areas on the island are served by a combination of underground pipes and open drainage ditches, while the undeveloped areas of the island are served exclusively by ditches (Port of Stockton 2003).

The island has been divided into nine separate drainages for purposes of stormwater management. Stormwater is directed to a collection and pumping area near the southwest corner of the island. This facility includes three pumps with a capacity of 37,400 gallons per minute. An approximate 5-acre stormwater overflow area just north of the pumphouse collects any overflow runoff until it can be pumped into Burns Cutoff. Historically, the stormwater drainage and pumping system has been adequate to control surface runoff, and the pump intakes have been regularly maintained and kept free of vegetation. However, the main drainage infrastructure is anticipated to require significant upgrades to meet modern codes and standards, as well as to accommodate the configuration and drainage characteristics of future terminals and other land uses (Port of Stockton 2003).

The proposed product receiving and product storage areas are located on relatively flat to gently sloping topography, approximately 1,700 feet from the DWSC, at the closest point. Approximately 20% of the site is paved, with the

remainder unpaved and pervious (Figure 1-8, Project Location: Port Rough Terminal, Port of Stockton). Stormwater runoff occurs as sheetflow to adjacent streets and the island drainage system, as described above.

Water Quality

Quality of surface waters is greatly influenced by local land uses, which on Rough and Ready Island have historically included institutional (military), urban/industrial, and agricultural uses. Pollutant sources within the island include past waste disposal practices, agricultural chemicals, urban and industrial stormwater runoff, and chemicals and fertilizers applied to landscaping, including the golf course. Typical contaminants include sediment, hydrocarbons and metals, pesticides, nutrients, bacteria, and trash. Within the island, 12 locations with surface water contamination have been discovered as a result of military and other historic land uses. These sites include storm drainage lines, aboveground storage tanks, potential spill areas, pits, construction yards, and storage and maintenance areas. Contaminants include volatile organic compounds, metals, and pesticides (Port of Stockton 2003).

Water quality in the DWSC has received particular attention due to exhibiting chronically low dissolved oxygen levels. The depth of the ship channel, which is much deeper than the natural conditions found in the San Joaquin River, greatly slows the net downstream transport rate of San Joaquin River water. This alters the ability of the channel to assimilate oxygen demand downstream of the Port by increasing the hydraulic residence time of the water and by decreasing the amount of re-aeration per unit volume of the channel (i.e., the surface to volume ratio decreases due to the increased depth, providing less opportunity for aeration). Also, the greater water volume in the DWSC relative to natural conditions dilutes the dissolved oxygen that is photosynthetically produced by algae and aquatic plants (Port of Stockton 2003).

While Port-related runoff is not thought to contribute significantly to the oxygen demand in the DWSC relative to loadings from agricultural return flows and municipal discharges, periodic dredging and passage of ships resuspends sediment that can deplete oxygen levels in the water column. Port activities, ship passage, and ballast water exchange also hold the potential to substantially influence other water quality parameters besides dissolved oxygen. However, ballast water is generally only a concern for providing a potential vector for invasive species, although certain invasive species could also ultimately result in negative water quality impacts.

With respect to SWRCB 303(d) list of impaired water bodies, the San Joaquin River in Delta Waterways, southern portion, and from Delta Waterways to the Stockton Ship Channel, is impaired with temperature, imidacloprid, and toxicity. The Delta Waterways, in the vicinity of the DWSC, is impaired with chlorpyrifos, dichlorodiphenyltrichloroethane (DDT), diazinon, dioxin, furan compounds, Group A pesticides, invasive species, mercury, organic enrichment/low dissolved oxygen, polychlorinated biphenyls (PCBs), temperature, and toxicity (SWRCB 2023).

Beneficial uses of the Sacramento-San Joaquin Delta include municipal and domestic supply, irrigation, stock watering, industrial process supply, industrial service supply, water contact recreation, other non-contact water recreation, warm, cold freshwater habitat, warm migration of aquatic organisms, cold migration of aquatic organisms, warm spawning/reproduction/early development, wildlife habitat, and navigation (Central Valley RWQCB 2019).

Flood Zones

The project site is not located within a 100-year Special Flood Hazard Area, as designated by FEMA. The project site is within Flood Zone X, with the majority of the site being located within an area of 0.2% annual chance of flood (i.e., 500-year floodplain); area of 1% annual chance of flood (i.e., 100-year floodplain), with an average depth of less than 1 foot or with drainage areas less than 1 square mile; or areas protected by levees from 1% annual chance flood. A small portion of the project site, in the vicinity of the ship loading area, is also Flood Zone X, but is an area determined to be outside the 0.2% annual chance floodplain (FEMA 2023c).

Stockton is close enough to major earthquake faults to be vulnerable to seismic activity, including the Greenville Fault, located approximately 22 miles away. The Hayward Fault, about 40 miles away, has an over 60% probability of a magnitude 6.7 or greater earthquake by 2036, according to the U.S. Geological Survey. Earthquakes of this magnitude can create ground accelerations in Stockton severe enough to cause major damage to structures and foundations not designed to resist the forces generated by earthquakes. Earthquakes are also among the threats to levee and dam stability. According to FEMA, most of the levees in the City of Stockton area meet minimum standards, but levees are subject to structural failure, erosion, and damage from vegetation and rodents, as well as earthquakes and floods. Given these possible risks, the California DWR provides Levee Flood Protection Zone maps to increase awareness of flood risks from levee failure. Based on these maps, the project site is located in an area that is protected by levees from the 100-year storm (1% probability in any given year). However, the project site is located within an area subject to flooding of 4 to 5 feet during a 200-year storm event (0.5% probability in any given year) (City of Stockton 2018).

The site is not located within a potential dam inundation area, based on potential failure of the New Melones and New Hogan Dams. Failure of either of these dams, located approximately 30 miles from Stockton, would give Stockton residents about seven hours to evacuate. Other major regional dams could also affect Stockton, but would have longer lead times. The California Division of Safety of Dams inspects each dam on an annual basis to ensure the dam is safe and performing as intended. The dams have also been assessed for seismic stability and are projected to withstand the maximum credible earthquake (City of Stockton 2018).

Groundwater

The project site overlies the San Joaquin Valley - Tracy Groundwater Basin, which is a sub-section of the Greater Central Valley Basin. Groundwater in the project area is recharged by local precipitation, and through percolation from the surrounding surface waters. The project area is not identified as a substantial groundwater recharge area. Due to the project site's location (i.e., surrounded by water bodies), groundwater levels are extremely shallow. Surface water levels in the surrounding channels vary seasonally and with the tides, and on average, are at mean sea level during most of the year. Because much of the Island is at or below the surrounding river elevations, portions of the Island would remain flooded in a natural state. The elevation of the water table beneath the island is therefore maintained below its natural level by pumping. This pumping creates a gradient in which groundwater is drawn towards the interior of the island, which increases during high flow conditions in winter and spring. Pumped groundwater is discharged into the network of drainage ditches and flows toward the pumping stations on the western edge of the Island. A groundwater well is present on the northeastern portion of the island, with a production capacity of 750 GPM. This well was historically maintained as a backup water source for the island, but is not currently in use (Port of Stockton 2003).

The San Joaquin Valley - Tracy Groundwater Basin (DWR Basin 5-022.15) has a high to medium priority with regard to potential overdraft and is regulated by the County of San Joaquin Groundwater Services Agency (GSA) – Tracy,

under SGMA (California DWR 2023). (See Section 3.9.2.2, Regulatory Setting – State, for more information pertaining to SGMA.)

3.9.2 Regulatory Setting

3.9.2.1 Federal

Clean Water Act

The Clean Water Act (CWA) of 1948 (as amended in 1972 and 1987) establishes federal policy for the control of point and non-point pollution and assigns the states the primary responsibility for control of water pollution. The CWA regulates the dredging and filling of freshwater and coastal wetlands. Section 404 (33 USC 1344) prohibits the discharge of dredged or fill material into waters (including wetlands) of the United States without first obtaining a permit from the U.S. Army Corps of Engineers. Wetlands are regulated in accordance with federal Non-Tidal Wetlands Regulations (Sections 401 and 404).

Compliance with the CWA by the U.S. Forest Service in California is achieved under state law. The California Water Code consists of a comprehensive body of law that incorporates all state laws related to water, including water rights, water developments, and water quality. The laws related to water quality (sections 13000 to 13485) apply to waters on the national forests and are directed at protecting the beneficial uses of water.

Section 402 of the Clean Water Act (National Pollutant Discharge Elimination System)

The NPDES permit program, as authorized by Section 402 of the CWA, was established to control water pollution by regulating point sources that discharge pollutants into waters of the United States (33 USC 1342). In the state of California, EPA has authorized the State Water Resources Control Board (SWRCB) permitting authority to implement the NPDES program. Regulations (Phase II Rule) that became final on December 8, 1999, expanded the existing NPDES Program to address stormwater discharges from construction sites that disturb land equal to or greater than 1.0 acres and less than 5.0 acres (small construction activity). The regulations also require that stormwater discharges from Municipal Separate Storm Sewer Systems (MS4s) be regulated by an NPDES General Permit for Storm Water Discharges Associated with Construction Activity, Order No. 2022-0057-DWQ (i.e., the Construction General Permit [CGP]).

The CGP requires that construction sites be assigned a Risk Level of 1 (low), 2 (medium), or 3 (high), based both on the sediment transport risk at the site and the receiving waters risk during periods of soil exposure (e.g., grading and site stabilization). The sediment risk level reflects the relative amount of sediment that could potentially be discharged to receiving water bodies and is based on the nature of the construction activities and the location of the site relative to receiving water bodies. The receiving waters risk level reflects the risk to the receiving waters from the sediment discharge. Depending on the risk level, the construction projects could be subject to the following requirements:

- Effluent standards
- Good site management “housekeeping”
- Non-stormwater management
- Erosion and sediment controls
- Run-on and runoff controls

- Inspection, maintenance, and repair
- Monitoring and reporting requirements

The CGP requires the development and implementation of a Stormwater Pollution Prevention Plan (SWPPP), which describes best management practices (BMPs) the discharger would use to protect stormwater runoff. The BMPs fall into several categories, including erosion control, sediment control, waste management and good housekeeping, and are intended to protect surface water quality by preventing the off-site migration of eroded soil and construction-related pollutants from the construction area. Each category contains specific BMPs to achieve the goals of the overarching category. Specific BMPs may include the following:

- Soil Stabilizing BMPs: Use of straw mulch, erosion control blankets or geotextiles, and/or wood mulching
- Sedimentation Control BMPs: Use of storm drain inlet protection, sediment traps, gravel bag berms, and fiber rolls
- Waste Management BMPs: Stockpile management, solid waste management, and concrete waste management
- Good Housekeeping BMPs: Vehicle and equipment cleaning, implementing water conservation practices, and implementing rules for fueling construction vehicles and equipment

Routine inspection of all BMPs is required under the provisions of the CGP. In addition, the SWPPP is required to contain a visual monitoring program, a chemical monitoring program for non-visible pollutants, and a sediment monitoring plan if the site discharges directly to a water body listed on the 303(d) list for sediment. On September 8, 2022, the SWRCB issued a new NPDES General Permit for Storm Water Associated with Construction Activities (Order No. 2022-0057-DWQ, NPDES No. CAS000002), which became effective September 8, 2022.

In the project areas (i.e., Lassen facility, Tuolumne facility, Port of Stockton), the CGP is implemented and enforced by the Central Valley Regional Water Quality Control Board (RWQCB), which administers the stormwater permitting program. Dischargers are required to electronically submit a Notice of Intent (NOI) and permit registration documents in order to obtain coverage under this CGP. Dischargers are responsible for notifying the LARWQCB of violations or incidents of non-compliance, as well as for submitting annual reports identifying deficiencies of the BMPs and how the deficiencies were corrected. The risk assessment and SWPPP must be prepared by a State Qualified SWPPP Developer (QSD) and implementation of the SWPPP must be overseen by a State Qualified SWPPP Practitioner (QSP). A Legally Responsible Person, who is legally authorized to sign and certify permit registration documents, is responsible for obtaining coverage under the permit.

Federal Antidegradation Policy

The federal Antidegradation Policy (40 CFR 131.12) requires states to develop statewide antidegradation policies and identify methods for implementing those policies. Pursuant to this policy, state antidegradation policies and implementation methods will, at a minimum, protect and maintain (1) existing in-stream water uses; (2) existing water quality where the quality of the waters exceeds levels necessary to support existing beneficial uses, unless the state finds that allowing lower water quality is necessary to accommodate economic and social development in the area; and (3) water quality in waters considered an outstanding national resource. State permitting actions must be consistent with the federal Antidegradation Policy.

National and State Safe Drinking Water Acts

The federal Safe Drinking Water Act, established in 1974, is administered by the EPA and sets drinking water standards throughout the country. The drinking water standards established in the act, as set forth in the Code of Federal Regulations (CFR), are referred to as the National Primary Drinking Water Regulations (Primary Standards; 40 CFR 141), and the National Secondary Drinking Water Regulations (Secondary Standards; 40 CFR 143). According to the EPA, the Primary Standards are legally enforceable standards that apply to public water systems. The Secondary Standards are non-enforceable guidelines regulating contaminants that may cause cosmetic or aesthetic effects in drinking water. The EPA recommends the Secondary Standards for water systems but does not require systems to comply. California passed its own Safe Drinking Water Act in 1986 that authorizes the state's Department of Health Services to protect the public from contaminants in drinking water by establishing maximum contaminant levels (as set forth in the California Code of Regulations (CCR), Title 22, Division 4, Chapter 15) that are at least as stringent as those developed by the EPA, as required by the federal Safe Drinking Water Act.

U.S. Forest Service

Water Quality Management Handbook

The 2011 Forest Service Region 5 Water Quality Management Handbook 2509.22, Chapter 10 (U.S. Forest Service 2011) includes requirements for best management practices (BMP) implementation monitoring of all projects with the potential to adversely affect water quality using a "checklist" approach. The USFS water quality protection program relies on implementation of prescribed BMPs. The checklists are the primary means for early detection of potential water-quality problems and should be completed early enough to allow corrective actions to be taken, if needed, prior to any significant rainfall or snowmelt throughout the duration of the project.

These BMPs are procedures and techniques that are incorporated in project actions and determined by the State of California to be the most effective, practicable means of preventing or reducing the amount of pollution generated by nonpoint sources to a level compatible with water quality goals. Forest Service BMPs, as presented in the 2011 Handbook, include detailed descriptions of individual BMPs (section 12), a requirement that site-specific BMPs be included in timber sale contracts (section 13), and direction that legacy sites (sites disturbed by previous land use that is causing or has potential to cause adverse effects to water quality) within timber project boundaries will be restored or improved. Additionally, the 2011 Handbook amendment establishes an expanded water quality management monitoring program (section 16).

National Best Management Practices for Water Quality Management on National Forest System Lands

Volume 1 – National Core BMP Technical Guide (FS-990a) directs compliance with required CWA permits and State regulations, and requires the use of BMPs to control nonpoint source pollution to meet applicable water quality standards and other CWA requirements. The Social and Ecological Resilience Across the Landscape (SERAL) BMP checklist was prepared to identify all of the applicable BMPs that need to be followed during implementation of the SERAL project.

National Flood Insurance Act

The National Flood Insurance Act of 1968 established the National Flood Insurance Program in order to provide flood insurance within communities that were willing to adopt floodplain management programs to mitigate future

flood losses. The act also required the identification of all floodplain areas within the United States and the establishment of flood-risk zones within those areas. FEMA is the primary agency responsible for administering programs and coordinating with communities to establish effective floodplain management standards. FEMA is responsible for preparing Flood Insurance Rate Maps that delineate the areas of known special flood hazards and their risk applicable to the community. The program encourages the adoption and enforcement by local communities of floodplain management ordinances that reduce flood risks. In support of the program, FEMA identifies flood hazard areas throughout the United States on FEMA flood hazard boundary maps.

Executive Order 11988

Under Executive Order 11988 – Floodplain Management, FEMA is responsible for management of floodplain areas defined as the lowland and relatively flat areas adjoining inland and coastal waters subject to a one percent or greater chance of flooding in any given year (the 100-year floodplain). FEMA requires that local governments covered by federal flood insurance pass and enforce a floodplain management ordinance that specifies minimum requirements for any construction within the 100-year floodplain. The Order addresses floodplain issues related to public safety, conservation, and economics. It generally requires federal agencies constructing, permitting, or funding a project in a floodplain to avoid incompatible floodplain development, be consistent with the standards and criteria of the National Flood Insurance Program, and restore and preserve natural and beneficial floodplain values.

With respect to encroachment or placement of fill within a 100-year floodplain, 44 CFR 60.3(d)(3) prohibits encroachments, including fill, new construction, substantial improvements, and other development within an adopted regulatory floodway, unless it has been demonstrated through hydrologic and hydraulic analyses performed in accordance with standard engineering practice that the proposed encroachment would not result in any increase in flood levels within the community during the occurrence of the base flood discharge.

However, 44 CFR 60.3(d)(4) indicates that notwithstanding any other provisions of § 60.3, a community may permit encroachments within the adopted regulatory floodway that would result in an increase in BFEs, provided that the community first applies for a conditional FIRM and floodway revision, fulfills the requirements for such revisions as established under the provisions of § 65.12, and receives the approval of the Administrator. If a community proposes to permit an encroachment in the floodway or the floodplain that will cause increases in the BFE in excess of the allowable level, the community would be required to apply to the FEMA Regional Office for conditional approval of such action prior to permitting the project to occur.

As part of the application for conditional approval, the applicant must submit:

- A complete application and letter of request for conditional approval of a change in the FIRM or a Conditional Letter of Map Revision (CLOMR), along with the appropriate fee for the change.
- An evaluation of alternatives which, if carried out, would not result in an increase in the BFE more than allowed, along with documentation as to why these alternatives are not feasible.
- Documentation of individual legal notice to all affected property owners (anyone affected by the increased flood elevations, within and outside of the community) explaining the impact of the proposed action on their properties.
- Concurrence, in writing, from the chief executive officer of any other communities affected by the proposed actions.

- Certification that no structures are located in areas which would be affected by the increased BFE (unless they have been purchased for relocation or demolition).
- A request for revision of BFE determinations in accordance with the provisions of 44 CFR 65.6 of the FEMA regulations.

Upon receipt of the FEMA conditional approval of the map change and prior to approving the proposed encroachments, the applicant must provide evidence to FEMA that the community's floodplain management ordinance incorporates the post project condition BFEs (FEMA 2005).

In addition, based on 44 CFR 60.3(c)(10), if a community has a FIRM with BFEs along rivers or streams, but no mapped floodway, the applicant must evaluate proposed developments to ensure that the development will not increase flood stages by one foot. However, in some states, floodways are mapped based on allowing flood heights to increase by less than one foot. In those states, the encroachment certification must be based on that more restrictive state standard, not the FEMA standard that allows a one-foot rise (FEMA 2005). In California, development is not allowed unless certified to cause "no rise" (no increase) in BFEs. "No rise" certifications must be signed, sealed, and dated by a Professional Engineer licensed in California and qualified to conduct hydraulic analyses (California DWR 2020).

3.9.2.2 State

The Lassen facility feedstock area encompasses portions of the RWQCB Central Valley, North Coast, and Lahontan regions. The Tuolumne facility feedstock area encompasses portions of the RWQCB Central Valley and Lahontan regions. Responsibility for the protection of water quality in California rests with the SWRCB and nine RWQCBs. The SWRCB establishes statewide policies and regulations for the implementation of water quality control programs mandated by federal and state water quality statutes and regulations. The RWQCBs developed and implement the North Coast, Central Valley, and Lahontan RWQCB Basin Plans, which consider regional beneficial uses, water quality characteristics, and water quality problems throughout their jurisdictional boundaries. The Basin Plans outline water quality parameters for inland surface waters and for groundwaters for a wide variety of water quality constituents. The plans also include the narrative and numerical water quality objectives that must be attained or maintained to protect the designated beneficial uses, conform to the state's anti-degradation policy, and describe implementation programs and other actions that are necessary to achieve the water quality objectives established in the Basin Plan.

NPDES Permits

The Lassen wood pellet facility, Tuolumne wood pellet facility, and Port of Stockton are located with the RWQCB Central Valley Region. Stormwater discharge to Municipal Separate Storm Sewer Systems (MS4s) in the RWQCB Central Valley Region are regulated under General Order R5-2016-0040, NPDES No. CAS0085324, National Pollutant Discharge Elimination System Permit and Waste Discharge Requirements General Permit for Discharges from Municipal Separate Storm Sewer Systems, effective on October 1, 2016.

Lassen and Tuolumne Counties do not operate under a county-specific MS4 permit. However, stormwater runoff in Tuolumne County is regulated in accordance with the Tuolumne County Water Quality Plan (Tuolumne County 2007), which addresses water quality issues in terms of the State General Permit. Regulatory requirements in the water quality plan were developed consistent with the Tuolumne County General Plan Goal 4.L, which directs the County to maintain and conserve the quality and quantity of the County's water resources, while protecting the rights of the land owners. The goal is intended to apply to all of the County's unincorporated lands and emphasizes

approaches to minimizing and preventing the discharge of non-point source pollutants into contributing drainages of local waterways.

Stormwater runoff in the City of Stockton is regulated under the City NPDES Municipal Stormwater Program, Stormwater Management Plan, which includes existing and enhanced program control measures and represents strategies for controlling the discharge of pollutants from the municipal storm drain system to the maximum extent practicable (City of Stockton 2009). The Port of Stockton MS4 is regulated under Order No. R5-2016-0040-011 (NPDES Permit No. CAS0085324), Stockton Port District, Facility-Wide Storm Water Discharges From Municipal Separate Storm Sewer System and Non-Storm Water Discharges From the Port of Stockton.

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act authorizes the SWRCB to adopt, review, and revise policies for all waters of the state (including surface water and groundwater) and directs the RWQCBs to develop regional water quality control plans. Section 13170 of the California Water Code authorizes the SWRCB to adopt water quality control plans on its own initiative.

Waste Discharge Requirements

All dischargers of waste to waters of the state are subject to regulation under the Porter-Cologne Water Quality Control Act, and the requirements for WDRs are incorporated into Section 13263 of the California Water Code. This includes point-source and nonpoint-source dischargers. All current and proposed nonpoint-source discharges to land must be regulated under WDRs, waivers of WDRs, a water quality control plan prohibition, or some combination of these administrative tools. Discharges of waste directly to state waters are subject to an individual or general NPDES permit, which also serves as WDRs. The RWQCBs have primary responsibility for issuing WDRs to cover a category of discharges. WDRs may include effluent limitations or other requirements that are designed to implement applicable water quality control plans, including designated beneficial uses and the water quality objectives established to protect those uses and prevent the creation of nuisance conditions. Violations of WDRs may be addressed by issuing Cleanup and Abatement Orders or Cease and Desist Orders, assessing administrative civil liability, or seeking imposition of judicial civil liability or judicial injunctive relief.

Waiver of Waste Discharge Requirements

The California Regional Water Quality Control Board, North Coast Region, Order No. R1-2015-0021, Waiver of Waste Discharge Requirements for Nonpoint Source Discharges Related to Certain Federal Land Management Activities on National Forest System Lands in the North Coast Region (North Coast RWQCB Waiver of Waste Discharge Requirements) (North Coast RWQCB 2015) covers discharges from nonpoint source activities that have the potential to discharge wastes that may affect waters of the state. Most of the potential water quality impacts would be associated with erosion and sediment delivery and/or alterations to riparian systems that may reduce shade and affect water temperatures, including timber harvesting, road use and maintenance, grazing, recreation, vegetation management, vegetation restoration, fire suppression, and fire salvage. Sediment and temperature TMDLs have been developed for the majority of the impaired waters in the North Coast Region. The conditions in the Waiver of Waste Discharge Requirements provide reasonable assurance that sediment, temperature, and nutrient impairments on U.S. Forest Service lands would be restored by requiring (1) protection, maintenance, and enhancement of riparian conditions and shade; (2) inventories and remediation of legacy sediment sites; (3) the application of BMPs and on-the-ground prescriptions on U.S. Forest Service land to avoid excess sediment discharges and to improve shade; and 4) periodic review, monitoring, and reassessment.

A similar waiver applies to the Central Valley Region: California Regional Water Quality Control Board, Central Valley Region, Order No. R5-2018-0017, Renewal of Conditional Waiver of Waste Discharge Requirements for Discharges Related to Timber Harvesting Activities, which would apply to the Proposed Action in the Sacramento River Basin of the Central Valley Region. This waiver is a renewal of the 1981 Water Quality Management for National Forest System Lands in California, which was developed and submitted by the Forest Service for specified activities on National Forest System lands in California that may result in nonpoint source discharges, including timber management, vegetative manipulation, fuels management, road construction, and watershed management (Central Valley RWQCB 2019).

Similarly, with respect to the Lahontan Region, Order No. R6T-2014-0030, Conditional Waiver of Waste Discharge Requirements for Waste Discharges Resulting from Timber Harvest and Vegetation Management Activities in the Lahontan Region, regulates waste discharges resulting from timber harvest and vegetation management. This waiver applies to vegetation management projects that range from homeowner defensible space operations to local Fire Protection District community protection plans, to large wildland/urban interface projects proposed by the California Department of Parks and Recreation, the Bureau of Land Management, and the Forest Service. Commercial timber harvest conducted by small landowners, industrial timber companies, and the Forest Service are also covered under the waiver. This waiver structures the enrollment conditions and implementation and monitoring requirements based on levels of increasing potential risk to water quality, focusing on sedimentation from disturbed land and solar/thermal heating of surface waters after vegetation is removed (Lahontan RWQCB 2014). The 2014 waiver was renewed in March 2019 by Order No. R6T-2019-0240 (Lahontan RWQCB 2019), and is in the process of being renewed again.

NPDES Construction Stormwater General Permit

Effective September 1, 2023, Construction Stormwater General Permit Order 2022-0057-DWQ supersedes SWRCB Order No. 2009-009-DWQ, as amended by 2010-0014-DWQ and 2012-0006-DWQ (i.e., the former CGP). SWRCB adopted the current CGP on September 8, 2022. The order requires that, prior to beginning any construction activity, the permit applicant obtain coverage under the CGP by preparing and submitting to the SWRCB a Permit Registration Document that includes a Notice of Intent, Stormwater Pollution Prevention Plan (SWPPP), and other compliance related documents required by the CGP. Regulating many stormwater discharges under one general permit greatly reduces the administrative burden associated with permitting individual stormwater discharges.

Construction activities subject to the NPDES CGP include clearing, grading, and disturbances to the ground (e.g., stockpiling or excavating), which result in soil disturbances of at least 1 or more acres of land surface, or that are part of a common plan of development or sale that disturbs more than 1 acre of land surface. Because construction of individual projects within the Specific Plan area would cumulatively disturb more than 1 acre, all improvements and development activities would be subject to these permit requirements. The SWPPP has two main objectives: to help identify the sources of sediment and other pollutants that affect the quality of stormwater discharges, and to describe and ensure the implementation of BMPs to reduce or eliminate sediment and other pollutants in stormwater and non-stormwater discharges.

Sustainable Groundwater Management Act

On September 16, 2014, Governor Jerry Brown signed into law a three-bill legislative package—Assembly Bill 1739 (Dickinson), Senate Bill 1168 (Pavley), and Senate Bill 1319 (Pavley)—collectively known as SGMA, which requires governments and water agencies of high- and medium-priority basins to halt overdraft and bring groundwater basins into balanced levels of pumping and recharge. Under SGMA, these basins should reach sustainability within

20 years of implementing their sustainability plans. For critically overdrafted basins, sustainability should be achieved by 2040. For the remaining high- and medium-priority basins, 2042 is the deadline. Through SGMA, the California Department of Water Resources (DWR) provides ongoing support to local agencies through guidance, financial assistance, and technical assistance. SGMA empowers local agencies to form Groundwater Sustainability Agencies to manage basins sustainably and requires those Groundwater Sustainability Agencies to adopt Groundwater Sustainability Plans (GSPs) for medium- and high-priority groundwater basins in California.

Senate Bill 610 and Senate Bill 221: Water Supply Assessments and Water Supply Verifications

SB 610 and SB 221, amended into state law effective January 1, 2002, improve the linkage between certain land use decisions made by cities and counties and water supply availability. The statutes require detailed information regarding water availability and reliability with respect to certain developments to be included in the administrative record, to serve as evidentiary basis for an approval action by the city or county on such projects. Under Water Code Section 10912(a), projects subject to the California Environmental Quality Act (CEQA) requiring a water supply assessment include: residential development of more than 500 dwelling units; shopping center or business establishment employing more than 1,000 persons or having more than 500,000 square feet of floor space; commercial office building employing more than 1,000 persons or having more than 250,000 square feet of floor space; hotel, motel or both, having more than 500 rooms; industrial, manufacturing, or processing plants, or industrial parks planned to house more than 1,000 persons, occupying more than 40 acres of land or having more than 650,000 square feet of floor area; mixed-use projects that include one or more of the projects specified; or a project that would demand an amount of water equivalent to or greater than the amount required by a 500 dwelling unit project. A fundamental source document for compliance with SB 610 is the Urban Water Management Plan, which can be used by the water supplier to meet the standard for SB 610. SB 221 applies to the applicant of a subdivision map of 500 dwelling units or more to verify that the public water supplier has sufficient water available to serve the proposed development. Related to Water Code Section 1912(a) is California Water Code Section 10910(d)(2), which requires the identification of existing water supply entitlements, water rights, or water service contracts; federal, state, and local permits for construction of necessary infrastructure, and any regulatory approvals required in order to be able to deliver the water supply.

California Water Code, Section 12924

Under California Water Code Section 12924, the California DWR, in conjunction with other public agencies, conducts investigations of the state's groundwater basins. The DWR identifies the state's groundwater basins on the basis of geological and hydrologic conditions and with consideration of political boundary lines whenever practical. The DWR also investigates existing general patterns of groundwater extraction and groundwater recharge within those basins to the extent necessary to identify basins that are subject to critical conditions of overdraft.

California Building Standards Code

The state regulations protecting structures from geo-seismic hazards are contained in the California Building Code (CBC) (24 CCR Part 2), which is updated on a triennial basis. These regulations apply to public and private buildings in the state. Until January 1, 2008, the CBC was based on the then-current Uniform Building Code and contained additions, amendments, and repeals specific to building conditions and structural requirements of the State of California. The 2022 CBC, effective January 1, 2023, incorporates by reference the 2021 International Building Code of the International Code Council, with necessary California amendments.

The updated 2022 CBC requires new flood hazard documentation, in accordance with Chapter 16, Section 1612.4. Item 1.3 requires the flood emergency plan required by American Society of Civil Engineers (ASCE) 24 to be included in construction documents. ASCE 24-14, Flood Resistant Design and Construction, states the minimum requirements and expected performance for the siting and design and construction of buildings and structures in flood hazard areas that are subject to building code requirements. Types of buildings and structures include commercial, residential, industrial, educational, healthcare, critical facilities, and other occupancy types. Buildings and structures designed according to ASCE 24 are better able to resist flood loads and flood damage. FEMA deems ASCE 24 to meet or exceed the minimum NFIP requirements for buildings and structures. ASCE 24 includes additional specificity, some additional requirements, and some limitations that are not in NFIP regulations. Buildings and structures within the scope of the International Building Code and proposed to be located in any flood hazard area must be designed in accordance with ASCE 24.

3.9.2.3 Local

Lassen County

Lassen County General Plan

The Lassen County General Plan 2000 Land Use Element includes a section on Flood Hazard Areas. In addition, the Natural Resources Element includes a section on Water Resources. Relevant goals and policies from these elements include the following.

Goal L-21. Minimize damage caused to and by development within areas which are subject to flooding.

Policy LU-46. The County shall continue to discourage inappropriate development in areas subject to flooding as indicated in the most recent and effective Flood Insurance Rate Maps adopted by the Federal Emergency Management Agency; said maps being hereby incorporated by reference into this Land Use Element.

Policy LU-47. Land within identified 100-year flood hazard areas should be zoned for agricultural uses or other relatively low-intensity land uses.

Implementation Measure:

- LUCC - The County shall continue to comply with and enforce the flood plain management regulations of its Flood Damage Prevention Ordinance, and to participate in the National Flood Insurance Program. This shall include review by the County of proposed project and building permit sites in respect to designated flood hazard areas.

Policy LU-48. In consideration of proposed development within areas subject to flooding, the County shall encourage the use of sites outside of flood prone areas when such alternatives exist and options are feasible.

Goal N-3. Water supplies of sufficient quality and quantity to serve the needs of Lassen County, now and in the future.

Policy NR-13. The County recognizes the critical importance and future value of its water resources and shall support the conservation of water supplies and protection of water quality.

Policy NR-14. The County supports efforts by state and Federal agencies, including the California Department of Water Resources, to monitor the quantity and quality of the County's water supplies and to protect the water resources of the County when such efforts are demonstrated to be based on sound, scientific assessment of potentially adverse impacts to those resources.

Policy NR-15. The County advocates the cooperation of state and Federal agencies, including the State Water Resources Control Board and its regional boards, in considering programs and actions to protect the quality of groundwater and surface water resources.

Policy NR-16. The County supports the continued use of appropriated and adjudicated surface water rights.

Policy NR-17. The County supports measures to protect and insure the integrity of water supplies and is opposed to proposals for the exportation of groundwater and surface waters from ground water basins and aquifers located in Lassen County (in whole or part) to areas outside those basins.

Implementation Measure:

- NR-H - The County will maintain groundwater ordinances and other forms of regulatory authority to protect the integrity of water supplies in Lassen County and regulate the exportation of water from ground water basins and aquifers in the county to areas outside those basins.

Policy NR-18. The County may adopt specific resource policies and development restrictions to protect specified water resources (e.g., Eagle Lake, Honey Lake, special recharge areas, etc.) to support the protection of those resources from development or other damage which may diminish or destroy their resource value.

Policy NR-19. The County supports control of water resources at the local level, including the formation of local groundwater management districts to appropriately manage and protect the long-term viability of groundwater resources in the interest of County residents and the County's resources.

Goal N-5. The development of new, well-planned reservoirs and other facilities and projects for water supply and/or flood control purposes which will benefit related resources and provide opportunities for multiple public benefits.

Policy NR-21. The County encourages feasibility studies for and, when appropriate, the development of new, well-planned reservoirs and the conservation and replenishment of water resources through means such as infiltration basins and reinjection when feasible.

Policy NR-22. Plans for reservoirs, flood control facilities and other water supply and flood control programs and projects shall regard the related impacts and cost-benefit relationships to other resource

values and land uses which may be affected, and shall consider opportunities and design elements to achieve multiple public benefits including recreation and enhancement of wildlife and fishery resources.

Goal N-6. Eliminate the threat of flood events which may result in the loss of lives and major damage to property and resources.

Policy NR-23. The County supports interagency cooperation.in developing programs and considering projects to protect people, property and resources from the threat of and damages from flood events.

Policy NR-24. The County encourages feasibility studies, planning projects and, when appropriate, the development of new, well-planned reservoirs, flood channels and other facilities and programs which can serve to control flooding and help reduce flood-related damage.

Lassen County Hazard Mitigation Plan

The primary purpose of a Local Hazard Mitigation Plan (LHMP) is to identify community policies, actions, and tools for implementation over the short and long-term that will result in a reduction in risk and potential future losses community wide. This is accomplished by using a systematic process of learning about the hazards that can affect each of the participating jurisdictions, setting clear goals and objectives, identifying and implementing appropriate actions, and keeping the plan current. The Lassen County Operational Area LHMP is an integral part of a multi-pronged approach to minimizing personal injury and property damage from natural, manmade, and technological hazards, including flooding, and it complements other planning documents and regulatory authorities governing pre-disaster land use planning and post-disaster response and recovery. It is intended to set the tone for the implementation of hazard mitigation practices that will build a disaster resistant and sustainable community.

The impetus and authority to create this plan is derived from the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Public Law 93-288), as amended by the Disaster Mitigation Act of 2000. In response to escalating disaster costs, the federal government adopted the Disaster Mitigation Act of 2000, which places emphasis on hazard mitigation planning. Under the Disaster Mitigation Act of 2000, state and local governments are required to have a FEMA-approved LHMP to be eligible for Hazard Mitigation Assistance grants.

Lassen County, the City of Susanville, and the Susanville Indian Rancheria are working cooperatively to update the October 2018 Lassen County Operational Area LHMP. The Lassen County Department of Planning and Building Services is responsible for coordinating this effort. FEMA requires that LHMPs be updated every five years and the current LHMP expired on January 15, 2024.

Lassen County Code

Title 12, Buildings and Construction, Article I. Building Code, Chapter 12.12, Uniform Plumbing Code

This chapter describes requirements for septic tanks that would ensure lot size and soil conditions would adequately support such facilities. As part of the code requirements, a flow test may be required to the point of effluent disposal, and it must be demonstrated that all lines and components are watertight.

Title 12, Buildings and Construction, Article I. Building Code, Chapter 12.26, Flood Damage Prevention

This chapter includes methods and provisions that:

1. Restrict or prohibit uses which are dangerous to health, safety and property due to water or erosion hazards, or which result in damaging increases in erosion or flood heights or velocities;
2. Require that uses vulnerable to floods, including facilities which serve such uses, be protected against flood damage at the time of initial construction;
3. Control the alteration of natural floodplains, stream channels and natural protective barriers, which help accommodate or channel floodwaters;
4. Control filling, grading, dredging and other development which may increase flood damage; and
5. Prevent or regulate the construction of flood barriers which will unnaturally divert floodwaters or which may increase flood hazards in other areas. (Ord. 2014-003 § 2)

Title 17, Groundwater, Chapter 17.01, Extraction and Exportation

This chapter describes how the County seeks to foster prudent water management practices to avoid significant adverse overdraft-related environmental, social, and economic impacts. In order to assure protection of the County's important groundwater resources the County requires a permit to extract groundwater for use outside the County. This chapter requires a permit for the export of groundwater outside the county and is not intended to regulate groundwater in any other way. The County in no way intends to limit either the County or other public entities, including the Lassen-Modoc County Flood Control and Water Conservation District, in managing groundwater under the Groundwater Management Act, the Honey Lake Valley Groundwater Basin Act, the Long Valley Groundwater Basin Act, the Willow Creek Valley Groundwater Basin Act, the Surprise Valley Groundwater Basin Act, and any other applicable laws in a manner consistent with any groundwater management plan adopted by the County or the Districts. (Ord. 539 § 1, 1999).

Title 17, Groundwater, Chapter 17.02, Basin Management Objectives

The purpose of this chapter is to establish a basin management objective program to facilitate the understanding and public dissemination of groundwater in Lassen County. The basin management objective program does not, and is not intended to, regulate any action or inaction; establish or increase any fees; or impose a penalty for any action or inaction. It is the purpose and intent of this chapter to establish an effective policy concerning groundwater that will assure that the overall economy and environment of the county is protected. Through adoption of this chapter, the Board of Supervisors seek to protect the health, safety, and welfare of county residents. The Board does not intend to determine whether any groundwater in storage above established basin management objectives is surplus groundwater, to define surplus groundwater, or to impose fees, assessments, charges, or taxes upon county residents and or business owners. (Ord. 2012-002 § 2)

Tuolumne County

Tuolumne County General Plan

The 2018 Tuolumne County General Plan Water Supply Element includes goals and policies pertaining to groundwater supply and watershed protection. In addition, the Natural Resources Element includes goals and policies pertaining to flood hazards. Relevant goals and policies from these elements include the following.

Goal 14A. Pursue adequate water supply for all Tuolumne County residents and visitors.

Policy 14.A-3. Work with other agencies in developing joint water policies supporting healthy watershed management.

Implementation Programs:

- 14.A.e - Implement the Tuolumne County Water Action Plan: Developing a Plan for Our Future adopted by the Board of Supervisors on April 7, 2015, as it may be amended from time to time.
- 14.A.f - Collaborate with the other agencies and water purveyors to develop a Comprehensive Water Resources Plan to manage and protect the County's water resources by developing and prioritizing a list of water resources projects and a monitoring program. Utilize planning reports from the Tuolumne-Stanislaus Integrated Water Management Authority (IRWM) in future water planning efforts.

Policy 14.A-5. Manage groundwater resources consistent with the requirements of the Sustainable Groundwater Management Act, in response to the probability that the State will extend regulations to the County of Tuolumne.

Implementation Program:

- 14.A.h - Use of groundwater recharge to help stabilize and supplement groundwater levels and protect water supplies. Discourage incompatible development near groundwater recharge stations, such as ponds, basins and tanks, that could affect the recharged groundwater levels.

Policy 14.A-6. Encourage water purveyors to provide an adequate water supply to meet long term needs in a manner that is consistent with this General Plan and urban water management plans and that maintains water resources for water users while protecting the natural environment.

Policy 14.A-7. Encourage the beneficial capture and utilization of stormwater to promote healthy watersheds, fire-safe landscapes, and groundwater recharge.

Goal 14.B. Pursue adequate water supply for all Tuolumne County residents and visitors.

Policy 14.B.1. Support water districts in establishing conservation standards to reduce demand for water.

Implementation Program:

- 14.B.a - Support the efforts, such as funding applications and inter-agency coordination, of water agencies and districts to prevent the depletion of water resources and promote the conservation and reuse of water.

Policy 14.B.2. Increase water conservation efforts to maximize water use efficiency within Tuolumne County through conservation, recycling and education.

Implementation Program:

- 14.B.b - Encourage water reuse programs in new development to conserve raw or potable water supplies consistent with State Water Resources Control Board guidelines through the application review process.
- 14.B.f - Prohibit any processing activities with high water use practices near areas where groundwater overdraft problems exist, unless the facility uses water recycling and conservation techniques that minimize effects of water use on the groundwater table.
- 14.B.i - Explore the feasibility of reducing wastewater through the use of dry/composting toilets in new construction consistent with Goal 3E.

Goal 14.C. Protect and improve the quality and quantity of the County's water resources, while protecting the rights of land owners.

Policy 14.C.1. Protect the quality of the County's water resources by supporting the efforts of local districts to maintain infrastructure and cross-connect sewer systems and ensuring Tuolumne County's development standards are adequate to protect surface and groundwater resources from contamination.

Implementation Programs:

- 14.C.a - Maintain local source water protection and wellhead protection programs in the Tuolumne County General Plan, such as setbacks, to protect the sources of drinking water supplies.
- 14.C.b - Implement grading and surface runoff standards, such as retention and detention, permeable surfaces and recharge, necessary to protect water resources in compliance with State and Federal water quality regulations and with the County's water quality plan.

Policy 14.C.5. Develop and evaluate criteria to allow limited development to occur where harmful area-wide impacts to groundwater exist based on known hazard areas when feasible.

Implementation Program:

- 14.C.f - Consider creating and maintaining soil maps that identify areas of high ground water, impervious soils, limestone or other hazards which, either by themselves or in combination, create potentially serious health conditions due to failing septic systems or which are inappropriate for on-site sewage treatment and disposal on an areawide basis. Continue to

develop and evaluate criteria to allow development to occur in areas of high groundwater, impervious soils, limestone or other hazards without degrading the water resources.

Policy 14.C.7. Recognize that clean water is essential to the public health, safety and welfare, fosters economic development and job creation, protects the environment, maintains fish and wildlife, and supports recreation.

Policy 14.C.8. Encourage water resources to be protected from pollution, conserved, and recycled whenever possible to provide for continued economic, community, and social growth.

Implementation Program:

- 14.C.h - Continue to regulate the exportation of groundwater to preserve the County's limited groundwater reserves for use by its residents and businesses through the provision of Chapter 13.20 of the Tuolumne County Ordinance Code.

Policy 14.C.9. Promote improved watershed health, improved water quality and water quantity yields of the watersheds in Tuolumne County.

Implementation Program:

- 14.C.i - Promote the development of plans for watershed rehabilitation projects which provide for such watershed improvements.
- 14.C.j - Initiate or assist in the formulation of plans for watershed rehabilitation projects with the County serving as the coordinating agency for the various stakeholders in such a plan, such as property owners, water agencies, other public agencies, private industry, recreational facility providers and other interested groups and organizations. Provide technical assistance in the development of plans for watershed rehabilitation projects through such means as data sharing.
- 14.C.k - Cooperate and consult with Federal, State and local agencies, such as the Tuolumne County Water Agency, in promoting the stewardship of the watersheds within the County. Consult with these agencies to avoid duplication of effort and to maximize use of public resources in working towards a common goal of improving the watersheds within Tuolumne County which will, in turn, contribute to the State and Federal objective of providing long-term Bay-Delta recovery and protection.
- 14.C.l - Support the Tuolumne County Resource Conservation District in its efforts to improve watersheds within Tuolumne County, including stream water quality sampling, which can assist agencies where to direct their efforts.
- 14.C.m - Submit applications for grants which become available for funding for County initiated or sponsored watershed rehabilitation projects and support the efforts of other public agencies and water agencies, such as the Tuolumne County Water Agency, Tuolumne-Stanislaus Integrated Regional Water Management Authority and other entities in their efforts to seek funding for watershed improvement projects. This support may manifest itself in such ways as adopting a resolution of support or co-sponsoring an application for funding for a watershed project.

Goal 17.B. Protect structures and land uses from flood hazards in order to minimize loss of life, injury, damage to property, and economic and social dislocations.

Policy 17.B.1. Reduce the potential for future damages and economic losses that result from flood hazards by implementing the Tuolumne County Multi-Jurisdictional Hazard Mitigation Plan.

Policy 17.B.2. Reduce the potential for damage to property within the 100 year floodplains as designated on the Federal Emergency Management Agency, Flood Insurance Rate Maps and other areas prone to flooding due to rain or dam failure, through limitations on land use.

Implementation Programs:

- 17.B.a - Implement and enforce the Flood Damage Prevention Ordinance, Chapter 15.28 of the Tuolumne County Ordinance Code, as it pertains to designated "special flood hazard areas", as identified on the Flood Insurance Rate Maps.
- 14.B.b - Review and notify FEMA of errors or other information to correct or update FIRM maps.

Policy 17.B.3. Solve flood control problems in areas where existing development has encroached into a floodplain.

Implementation Programs:

- 17.B.c - Encourage property owners with existing structures within areas subject to flooding, whether identified on the Flood Insurance Rate Maps or not, to conform to the requirements of the Flood Damage Prevention Ordinance.
- 14.B.d - Based upon the Flood Insurance Rate Maps, provide notification to the owners of property within designated floodplains of the consequences of constructing within the floodplain.

Policy 17.B.4. Projects proposed within areas identified on the dam failure inundation maps designated by the Office of Emergency Services and evacuation plans on file with the County Office of Emergency Services shall not be approved if a project presents a direct threat to human life or structures. Projects should be modified to ensure public safety.

Implementation Programs:

- 17.B.g - Regularly update the Emergency Operations Plan for Tuolumne County, which addresses dam failures in the Flood Annex. In the event of a dam failure, the Emergency Operations Plan refers to the Emergency Action Plan of the owner agency of the dam. The County will notify and assist in evacuation along federally designated flood plains.

Goal 17.C. Manage floodplains for their natural resource value.

Policy 17.C.1. Minimize the risk from flood hazards through land use planning and the avoidance of incompatible structural development in floodplains.

Implementation Programs:

- 17.C.a - Utilize regulatory methods of flood control, such as designating identified floodplains and drainage easements as Open Space, where possible, rather than construction-related methods of flood control. Regulatory methods reduce the need for flood control projects, minimize losses in areas where flooding is inevitable, and attempt to notify those who own property in flood hazard areas of the risks and that they should assume responsibility for their actions.
- 14.C.b - Maintain stream carrying capacity by continuing to regulate new fill, grading, dredging, and other new development which may increase flood damage by increasing sedimentation in streams and watercourses, or by constricting water courses with structures for roads and driveways. Encourage owners of land and improvements within floodplains to maintain the stream carrying capacity by allowing thinning of dense vegetation, subject to approval of the Community Resources Agency.

Policy 17.C.2. Continue to require evaluation of potential flood hazards prior to approval of development projects and require on-site mitigation to minimize off-site flows.

Implementation Programs:

- 17.C.c - Proponents of new development shall submit accurate topographic and flow characteristics information and depiction of the 100-year floodplain boundaries under fully developed, unmitigated conditions.
- 14.C.d - Review policies and available data concerning development in floodplains to ensure lives and property are not at risk from future flood conditions.
- 14.C.e - Require new development to mitigate impacts on downstream drainages if new development results in increased peak flows due to project-generated stormwater runoff. Measures necessary to mitigate impacts will be attached to development entitlements issued by the County, which may include retention/detention facilities, permeable surfacing materials, greywater systems, and green roofs.

Policy 17.C.3. Strive to maintain natural conditions within the 100-year floodplain of rivers and streams in order to maintain stream capacity except under the following circumstances:

a. Where work is required to restore the stream's drainage characteristics and where such work is done in accordance with the Tuolumne County Water Quality Plan, County Flood Damage Prevention Ordinance, California Department of Fish and Wildlife regulations, and Clean Water Act provisions administered by the U.S. Army Corps of Engineers; or
b. When facilities for the treatment of development generated runoff can be located in the floodplain provided that there is minimal destruction of riparian vegetation, and such work is done in accordance with the County Flood Damage Prevention Ordinance and California Department of Fish and Wildlife regulations.

Implementation Programs:

- 17.C.f - Maintain essential public facilities, such as culverts and drainage facilities along County maintained roads, and eliminate logjams and other obstructions from bridges.

Tuolumne County Code

Chapter 13.08, On-Site Sewage Treatment and Disposal Code

This chapter describes requirements for septic tanks that would ensure soil conditions would adequately support such facilities. As part of the code requirements, any new disposal systems or modifications to an existing system require a permit from the County's Environmental Health Division, which would review the site and location of such systems and confirm that the installation of such a system at that location is feasible and would not result in significant impacts. In addition, this Chapter establishes minimum requirements for the protection of public health, welfare, and safety in the design, construction, maintenance, and use of sewage disposal systems and to protect surface and groundwater from contamination by inadequately treated sewage.

Chapter 13.20, Groundwater Management

This chapter focuses on preventing the export of groundwater supplies outside Tuolumne County. It is essential for the protection of the environment as well as the health, welfare, and safety of the residents of Tuolumne County in addition to land use planning and regulation, that groundwater resources within the County be protected from potential harm resulting from the extraction of groundwater for use on lands outside the basin from which the water is taken, particularly when those lands that lay outside the boundaries of the County. With exceptions, is unlawful for any person to extract groundwater underlying the County, directly or indirectly, for use outside of County boundaries, or to replace water transported outside County boundaries, without first obtaining a conditional use permit.

Chapter 15.24, Flood Damage Prevention

It is the purpose of this chapter to promote the public health, safety, and general welfare, and to minimize public and private losses due to flood conditions in specific areas by legally enforceable regulations applied uniformly throughout the County, to all publicly and privately owned land within flood prone or flood related erosion areas.

City of Stockton

City of Stockton 2040 General Plan

The City's 2018 Envision Stockton 2040 General Plan includes a Safety Element that addresses flooding. Relevant Safety Element goals and policies include the following.

Policy SAF-2.3. Protect the community from potential flood events.

Action SAF-2.3A. Coordinate with appropriate State, federal, and local flood control agencies to develop a flood protection plan for the levee systems protecting the city that:

- Identifies the levees protecting the city and the entities responsible for the operation and maintenance of the levees;

- Determines the flood levels in the waterways and the level of protection offered by the existing levees along the waterways;
- Identifies a long-term plan to upgrade the system as necessary to provide at least a 100-year level of flood protection to the city, and 200-year level of flood protection, where feasible;
- Encourages multi-purpose flood management projects that, where feasible, incorporate recreation, resource conservation, preservation of natural riparian habitat, and scenic values of the city's streams, creeks, and lakes; and
- Includes provisions for updates to reflect future State or federally mandated levels of flood protection.

Action SAF-2.3B. Collaborate with State and local flood management agencies and other interested parties to develop funding mechanisms to finance the local share of flood management responsibilities, and maintain cooperative working relationships with appropriate agencies to minimize flood hazards and improve safety.

Action SAF-2.3C. Require new public and private waterfront development to be oriented to waterways and provide setbacks and easements along levees and channels to provide space for levee widening, flood fighting, roadway and maintenance access, open space and trail amenities, and appropriate landscaping.

Action SAF-2.3D. Prepare and maintain a map of evacuation routes for major flood events.

Policy SAF-2.4. Minimize risks to the community from flooding through appropriate siting and protection of structures and occupants.

Action SAF-2.4A. Regulate new urban development in accordance with State requirements for 200-year level of flood protection and federal requirements for 100-year level of flood protection.

Action SAF-2.4B. Investigate and implement when feasible mitigation measures that offer 200-year level of flood protection for existing urban development in flood-prone areas.

Action SAF-2.4C. Preserve floodways and floodplains for non-urban uses to maintain existing flood carrying capacities, except when mitigated in conformance with the City's floodplain management program.

Action SAF-2.4D. Consider the best available flood hazard information and mapping from regional, State, and federal agencies to inform land use and public facilities investment decisions.

3.9.3 Thresholds of Significance

The significance criteria used to evaluate the project impacts to hydrology and water quality are based on Appendix G of the CEQA Guidelines. According to Appendix G of the CEQA Guidelines, a significant impact related to hydrology and water quality would occur if the project would:

- Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality;
- Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin;
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:
  - result in a substantial erosion or siltation on- or off-site;
  - substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite;
  - create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or
  - cause the proposed development, when combined with all other existing and anticipated development, to increase the water surface elevation of the base flood more than one foot at any point within the community;
- In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation; or
- Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.

3.9.4 Impact Analysis

3.9.4.1 Methodology

The proposed project would consist of three primary phases: feedstock acquisition, wood pellet production, and transport to market. The impact analyses below evaluate each of these primary phases as related to hydrology and water quality. The impact analysis evaluates potential project impacts during both construction and operation. The following analysis of impacts related to hydrology and water quality is based on publicly available information project-specific technical reports, and policies described above in Section 3.9.2, Regulatory Setting. Technical reports prepared for the project include those listed in the introduction to this EIR section.

3.9.4.2 Project Impacts

Impact HYD-1 The project may violate water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality.

Feedstock Acquisition

Sustainable Forest Management Projects

Soil Erosion

As discussed in detail in Section 3.6.4, Impact Analysis, Impact GEO-2, forest thinning activities could potentially result in sediment releases due to exposure of previously stabilized soils to rainfall/runoff and wind. Such activities include the removal of vegetation and disturbance of soil by equipment. Environmental factors that affect erosion include topographic, soil, and rainfall characteristics. Erosion and sedimentation affect water quality and interferes with photosynthesis; oxygen exchange; and the respiration, growth, and reproduction of aquatic species. According to the USGS National Hydrography Dataset, the Northern California Feedstock Area intersects 157 watersheds and 42,476 linear miles of streams, rivers, canals, and ditches (USGS 2023). Soils most susceptible to erosion are those high in coarse silt- and fine sand-sized particles (Balasubramanian 2017), particularly when organic matter content is low and soil structure is weak or nonexistent. Erosion can be substantially minimized by avoiding certain actions on highly erosive soils, choosing management activities appropriate for given slopes, and by managing the maintenance of soil cover (USDA Forest Service 2009).

The likelihood of erosion is greater when the vegetative cover is removed or reduced, the soil is otherwise disturbed, or when both of these conditions exist. Soil erosion by water is more aggressive on steep slopes than on shallow slopes (e.g., 10% gradient or less), because at lower slope gradients surface runoff cannot reach peak velocities necessary to erode the soil. In general, areas with less vegetative cover are more prone to soil erosion than heavily vegetated areas, because surface cover and additional soil structure from plant roots can reduce soil erosion potential. Soil erosion can also be caused by wind in areas with a combination of high winds, removed or disturbed vegetation, fine sandy or silty textures, and low organic matter content. The erosion rate of a particular soil in the absence of human activities is referred to as the natural (background) or geologic erosion rate. Soil erosion in excess of the natural erosion rate is called accelerated soil erosion and is usually caused by poorly implemented human activities such as timber harvesting, road construction, grading, and other land-disturbing activities (Robichaud et al. 2010).

Studies by the California Geological Survey indicate that areas with more abundant landslides result in excessive erosion and sedimentation of downstream drainages. This is particularly true for watersheds underlain by the Franciscan Formation, a widespread geologic formation in California characterized by abundant deep-seated landslides and earthflows. Long duration precipitation results in localized shallow failures, gully erosion, and erosion of the in-channel toes of these large unstable features, which in turn results in excessive sedimentation of water bodies (CGS 2002).

Roads and Erosion

As discussed in detail in Section 3.6.4, Impact Analysis, Impact GEO-2, roads are ubiquitous in the forest environment and typically have very low infiltration rates and, as a result, generate large amounts of surface runoff. Road surfaces are subjected to rain-splash, and the combination of rain-splash with large amounts of surface runoff results in surface erosion rates that are several orders of magnitude higher than the adjacent undisturbed forest. Research has consistently shown that roads, including tractor skid trails and log landings, have the greatest effect on erosion of all practices associated with forest management. Roads affect geomorphic processes by increasing mass wasting and surface erosion; altering stream channel morphology; extending stream channel networks by modifying surface flows; and causing interactions of water, sediment, and wood at road stream crossings. Although

other forest management activities usually occur on a larger proportion of the landscape, the erosion rates on roads are the dominant source of sediment in most managed forests. Road erosion rates generally increase with increased traffic, and heavy vehicles tend to cause more erosion than light vehicles. Higher use also is associated with more frequent maintenance operations, and grading increases the amount of available sediment and road erosion rates (Robichaud et al. 2010; USDA Forest Service 1980, 2012).

As set forth in Section 2.4, each GSNR Biomass Only Thinning Project could include construction of up to 1.0 mile of low-standard (i.e., unpaved roads) per project. The only in-stream disturbance of streams during project implementation would be at designated stream crossings to access treatment sites. In addition, existing unpaved roads would be improved and maintained as part of feedstock acquisition. Road construction and maintenance in hillside areas typically involves pushing sediments over the downslope side of the road (i.e., sidecast material), which can result in thick accumulation of sediments on the hillsides. These sediment accumulations would be subject to excessive erosion and siltation of down-slope water bodies during precipitation events. Mass wasting events could occur during periods of high intensity precipitation, resulting in substantial quantities of sediment in downstream water bodies. Increased sediment in downstream water bodies could contribute to increased sediment that would be in excess of USEPA TMDL requirements for sediment and turbidity.

Feedstock acquisition on both flat and hillside unpaved roads would result in heavy truck traffic, which could result in surface erosion rates that are several orders of magnitude higher than the adjacent undisturbed forest. As described above, research has consistently shown that roads have the greatest effect on erosion of all practices associated with forest management. Although other forest management activities usually occur on a larger proportion of the landscape, the erosion rates on roads are the dominant source of sediment in most managed forests. As a result, erosion from unpaved roads during feedstock acquisition could result in **potentially significant** erosion and siltation and downstream water bodies. However, PDFs (see Section 2.4) would minimize the potential for erosion during road construction, maintenance, and use. PDF-GEO-1 requires suspension of road use during wet winter weather, thus reducing the potential for soil erosion in saturated soils. PDF-GEO-2 requires implementation of erosion prevention and control measures in areas with slopes in excess of 50% (27 degrees). PDF-GEO-3 and PDF-GEO-4 require implementation of a SWPPP or equivalent document, which would reduce the potential for soil erosion. PDF-GEO-5 requires construction of drainage features in treatment areas, which will reduce erosion. And PDF-GEO-6 requires that a Registered Professional Forester or licensed geologist evaluate treatment areas with slopes greater than 50% for unstable soil areas (i.e., soil with moderate to high erosion potential). In addition, **MM-HYD-1** requires protection of water quality at stream crossings by minimization of the number of crossings; selection of crossings where the erosion potential is low; use of a temporary bridge, culvert, or log culvert to minimize siltation of the stream; using suitable drainage measures to disconnect the road from the waterbody; and removal and stabilization of the stream crossing prior to the winter rainy season. With implementation of PDF-GEO-1 through PDF-GEO-6 and mitigation measure **MM-HYD-1**, Protection of Existing Water Bodies, potential significant impacts would be reduced to less than significant levels.

Forest Thinning and Erosion

As discussed in detail in Section 3.6.4, Impact Analysis, Impact GEO-2, numerous studies have evaluated the effects of timber harvest on runoff, water quality, erosion, and sediment yields. The removal of forest cover, including tree canopy and other vegetation, decreases interception and transpiration, and in wetter areas, this generally increases annual water yields. No measurable increase in runoff can be expected from thinning operations that remove less than 15% of the forest cover or in areas with less than 18 inches of annual precipitation. Since evapotranspiration rapidly recovers with vegetative regrowth in partially thinned areas, any increase in runoff due to thinning operations is likely to persist for no more than 5 to 10 years. The timing of the increase in runoff due to forest harvest is

important because of the potential impact on water supplies, sediment transport capacity, bank erosion, and aquatic ecosystems. If forest harvest only increases low or moderate flows, one would expect little or no change in channel erosion or sediment yields. An increase in larger flows provides a mechanism for increasing annual sediment yields. Because the climate in northern California is dry in summer and rainy during the winter, the largest increase in runoff occurs in the fall to early winter. In snow-dominated environments, nearly all of the increase in runoff will occur in early spring (Robichaud et al. 2010). Depending on the timing of forest thinning in any given area, project feedstock acquisition would result in **potentially significant** erosion related impacts.

However, PDFs (see Section 2.4) would minimize the potential for erosion during feedstock acquisition. PDF-GEO-1 requires suspension of mechanical treatments during wet winter weather, thus reducing the potential for soil erosion in saturated soils. PDF-GEO-2 requires implementation of erosion prevention and control measures in areas with slopes in excess of 50% (27 degrees). PDF-GEO-3 and PDF-GEO-4 require implementation of a SWPPP or equivalent document, which would reduce the potential for soil erosion during feedstock acquisition. PDF-GEO-5 requires construction of drainage features in treatment areas, which will reduce erosion. And PDF-GEO-6 requires that a Registered Professional Forester, California Professional Geologist, or California Geotechnical Engineer evaluate treatment areas with slopes greater than 50% for unstable soil areas (i.e., soil with moderate to high erosion potential). In addition, **MM-HYD-1** requires protection of water quality at stream crossings by minimization of the number of crossings; selection of crossings where the erosion potential is low; use of a temporary bridge, culvert, or log culvert to minimize siltation of the stream; using suitable drainage measures to disconnect the road from the waterbody; and removal and stabilization of the stream crossing prior to the winter rainy season. With implementation of PDF-GEO-1 through PDF-GEO-6 and mitigation measure **MM-HYD-1**, Protection of Existing Water Bodies, erosion related impacts during forest thinning would be reduced to less than significant levels.

Tree Felling and Erosion

As discussed in detail in Section 3.6.4, Impact Analysis, Impact GEO-2, the use of machines for tree felling is a potential source of erosion. Non-commercial thinning to reduce fuel loads is being done on an increasingly large scale using masticating machines. These machines are usually large, rubber-tired or tracked skidders with a mulching or wood grinding attachment such as a Hydro-Ax or a Bull-Hog. Some machines are designed to masticate standing trees, while others fell the trees before masticating the material. Like mechanized fellers, the movement of masticating machines can disturb or compact the soil and thereby increase the potential for erosion. The shredded wood that remains after these operations may increase the amount of ground cover and reduce the erosion potential (Robichaud et al. 2010). Depending on the method of tree felling, project feedstock acquisition would result in **potentially significant** erosion related impacts.

However, PDFs (see Section 2.4) would minimize the potential for erosion during tree felling. PDF-GEO-1 requires suspension of mechanical treatments during wet winter weather, thus reducing the potential for soil erosion in saturated soils. PDF-GEO-2 requires implementation of erosion prevention and control measures in areas with slopes in excess of 50% (27 degrees). PDF-GEO-3 and PDF-GEO-4 require implementation of a SWPPP or equivalent document, which would reduce the potential for soil erosion during tree felling operations. PDF-GEO-5 requires construction of drainage features in treatment areas, which will reduce erosion. And PDF-GEO-6 requires that a Registered Professional Forester, California Professional Geologist, or California Geotechnical Engineer evaluate treatment areas with slopes greater than 50% for unstable soil areas (i.e., soil with moderate to high erosion potential). In addition, **MM-HYD-1** requires protection of water quality at stream crossings by minimization of the number of crossings; selection of crossings where the erosion potential is low; use of a temporary bridge, culvert, or log culvert to minimize siltation of the stream; using suitable drainage measures to disconnect the road from the waterbody; and removal and stabilization of the stream crossing prior to the winter rainy season. With

implementation of PDF-GEO-1 through PDF-GEO-6 and mitigation measure **MM-HYD-1**, Protection of Existing Water Bodies**,** erosion related impacts during forest thinning would be reduced to less than significant levels.

Yarding and Erosion

As discussed in detail in Section 3.6.4, Impact Analysis, Impact GEO-2, the amount of disturbed area and bare soil due to thinning will depend largely on the amount and type of yarding activities. The use of ground-based logging systems can result in increased soil disturbance by displacing soil cover through the mechanical action of machine travel. Commercial thinning operations which utilized tractors and rubber-tired skidders could result in 34% disturbance of a given activity area. Tractor logging of clearcuts can result in up to 43% areal extent of disturbance. But when skid trail layout is considered, disturbance could be as low as 4% to 11% depending on skid trail spacing. Soil disturbance monitoring on the Klamath National Forest of conventional tractor logging with rubber-tired skidders showed that an average of 11.5% of a particular unit was in main skid trails and landings after harvest. Commercial thinning requires yarding methods appropriate for smaller trees, such as small skylines with light cables and short towers, small crawler tractors, rubber-tired skidders, horses, tractor-mounted winches, or specialty yarding machines. The use of skyline logging systems would be expected to cause smaller amounts of soil displacement than ground-based logging systems because the primary disturbance lies in the skyline yarding corridors where the butt end of logs drag over the soil surface (USDA Forest Service 2009, Robichaud et al. 2010). Depending on the type of yarding used, project feedstock acquisition would result in **potentially significant** erosion related impacts.

However, PDFs (see Section 2.4) would minimize the potential for erosion during yarding. PDF-GEO-1 requires suspension of mechanical treatments during wet winter weather, thus reducing the potential for soil erosion in saturated soils. PDF-GEO-2 requires implementation of erosion prevention and control measures in areas with slopes in excess of 50% (27 degrees). PDF-GEO-3 and PDF-GEO-4 require implementation of a SWPPP or equivalent document, which would reduce the potential for soil erosion during yarding operations. PDF-GEO-5 requires construction of drainage features in treatment areas, which will reduce erosion. And PDF-GEO-6 requires that a Registered Professional Forester California Professional Geologist, or California Geotechnical Engineer evaluate treatment areas with slopes greater than 50% for unstable soil areas (i.e., soil with moderate to high erosion potential). In addition, **MM-HYD-1** requires protection of water quality at stream crossings by minimization of the number of crossings; selection of crossings where the erosion potential is low; use of a temporary bridge, culvert, or log culvert to minimize siltation of the stream; using suitable drainage measures to disconnect the road from the waterbody; and removal and stabilization of the stream crossing prior to the winter rainy season. With implementation of PDF-GEO-1 through PDF-GEO-6 and mitigation measure **MM-HYD-1**, Protection of Existing Water Bodies, erosion related impacts during forest thinning would be reduced to less than significant levels.

Hazardous Substances Spills

Forest thinning operations would include equipment and vehicle fueling and maintenance, which typically includes use of gasoline, diesel fuel, oils/lubricants, hydraulic fluids, antifreeze, coolants, solvents/cleaners, and degreasers. Incidental spills of these substances could adversely affect the water quality of stormwater and nearby surface water bodies, including streams, rivers, and reservoirs. Pollutants can also attach to sediment and be transported downstream, which could contribute to degradation of water quality. In addition, in the event that forest thinning operations occurred on legacy soil contamination sites, soil disturbance could result in erosion of contaminated soils and siltation of downstream water bodies with entrained contaminated soils. Impacts to surface waters could also adversely impact the underlying shallow groundwater.

As discussed in Section 3.9.2.2, Waiver of Waste Discharge Requirements for Discharges Related to Timber Harvesting Activities have been established for the North Coast RWQCB, Central Valley RWQCB, and Lahontan RWQCB Regions. The waivers cover discharges from nonpoint source activities that have the potential to discharge wastes that may affect waters of the state. Most of the potential water quality impacts would be associated with erosion and sediment delivery and/or alterations to riparian systems that may reduce shade and affect water temperatures, including timber harvesting, road use and maintenance, grazing, recreation, vegetation management, vegetation restoration, fire suppression, and fire salvage. Sediment and temperature TMDLs have been developed for the majority of the impaired waters in these regions.

The conditions in the Waiver of Waste Discharge Requirements provide reasonable assurance that sediment, temperature, and nutrient impairments would be restored by requiring (1) protection, maintenance, and enhancement of riparian conditions and shade; (2) inventories and remediation of legacy sediment sites; (3) the application of BMPs and on-the-ground prescriptions to avoid excess sediment discharges and to improve shade; and 4) periodic review, monitoring, and reassessment. These waivers apply to vegetation management projects that range from homeowner defensible space operations to local Fire Protection District community protection plans, to large wildland/urban interface projects proposed by the California Department of Parks and Recreation, the Bureau of Land Management, and the Forest Service. Commercial timber harvest conducted by small landowners, industrial timber companies, and the Forest Service are also covered under the waiver.

Although the Waiver of Waste Discharge Requirements includes general requirements designed to prevent adverse impacts to water quality, in the absence of project specific measures to prevent such adverse impacts, impacts would be **potentially significant**. However, with implementation of PDFs, including PDF-HAZ-1, Equipment Maintenance, and PDF-HYDRO-3, Watercourse and Lake Protection Zones, and mitigation measures **MM-HYD-1**, Protection of Existing Water Bodies, **MM-HYD-2**, Spill Prevention and Response Plan, **MM-HYD-3**, Protection of Existing Drainage Systems, and **MM-HYD-4**, Avoidance of Legacy Soil Contamination, water quality related impacts during forest thinning would be reduced to less than significant levels.

Wood Pellet Production

Lassen Facility

Construction

The production facilities would be located on a parcel approximately 65 acres in size and the log decking (storage) would occur on approximately 51 acres of the 95-acre parcel immediately south of the production site. The production facilities site currently includes railroad siding, a cement deck, internal roadways, a well pump house, and water tower. The majority of the undeveloped areas of the project site consist of non-native grassland with a mix of annual grasses and forbs. Mowed agricultural fields are present in the northern portion of the project site.

Construction activities would include demolition of the railroad siding, cement deck, and internal roadways, followed by importing 5,220 cubic yards of fill soil to raise the proposed production facilities above the 100-year floodplain. The total area of disturbance would be approximately 192.52 acres. As discussed in Section 3.6, Geology and Soils, erosion and sedimentation affects water quality and interferes with photosynthesis; oxygen exchange; and the respiration, growth, and reproduction of aquatic species. Additionally, other pollutants, such as nutrients, trace metals, and hydrocarbons, can attach to sediment and be transported downstream, which could contribute to degradation of water quality. Non-sediment-related pollutants that are also of concern during construction relate to construction materials and non-stormwater flows and include construction materials (e.g., paint); chemicals,

liquid products, and petroleum products used in construction or the maintenance of heavy equipment; and concrete-related pollutants.

Because the proposed project is greater than 1 acre in size, construction impacts would be minimized through compliance with the SWRCB CGP, which is the NPDES General Permit for Storm Water Associated with Construction Activities (Construction Stormwater General Permit Order 2022-0057-DWQ). The applicant would be required to submit a Notice of Intent to the SWRCB in order to obtain approval to complete construction activities under the CGP. This permit requires the discharger to perform a risk assessment for the proposed development (with differing requirements based upon the determined level) and to prepare and implement a SWPPP. A Construction Site Monitoring Program that identifies monitoring and sampling requirements during construction is a required component of the SWPPP. The SWPPP is also required to include construction-phase BMPs to be implemented. Typical BMPs that would be implemented during grading and construction of the proposed project that would minimize degradation of surface water quality include the following.

- Diverting off-site runoff away from the construction site.
- Vegetating landscaped/vegetated swale areas as soon as feasible following grading activities.
- Placing perimeter straw wattles to prevent off-site transport of sediment.
- Using drop inlet protection (filters and sandbags or straw wattles), with sandbag check dams within paved areas.
- Regular watering of exposed soils to control dust during demolition and construction.
- Implementing specifications for demolition/construction waste handling and disposal.
- Using contained equipment wash-out and vehicle maintenance areas.
- Maintaining erosion and sedimentation control measures throughout the construction period.
- Stabilizing construction entrances to avoid trucks from imprinting soil and debris onto the project site and adjoining roadways.
- Training, including for subcontractors, on general site housekeeping.
- Managing the following types of materials, products, and wastes: solid, liquid, sanitary, concrete, hazardous, and equipment-related wastes. Management measures include covered storage and secondary containment for material storage areas, secondary containment for portable toilets, covered dumpsters, dedicated and lined concrete washout/waste areas, proper application of chemicals, and proper disposal of all wastes.
- Incorporating a spill response and prevention program, including conspicuously located spill response materials at all times on site.
- Incorporating good housekeeping practices to reduce or limit pollutants at their source before they are exposed to stormwater, including such measures as water conservation practices, vehicle and equipment cleaning and fueling practices, illicit connection/discharge elimination, and concrete curing and finishing.

Through implementation of the requirements outlined in the CGP, construction-related impacts to surface water and groundwater would be minimized and impacts would be **less than significant**.

Operations

The proposed project would include construction of a new wood pellet processing facility, including a woodyard, green processing area, drying area, pellet mill, project storage, and loadout area. New onsite paved roads for truck access and mill personnel access would be added, including a new road for truck access from Babcock Road at the

southwest corner of the site. A new rail spur connecting to the adjacent BNSF Railway line would be added for finished product load out as well as additional rail siding tracks on-site for the storage of full and empty railcars. Other improvements would include new truck scales and a graded area for overflow raw material storage.

Wastewater generated as part of wood pellet production would be recycled to the dryer system. However, each of the project components described above are potential sources of stormwater pollution as a result of incidental spills of petroleum products and hazardous substances from trucks, processing equipment, and railcars. Stormwater runoff would be channeled through a stormwater drainage system, which in turn would flow into an on-site detention basin. However, no water quality Low Impact Development (LID) features were included in the original project design. Runoff from the site exits through a culvert beneath the railroad in the southeast portion of the site. Numerous small streams, sloughs, and marshy areas are present east of the project site. The Pit River is approximately 2.9 miles east of the site; Bull Run Slough is approximately 0.7 mile to the east; and a tributary creek to Bull Run Slough is approximately 500 feet to the east, at the closest point (Figure 3.9-3, Lassen Surface Water Features). In the absence of water quality LID features, stormwater runoff could result in adverse impacts to these downstream water bodies. Due to shallow groundwater, the proposed stormwater detention basin is not a feasible alternative for stormwater infiltration into the subsurface. In the absence of proposed LID features, water quality impacts would be potentially significant. However, with implementation of **MM-HYD-6**, Lassen Low Impact Development Features, water quality related impacts during proposed wood pellet production would be reduced to less than significant levels.

Sanitary sewers are not available for wastewater disposal; therefore, a septic system would be required during project operations. Based on percolation testing at two on-site locations, the site may not be suitable for infiltration as the infiltration at the site will be very low to non-existent. In addition, the shallow depth of existing groundwater for the site is a concern with respect to the distance between the bottom of the system and groundwater. The geotechnical report recommends that the drainage system be designed by an experienced and qualified engineer familiar with the applicable regulatory agencies requirements and an appropriate factor of safety should be included in the overall design (Appendix E2 – Supplemental Geotechnical Investigation).

As a result, use of a septic system may result in a **potentially significant** impact to groundwater quality.

An engineered septic system, which is designed to treat the effluent prior to discharge to the subsurface, would prevent potential adverse bacterial impacts to groundwater beneath the site. The requirement for such a system is described in mitigation measure **MM-GEO-1.**

Tuolumne Facility

The proposed project would include construction of a new wood pellet processing facility, including a woodyard, green processing area, drying area, pellet mill, project storage and loadout area. New roads for truck access and mill personnel access would be added, including a new truck access from La Grange Road at the southeast corner of the site. A new rail spur connecting to the adjacent Sierra Northern Railway line would be added for finished product loadout. Other improvements would include repurposing existing truck scales and a graded area for overflow raw material storage.

Construction related water quality impacts would be the same as that described above for the Lassen Facility. Through implementation of the requirements outlined in the CGP, construction-related impacts to surface water and groundwater would be minimized and impacts would be **less than significant**.

Operation related water quality impacts would be similar as that described above for the Lassen Facility, In the absence of proposed LID features, water quality impacts would be potentially significant. However, with implementation of **MM-HYD-8**, Tuolumne Low Impact Development Features, water quality related impacts during proposed wood pellet production would be reduced to less than significant levels.

Sanitary sewers are not available for wastewater disposal; therefore, a septic system would be required during project operations. A geotechnical investigation completed at the site (Appendix E3 – Tuolumne Geotechnical Report) included percolation tests at two locations on-site. In addition, a test pit was excavated near the percolation test locations to determine the depth of weathered bedrock. Resistant bedrock was encountered at a depth of about 3.5 feet below ground surface, overlain by low plastic clay (residual soil). Based on the percolation testing, which were completed at depths of 1 and 2 feet, respectively, the percolation rate was 150 and 300 minutes per inch, which is very slow.

Based on Section 13.08.220 of the Tuolumne County On-Site Sewage Treatment and Disposal Code (Chapter 13.08), "there shall be a minimum of five feet of permeable soil below the bottom of a leach trench or bed" with permeable soil defined as soil with a percolation rate not slower than 120 minutes per inch for standard leach trenches or beds. With the shallow bedrock conditions and slow percolation test results, a conventional absorption trench, bed or pit sewage treatment system will not meet Tuolumne County criteria. The geotechnical report recommended that a mound system or a system that incorporates pre-treatment prior to evaporation or ground disposal, be constructed.

As a result, use of a standard septic tank system may result in a **potentially significant** impact to groundwater quality.

An engineered septic tank system, which is designed to treat the effluent prior to discharge to the subsurface, would prevent potential adverse bacterial impacts to groundwater beneath the site. The requirement for such a system is described in mitigation measure **MM-GEO-1**.

Transport to Market

Port of Stockton Facility

The proposed project would include a new wood pellet storage and loadout facility, including a rail unloading system, two storage domes, and a ship loadout system. A new road for truck access and facility personnel access would be added on site. A new rail spur connecting to an existing nearby rail line operated by CCT would be added for pellet receipt. New rail scales and a truck scale would be installed for weighing pellets received.

Construction and operation related water quality impacts would be the same as that described above for the Lassen Facility. Shallow groundwater is similarly present beneath the Port facility. In the absence of proposed LID features, water quality impacts would be potentially significant. However, with implementation of **MM-HYD-10**, Stockton Low Impact Development Features, water quality related impacts during proposed wood pellet storage and loading would be reduced to less than significant levels.

Impact HYD-2 The project would not substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin.

Feedstock Acquisition

Sustainable Forest Management Projects

Groundwater Supplies

The water demand for feedstock acquisition would primarily be related to dust suppression along unpaved roads. Water would secured from various sources, including local water purveyors and local water wells. The demand would be relatively minor and spread out throughout the Working Area. As a result, feedstock acquisition would not substantially decrease groundwater supplies such that the project may impede sustainable groundwater management of the basin. Impacts would be **less than significant**.

Groundwater Recharge

Tracked and wheeled equipment use during forest thinning operations could result in soil compaction, which in turn could decrease infiltration of precipitation and decrease groundwater recharge, resulting in **potentially significant impacts**. However, with implementation of **MM-HYD-5**, Minimize Soil Compaction, groundwater recharge related impacts during forest thinning would be reduced to less than significant levels.

Wood Pellet Production

Lassen Facility

Groundwater Supply

Project Water Demand

The Project is anticipated to require approximately 20 AF of water for construction over a one-year period and approximately 47 AFY for operation. The operational water demand of 47 AFY is anticipated to remain constant over the life of the project. This estimate is based on the volume of water required to produce 700,000 metric tons of pellets per year (15,159,017 gallons per year), plus the sanitary and drinking water demands of 60 employees at 10 gallons per employee per shift (156,000 gallons per year). This equates to an amortized pumping rate of approximately 29 GPM, assuming the well is pumped 24 hours per day seven days per week, or approximately 123 GPM, assuming the well is pumped eight hours per day five days per week. Based on these estimates, the total project water demand is estimated to be approximately 913 AF over a 20-year period, or 47 AFY (Appendix G2).

Onsite Well Evaluation

A 24-hour constant rate pumping test was performed by Dudek at Well 1 in March 2024. Well 1 was pumped at an average rate of 180 GPM. The static groundwater level measured in Well 1 before the constant rate test was approximately 47.00 feet bgs and at the end of the test was 74.15 feet bgs for a total groundwater level drawdown of 27.15 feet. Approximately 24 hours after the pump was shut off, the recovered water level in Well 1 was measured at 48.30 feet bgs. There was 1.30 feet of residual drawdown and 95.2% recovery to the pre-test static water level 24 hours after shutdown. An analysis of the pump test data indicated the well would need to be pumped continuously for 59 days at the tested rate of 180 GPM to achieve the total annual water demand of 46.85 AFY. The water level would drop to approximately 76.20 feet bgs (approximate drawdown of 29.20 feet) after 59 days of continuous pumping at 180 GPM and approximately 77.00 feet bgs (approximate drawdown of 30.00 feet) after

1 year of continuous pumping at 180 GPM. Based on the results of the 24-hour pumping test conducted at Well 1, the well has sufficient capacity to satisfy the estimated project demand of 47 AFY (Appendix G2; Appendix G3).

Basin-Wide Groundwater Supply

As discussed in Section 3.9.1, the Big Valley Groundwater Basin has been classified by the DWR as a medium priority basin, with respect to SGMA. Groundwater provides 65% of water supply in the basin. A GSP was adopted by the Modoc and Lassen County GSAs and submitted to DWR in December 2021; however, the GSP was marked as incomplete in October 2023. The basin GSAs were instructed to resubmit the revised GSP for evaluation no later than April 23, 2024 (Appendix G2). As of October 1, 2024, a revised GSP has been submitted to DWR but has not yet been approved (California DWR 2024).

Typical 20-year water supply and demand projections are lacking due to the project existing outside of a public water system; however, the GSP prepared for the Big Valley Groundwater Basin provides long-term forecasting of inflows and outflows within the Basin. A spreadsheet-based water budget was developed for the basin as part of the GSP development. The water budget evaluated the average projected total basin water budget for 2019 to 2068 for both the future baseline condition and the future condition when factoring in climate change. Both projections use climate data from 1962 to 2011 as an estimate of future conditions (Appendix G2).

The future baseline projections with climate change result in an average overdraft of 1,000 AF less than baseline conditions, due to climate models forecasting weather in the basin being warmer with increased precipitation and more precipitation falling in the form of rain than snow. The analysis predicts that the basin will be nearly in balance through 2068, with overdraft of about 1,000 to 2,000 AFY. In addition, groundwater levels in Well 38N07E32A002M, located near the project site, have remained stable since the beginning of the measurement record in 1959, indicating a stable groundwater supply (Appendix G2).

Implementation of the Big Valley Groundwater Basin GSP will ensure that the groundwater basin is managed sustainably for existing and future beneficial uses of the groundwater supply. Based on the onsite pump test and basin-wide water budget analysis, local groundwater supplies are available during normal, single dry, and multiple dry years during a 20-year projection and will meet the projected water demand associated with the proposed project, in addition to existing and planned future uses of the groundwater supply (Appendix G2). As a result, the project would not substantially decrease groundwater supplies such that the project may impede sustainable groundwater management of the basin. Impacts would be **less than significant**.

Groundwater Recharge

Currently, the project site is predominantly unpaved and pervious to rainfall infiltration. Approximately 5,220 cubic yards of fill soil would be imported to the site to raise the grade above the 100-year flood plain. A portion, but not all, of the production facility parcel within the project site would be paved for construction and operation of the wood pellet production facility, resulting in locally denied groundwater recharge. However, the project site is located in a mostly rural area that is predominantly unpaved and pervious to rainfall infiltration. As a result, localized denied recharge as a result of construction of the proposed pellet production facility would not interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin. Impacts would be **less than significant**.

Tuolumne Facility

Groundwater Supply

Project Water Demand

The project is anticipated to require approximately 10 AF of water for construction, over a 1-year period, and approximately 25 AFY for operations. The operational water demand of 25 AFY is anticipated to remain constant over the life of the project. This estimate is based on the volume of water required to produce 300,000 metric tons of pellets per year (8,033,731 gallons per year), plus the sanitary and drinking water demands of 51 employees at 10 gallons per employee per shift (132,600 gallons per year), as well as a one-time demand to fill a 180,000-gallon water storage tank for fire supply. This equates to an amortized pumping rate of approximately 16 GPM, assuming the well is pumped 24 hours per day seven days per week, or approximately 65 GPM, assuming the well is pumped eight hours per day five days per week. Based on these estimates, the total project water demand is estimated to be 485 AF over a 20-year period, or 24.25 AFY. SB 610 requires assessment of the availability of the identified water supply over a 20-year projection (Appendix G4).

Onsite Well Evaluation

During an onsite pump test in February 2024 (Appendix G5), Well 1 was pumped at a constant rate of 137 GPM for approximately 24 hours. Depth to water in Well 1 after 24 hours of pumping was measured at 85.5 feet bgs (equivalent to 61.8 feet of drawdown). Approximately 24 hours after the pump was shut off, the recovered water level in Well 1 was measured at 26.7 feet bgs. There was 3 feet of residual drawdown and 88.8% recovery to the pre-test static water level 24 hours after shutdown. Drawdown was projected over 42 days, which represents the number of days the well would need to be pumped continuously at the tested rate of 137 GPM to achieve the total annual water demand of 24.6 AFY. The drawdown projection estimates that the depth to water would drop to approximately 97 feet bgs (approximate drawdown of 73.3 feet) after 42 days of continuous pumping at 137 GPM. In addition, drawdown estimates projected over a 1 year period resulted in drawdown to approximately 103.5 feet bgs (approximate drawdown of 79.8 feet) after 1 year of continuous pumping at 137 GPM. The pump test also indicated Wells 1 and 2 are hydraulically connected. In summary, groundwater level projections using the 24-hour constant rate data show that there is available water column in the well to produce the annual water demand of 24.65 AFY.

Basin-Wide Groundwater Supply

As discussed in Section 3.9.1, the Tuolumne project site does not overlie a groundwater basin, as designated by DWR, and is therefore not regulated under SGMA. However, because of the presence of other groundwater users in the project contributing watershed, their associated pumping demands, and the fact that groundwater recharge can vary from year-to-year due to climatic variability, an analysis of the long-term availability of groundwater resources was completed. The project site contributing watershed area, which is the upslope area that contributes recharge to the project site, includes the southeastern part of the Green Spring Run watershed. Green Spring Run flows near the southwestern boundary of the Project site and is a perennial tributary of Tulloch Reservoir and the Stanislaus River. The contributing watershed area is approximately 1,802 acres (Appendix G4).

The groundwater in storage underlying the Tuolumne project site contributing watershed was calculated using conservative estimates of the saturated thickness and specific yield of the fractured rock aquifer. The saturated thickness of the fractured rock was assumed to be uniform across the 1,802-acre contributing watershed at

500 feet (approximate average depth of wells drilled in project vicinity). Specific yield values for fractured rock generally range from approximately 0.1% to 8% depending on rock type, degree of weathering, and other factors. For this analysis, the specific yield of the fractured rock was conservatively assumed to be 0.25%. By multiplying the acreage of the contributing watershed by the assumed saturated thickness and specific yield, the total groundwater in storage in the Tuolumne project site contributing watershed is estimated to be 2,253 AF (Appendix G4).

Recharge from Precipitation

The percentage of precipitation that becomes recharge is spatially and temporally variable, depending on the geologic units, land use, and other factors, and can range from less than 10% to as much as 90%. For this study, the groundwater recharge rate was assumed to be 10% of the mean annual precipitation as measured at the Sonora weather station (station no. 048353). The average annual precipitation at the Sonora weather station for the period from 1903 to 2024 is approximately 31 inches. Assuming a conservative recharge rate of 10%, the average annual recharge within the 1,802-acre contributing watershed is approximately 466 AFY. This estimate does not take into account underflow, recharge from septic systems, and other potential sources of aquifer recharge (Appendix G4).

Basin-Wide Groundwater Demand

Groundwater demand within the contributing watershed was estimated by identifying all existing groundwater users in the contributing watershed using aerial imagery and well completion reports. Based on available information, there are eight domestic groundwater users, one agricultural user, and one industrial user. The agricultural user appears to be a turkey ranch and the industrial user is a sawmill.

One residential dwelling typically consumes approximately 0.5 AFY. Therefore, the eight domestic groundwater users are estimated to require a total of 4 AFY. The sawmill and turkey ranch water use is more difficult to estimate. For this analysis, the sawmill was assumed to require 25 AFY, the same amount of water as the proposed project, and the turkey ranch was assumed to require 100 AFY, based on Dudek's professional judgement from working on agricultural water use projects throughout California. Thus, the combined total groundwater demand within the contributing watershed, including the proposed project, is estimated to be 154 AFY. This estimate does not take into account groundwater discharge to streams, evapotranspiration by phreatophytes, and other potential sources of aquifer discharge (Appendix G4).

Projected Groundwater Supplies

Based on precipitation values from the most recent 20-year period, groundwater recharge exceeds groundwater extraction in all years except years where the total annual precipitation is less than 33% of the average, or approximately 10.26 inches, such as in 2013. It should be noted that this is a simplified groundwater budget that does not take into account all budget components such as underflow, recharge from septic systems, groundwater discharge to streams, evapotranspiration by phreatophytes, etc. and actual conditions may vary. However, considering that groundwater levels in the Tuolumne project vicinity have generally remained stable over the past few decades, the groundwater budget analysis presents a reasonable demonstration of sufficient groundwater availability for the project over a 20-year period (Appendix G4).

Based on the results of the groundwater budget analysis for the Tuolumne project site contributing watershed, there is sufficient groundwater recharge and groundwater in storage to satisfy the project water demand and the

demands of all other groundwater users in the watershed during normal, single dry, and multiple dry years over a 20-year projection. As a result, the project would not substantially decrease groundwater supplies such that the project may impede sustainable groundwater management of the basin. Impacts would be **less than significant**.

Groundwater Recharge

Impacts would be similar to those described for the Lassen facility. Localized denied recharge as a result of construction of the proposed wood pellet production facility would not interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin. Impacts would be **less than significant**.

Transport to Market

Port of Stockton Facility

Groundwater Supplies

The City of Stockton treats and distributes water from the following sources:

- Surface water diverted from the Sacramento San Joaquin Delta;
- Surface water from the Mokelumne River purchased from Woodbridge Irrigation District;
- Local groundwater from wells owned and operated by the City;
- Treated water purchased from the Stockton East Water District (SEWD), imported from the New Melones (Stanislaus River) and New Hogan (Calaveras River) Reservoirs (City of Stockton 2024).

As discussed in Section 3.9.1, Environmental Setting, the San Joaquin Valley - Tracy Groundwater Basin has a high to medium priority with regard to potential overdraft and is regulated by the County of San Joaquin GSA – Tracy, under SGMA. As a result, in 2029, the County of San Joaquin GSA – Tracy completed the Eastern San Joaquin Groundwater Subbasin GSP, which shows that groundwater elevations have declined since the 1950s. The GSP outlined the need to reduce overdraft conditions and identified 23 projects for potential development, along with management actions, that either replace groundwater use or supplement groundwater supplies to meet current and future water demands. The list of 23 potential projects included in the GSP represent a variety of project types, including direct and in-lieu recharge, intra-basin water transfers, demand conservation, water recycling, and stormwater reuse to be undertaken by the member agencies. The GSP determined an estimated pumping offset and/or recharge need of 78,000 afy subbasin-wide to achieve sustainability. To improve water supply reliability, several groundwater wells will be rehabilitated, a new well installed, and recommended studies include a comprehensive groundwater supply study and a groundwater storage bank/recharge basin study (City of Stockton 2021). Based on the 2020 Urban Water Management Plan, Stockton District, purchased water and groundwater supplies are expected to be able to serve water demands in the District through 2045 (Cal Water 2021).

The proposed project would include a new wood pellet storage and loadout facility, including a rail unloading system, two storage domes, and a ship loadout system. Water demand would primarily be related to potable water supplies for employees and dust suppression. Based on the diversified water supplies for project operations, in combination with oversight of groundwater withdrawals by the County of San Joaquin GSA – Tracy, project related Port operations would not substantially decrease groundwater supplies such that the project may impede sustainable groundwater management of the basin. Impacts would be **less than significant**.

Groundwater Recharge

Approximately 20% of the Port site is paved, with the remainder unpaved and pervious (Figure 1-8, Project Location: Port Rough Terminal, Port of Stockton). Paving of the site for the project would preclude infiltration of precipitation, resulting in a lack of groundwater recharge. As discussed in Section 3.9.1, Environmental Setting, the project area is not identified as a substantial groundwater recharge area. Because the Rough and Ready Island is surrounded by water bodies, groundwater levels are extremely shallow and on average, are at mean sea level during most of the year. This pumping creates a gradient in which groundwater is drawn towards the interior of the island, which increases during high flow conditions in winter and spring. Based on this continuous flow of shallow groundwater from the San Joaquin River to the east, the Burns Cutoff to the west and south, and the SDWC to the north, denied recharge associated with paving of the project site would result in negligible impacts with respect to groundwater supplies. As a result, the project would not interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin. Impacts would be **less than significant**.

Impact HYD-3 The project may substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:

- result in a substantial erosion or siltation on- or off-site;
- substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite;
- create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or
- cause the proposed development, when combined with all other existing and anticipated development, to increase the water surface elevation of the base flood more than one foot at any point within the community.

Feedstock Acquisition

Sustainable Forest Management Projects

Increased Runoff – Soil Compaction

As discussed for Impact HYD-2, tracked and wheeled equipment use during forest thinning operations could result in soil compaction, which in turn could decrease infiltration of precipitation and increase stormwater runoff, resulting in excessive erosion or siltation of nearby streams, rivers, lakes, or reservoirs; off-site flooding; and exceedance of the capacity of adjacent or downstream drainage systems. The risk soil compaction and accelerated runoff from mechanical fuel reduction treatments varies depending on factors such as methods of treatment, types of equipment used, amounts and types of materials being yarded or piled, soil types, soil moisture conditions, slope steepness, and history of past disturbance. The primary potential sources for erosion are skid trails, landings, and treatment areas near watercourses. Potential impacts related to soil compaction and increased runoff would be **potentially significant**. However, with implementation of **MM-HYD-5**, Minimize Soil Compaction, increase runoff related impacts during forest thinning would be reduced to less than significant levels.

Increased Runoff – Road Construction

As discussed in detail Impact GEO-1, roads are ubiquitous in the forest environment and typically have very low infiltration rates and, as a result, generate large amounts of surface runoff. As set forth in Section 2.4, each GSNR Biomass Only Thinning Project could include construction of up to 1.0 mile of low-standard (i.e., unpaved roads) per project. The only in-stream disturbance of streams during project implementation would be at designated stream crossings to access treatment sites. In addition, existing unpaved roads would be improved and maintained as part of feedstock acquisition. New road construction completed during forest thinning operations would be a primary source of increased stormwater runoff, which in turn could result in excessive erosion or siltation of nearby streams, rivers, lakes, or reservoirs; off-site flooding; and exceedance of the capacity of adjacent or downstream drainage systems. Downstream sedimentation results from improper road location, inadequate road drainage, lack of energy dissipators at culvert outlets, road use during wet weather, and poor culvert alignment (USDA Forest Service 1991).

Roads affect geomorphic processes by increasing mass wasting and surface erosion; altering stream channel morphology; extending stream channel networks by modifying surface flows; and causing interactions of water, sediment, and wood at road stream crossings. Climate, geology, road age, construction practices, and storm history all significantly influence the degree of these effects. Many researchers have shown that roads can deliver more sediment to streams than any other human disturbance in forested land. In areas where mass wasting is common, forest roads can be especially problematic (USDA Forest Service 2004a).

Many studies have shown that surface erosion from roads can be reduced through improved design, construction, and maintenance practices. Operational monitoring by the U.S. Forest Service has shown similar results. For example, 10 years of monitoring different road-related BMPs throughout California demonstrated that they were effective in meeting their on-site water quality objectives (e.g., minimal erosion) at 90% of the 1,072 sites where they had been implemented. Water quality effects of significant magnitude, duration, or extent occurred at only 1% of all 1,255 monitored sites. Proper road location, drainage, surfacing, and cut slope and fill slope treatments are important in limiting effects. Surfacing materials and vegetative treatments, in particular, have been demonstrated to reduce the amount of fine sediment produced by roads. For example, rocked roads in the central Sierra Nevada produce 10% to 50% less sediment than native surfaced roads; others have observed greater reductions of up to 80% or more. Research and monitoring have also demonstrated that a small percentage of roads are often responsible for a large amount of the total road-related erosion and the most harm to fish and fish habitats. Most road problems during floods result from poor design or construction, particularly at road stream crossings where streamflow diversions can cause road failures (USDA Forest Service 2004b).

Limited information is available regarding long-term, watershed-scale changes to sediment yields associated with road decommissioning and restoration. However, one recent study documented that these treatments in Northern California reduced sediment yields from abandoned logging roads by 75%. Monitoring of U.S. Forest Service projects in Northern California indicate that reductions may be significantly higher in some cases. Besides these geomorphic effects, roads affect hydrologic processes because roads intercept rainfall on the road surface and cutbanks, and intercept subsurface water moving down adjacent hillslopes. Roads also concentrate flow and divert water from areas to which it would normally flow. These altered processes modify the amount of time required for water to enter streams. In turn, the timing of peak flows may be changed. However, studies show that the effects of roads on streamflow are generally smaller than the effects of timber harvest (USDA Forest Service 2004b).

Potential impacts related to road construction and increased runoff would be **potentially significant**. However, PDFs (see Section 2.4) would minimize the potential for runoff during road construction, maintenance, and use. PDF-GEO-1 requires suspension of road use during wet winter weather, thus reducing the potential for soil erosion in

saturated soils. PDF-GEO-2 requires implementation of erosion prevention and control measures in areas with slopes in excess of 50% (27 degrees). PDF-GEO-3 and PDF-GEO-4 require implementation of a SWPPP or equivalent document, which would reduce the potential for soil erosion. PDF-GEO-5 requires construction of drainage features in treatment areas, which will reduce erosion. And PDF-GEO-6 requires that a Registered Professional Forester or licensed geologist evaluate treatment areas with slopes greater than 50% for unstable soil areas (i.e., soil with moderate to high erosion potential). In addition, **MM-HYD-1** requires protection of water quality at stream crossings by minimization of the number of crossings; selection of crossings where the erosion potential is low; use of a temporary bridge, culvert, or log culvert to minimize siltation of the stream; using suitable drainage measures to disconnect the road from the waterbody; and removal and stabilization of the stream crossing prior to the winter rainy season. With implementation of PDF-GEO-1 through PDF-GEO-6 and mitigation measure **MM-HYD-1,** Protection of Existing Water Bodies, potential significant impacts would be reduced to less than significant levels.

Flood Flows

Forest thinning operations would locally occur within 100-year floodplains, throughout the Working Area. These operations would not impede or redirect flood flows. **No impacts** would occur.

Wood Pellet Production

Lassen Facility

Increased Runoff

As discussed in Section 3.9.1, Environmental Setting, runoff across the site primarily occurs as sheetflow to the south and southeast toward drainage ditches, including one ditch that coincides with the western property boundary, and two other ditches that merge in the southern portion of the site and connect with a culvert beneath the railroad in the southeast portion of the site. The site is predominantly unpaved and pervious to rainfall infiltration. Five upland ditches located throughout the project site are unlined, earthen water conveyance systems that were constructed in upland habitat and exhibit a mild break in slope and change in vegetation. Ditches within the project site are generally 5 to 6 feet wide at the top of bank and have an ordinary high water mark width of 1 to 2 feet (Appendix G1, Hydrology and Hydraulics Technical Study).

Construction of the proposed wood pellet production facility would result in an increase in impervious surfaces, which in turn would result in increased stormwater runoff. Numerous small streams, sloughs, and marshy areas are present east of the project site. The Pit River is approximately 2.9 miles east of the site; Bull Run Slough is approximately 0.7 mile to the east; and a tributary creek to Bull Run Slough is approximately 500 feet to the east, at the closest point (Figure 3.9-3, Lassen Surface Water Features). Stormwater runoff emanating from the hilly areas to the west and southwest flows in the direction of the southern proposed project area. An increase in stormwater runoff as a result of increased impervious surfaces on site could potentially result in excessive erosion or siltation of these downstream water bodies; off-site flooding; and exceedance of the capacity of adjacent or downstream drainage systems. Potential impacts related to increased runoff would be **potentially significant**. However, with implementation of **MM-HYD-7**, Lassen Stormwater Detention, potential significant impacts would be reduced to less than significant levels.

Flood Flows

The project site is located within a 100-year Special Flood Hazard Area, as designated by FEMA. The project site is within Flood Zone A, which is subject to inundation by the 1% annual flood chance, but the base flood elevation (BFE) has not yet been determined (44 CFR 64.3). The project site is not within an area subject to seiches or dam failure inundation (Lassen County 2018).

The project, as described in Section 2, includes construction of occupied structures which will be raised above the BFE. The placement of fill in the Special Flood Hazard Area can result in an increase in the water surface elevation by reducing the ability to convey and store flood waters. This can result in increased flood damage to both upstream and downstream properties.

FEMA regulations, 44 CFR 60.3, permit encroachments (i.e., construction) within the Special Flood Hazard Area, subject to numerous requirements to ensure that both the proposed development and surrounding community are safe from flooding. The project will be required to comply with these regulatory requirements, and to obtain and comply with floodplain development permits from Lassen County (the floodplain administrator). For developments greater than 5 acres in the Zone A Special Flood Hazard Areas, where BFE has not yet been established, the floodplain development permit application must include BFE data, utilizing Federal, State, or other data sources.

Upon establishment of BFE, FEMA regulations further prohibit new construction, substantial improvements, or other development (including fill) "unless it is demonstrated that the cumulative effect of the proposed development, when combined with all other existing and anticipated development, will not increase the water surface elevation of the base flood more than one foot at any point within the community" (44 CFR 60.3(c)(10).) This EIR consequently adopts this standard as the threshold of significance for flood flow impacts. (Compared to Appendix G of the CEQA Guidelines, this standard allows for a more useful and meaningful assessment of potential impacts in areas that have flooding risks, but for which no BFE has yet been established, in that it provides an objective measurable metric against which the effects of the project along with existing and anticipated development can be evaluated.)

A preliminary grading plan has been prepared for the project (Kimley-Horn and Associates, Inc. 2024), and flood flow modeling based upon this design has been conducted utilizing the Army Corps of Engineers HEC-RAS software and a publicly available (USGS) 1-meter digital elevation model (DEM) (Appendix G1). This modeling indicates that the project, combined with all other existing development, will not increase the water surface elevation more than one foot at any point within the community of Nubieber or elsewhere in Lassen County. (As discussed in Chapter 3.0, there is no anticipated development in the vicinity of the project.) This impact would consequently be **less than significant**.

Mitigation is not required for impacts that are less than significant; nevertheless, the project will include the following Site Design Feature (SDF) to confirm that all applicable permits will be obtained and all regulatory requirements of FEMA and Lassen County will be implemented, and to ensure that no occupied structure that is not currently subject to inundation by flood will become inundated as a result of this project. (As set forth in Chapter 2, SDFs will be incorporated as enforceable contract terms in the public-private partnership agreement between GSFA and GSNR through which GSNR is authorized to perform project activities.)

SDF-HYD-1 Lassen Flood Protection.

Prior to issuance of a building permit, the following requirements shall be fulfilled to the satisfaction of the Lassen County Floodplain Administrator and consistent with 40 CFR 60.3 (b):

1. the Base Flood Elevation (BFE) shall be identified in Zone A within the community of Nubieber where the project site is located;
2. the proposed construction shall comply with all applicable regulatory requirements of FEMA and Lassen County, and has obtained all permits required for development in the floodplain; and
3. the applicant shall provide modeling or data to demonstrate that no occupied structure not presently subject to inundation by flood will become inundated as a result of the project combined with any other then existing or anticipated development within the community of Nubieber.

Tuolumne Facility

Increased Runoff

As discussed in Section 3.9.1, Environmental Setting, the Tuolumne facility project site is located on relatively flat to gently sloping topography. An east-west trending drainage divide is present in the northern portion of the project site, resulting in surface runoff in the southern portion to the west and southwest toward off-site Green Spring Run and runoff in the northern portion to the west and northwest toward an on-site tributary creek to Green Spring Run, located approximately 1,200 feet southwest of the site. A wetlands area is located in the northern portion of the site (Figure 3.9-7, Tuolumne Surface Water Features). A perennial pond is present in this area, which is located within east-west-trending, unnamed blue-line creek, which is a tributary to Green Spring Run, located west of Keystone.

An increase in stormwater runoff as a result of increased impervious surfaces on site could potentially result in excessive erosion or siltation of these downstream water bodies; off-site flooding; and exceedance of the capacity of adjacent or downstream drainage systems. A stormwater detention area, which was previously used by Sierra Pacific Industries for a former wood mill facility, is present in the northern portion of the site. The detention basin presumably captures stormwater flowing to the north. The stormwater capacity of this detention basin is unknown. In addition, a detention facility is not present in the southern portion of the property to detain runoff flowing towards the south. Based on a lack of adequate stormwater detention facilities, potential impacts related to increased runoff would be **potentially significant**. However, with implementation of **MM-HYD-9**, Tuolumne Stormwater Detention, potential significant impacts would be reduced to less than significant levels.

Flood Flows

The project site is not located within a 100-year Special Flood Hazard Area, as designated by FEMA. The project site is within Flood Zone X, which is an area outside the 0.2% annual floodplain (i.e. 500-year floodplain). In addition, the project site is not within an area subject to seiches or dam failure inundation. As a result, project construction would not impede or redirect flood flows. **No impacts** would occur.

Transport to Market

Port of Stockton Facility

Increased Runoff

The proposed product receiving and product storage areas are located on relatively flat to gently sloping topography, approximately 1,700 feet from the DWSC, at the closest point. Approximately 20% of the site is paved, with the remainder unpaved and pervious (Figure 2-10, Project Location: Port Rough Terminal, Port of Stockton). Stormwater runoff occurs as sheetflow to adjacent streets and the island drainage system. The developed areas on the island are served by a combination of underground pipes and open drainage ditches, while the undeveloped areas of the island are served exclusively by ditches. Stormwater on the island is directed to a collection and pumping area near the southwest corner of the island. An approximate 5-acre stormwater overflow area just north of the pumphouse collects any overflow runoff until it can be pumped into Burns Cutoff.

An increase in stormwater runoff as a result of increased impervious surfaces on site could potentially result in excessive erosion or siltation of these downstream water bodies; off-site flooding; and exceedance of the capacity of adjacent or downstream drainage systems. Potential impacts related to increased runoff would be **potentially significant**. However, with implementation of **MM-HYD-11**, Stockton Stormwater Detention, potential significant impacts would be reduced to less than significant levels.

Flood Flows

The project site is not located within a 100-year Special Flood Hazard Area, as designated by FEMA. The project site is within Flood Zone X, which is an area outside the 0.2% annual floodplain (i.e. 500-year floodplain). In addition, the project site is not within an area subject to seiches or dam failure inundation. As a result, project construction would not impede or redirect flood flows. **No impacts** would occur.

Impact HYD-4 The project would not potentially risk release of pollutants due to project inundation in flood hazard, tsunami, or seiche zones.

Feedstock Acquisition

Sustainable Forest Management Projects

Forest thinning operations would locally occur within 100-year floodplains, throughout the Working Area. Use of equipment that might result in incidental spills of petroleum products and hazardous substances would not occur during flood events or within flood waters. As a result, **no impacts** would occur.

Wood Pellet Production

Lassen Facility

As discussed in Impact HYD-3, the project site is located within a 100-year floodplain. Project operations would include use of fuels, oils, paints, commercial cleaners, lubricants, and other miscellaneous maintenance and repair products. In the event the designated hazardous materials storage area were inundated by a flood event, these hazardous substances could spill into the flood waters, resulting in potentially significant water quality impacts. However, approximately 5,220 cubic yards of fill soil would be placed on the site to raise the proposed facility above

the 100-year flood plain (Appendix G1), thus minimizing the potential for flood waters to impact the hazardous materials storage area.

A chemical storage facility is located on the property immediately west of the project site. In the event that the proposed final site elevation would impede and redirect flood flows such that flood elevations rose on this adjacent property, hazardous substances stored at the facility could be potentially released into the environment, resulting in significant water quality impacts. However, as discussed for Impact HYD-3, the project includes a Site Design Feature (SDF-HYD-1) ensuring that no occupied structure that is not currently subject to inundation by flood will become inundated as a result of this project, which includes structures comprising the chemical storage facility. Further, as illustrated on Figure 7c, flood flow modeling indicates that the project, combined with all other existing and anticipated development, will not increase the water surface elevation more than one foot anywhere on this adjacent property. This impact would consequently be **less than significant**.

Tuolumne Facility

The project site is not located within a 100-year Special Flood Hazard Area, as designated by FEMA. The project site is within Flood Zone X, which is an area outside the 0.2% annual floodplain (i.e. 500-year floodplain). In addition, the project site is not within an area subject to tsunamis, seiches, or dam failure inundation. As a result, project construction would not impede or redirect flood flows. **No impacts** would occur.

Port of Stockton Facility

The project site is not located within a 100-year Special Flood Hazard Area, as designated by FEMA. The project site is within Flood Zone X, which is an area outside the 0.2% annual floodplain (i.e. 500-year floodplain), nor is the site in an area subject to tsunamis. The ship loading/unloading area would potentially be subject to inundation by a seiche in the event of a large earthquake, as it is immediately adjacent to the SDWC. However, the project would not include storage, use, or disposal of hazardous substances during loading and unloading of ships. As a result, **no impacts** would occur.

Impact HYD-5 The project would not conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.

Feedstock Acquisition

Sustainable Forest Management Projects

As discussed for Impact HYD-1, tractor skid trails and log landings have the greatest effect on erosion of all practices associated with forest management. Although other forest management activities usually occur on a larger proportion of the landscape, the erosion rates on roads are the dominant source of sediment in most managed forests. As set forth in Section 2.4, each GSNR Biomass Only Thinning Project could include construction of up to 1.0 mile of low-standard (i.e., unpaved roads) per project. The only in-stream disturbance of streams during project implementation would be at designated stream crossings to access treatment sites. In addition, existing unpaved roads would be improved and maintained as part of feedstock acquisition. In the absence of proper erosion control features, these activities could result in erosion induced sedimentation of streams, rivers, and reservoirs.

However, PDFs (see Section 2.4) would minimize the potential for erosion during 1) road construction, maintenance, and use, 2) forest thinning, 3) tree felling, and 4) yarding. PDF-GEO-1 requires suspension of road use during wet

winter weather, thus reducing the potential for soil erosion in saturated soils. PDF-GEO-2 requires implementation of erosion prevention and control measures in areas with slopes in excess of 50% (27 degrees). PDF-GEO-3 and PDF-GEO-4 require implementation of a SWPPP or equivalent document, which would reduce the potential for soil erosion. PDF-GEO-5 requires construction of drainage features in treatment areas, which will reduce erosion. And PDF-GEO-6 requires that a Registered Professional Forester or licensed geologist evaluate treatment areas with slopes greater than 50% for unstable soil areas (i.e., soil with moderate to high erosion potential). In addition, **MM-HYD-1** requires protection of water quality at stream crossings by minimization of the number of crossings; selection of crossings where the erosion potential is low; use of a temporary bridge, culvert, or log culvert to minimize siltation of the stream; using suitable drainage measures to disconnect the road from the waterbody; and removal and stabilization of the stream crossing prior to the winter rainy season. With implementation of PDF-GEO-1 through PDF-GEO-6 and mitigation measure **MM-HYD-1**, Protection of Existing Water Bodies, potentially significant erosion related impacts would be reduced such that the project would not conflict or obstruct implementation of a water quality control plan, including water quality objectives of the North Coast, Central Valley, and Lahontan RWQCB Basin Plans. Impacts would be **less than significant**.

As discussed in Impact HYD-1, forest thinning operations would include equipment and vehicle fueling and maintenance, which typically includes use of gasoline, diesel fuel, oils/lubricants, hydraulic fluids, antifreeze, coolants, solvents/cleaners, and degreasers. Incidental spills of these substances could adversely affect the water quality of stormwater and nearby surface water bodies, including streams, rivers, and reservoirs. Pollutants can also attach to sediment and be transported downstream, which could contribute to degradation of water quality. However, with implementation of PDFs, including PDF-HAZ-1, Equipment Maintenance, and PDF-HYDRO-3, Watercourse and Lake Protection Zones, and mitigation measures **MM-HYD-1**, Protection of Existing Water Bodies, **MM-HYD-2**, Spill Prevention and Response Plan, **MM-HYD-3**, Protection of Existing Drainage Systems, and **MM-HYD-4**, Avoidance of Legacy Soil Contamination, water quality related impacts during forest thinning would be reduced such that the project would not conflict or obstruct implementation of a water quality control plan, including water quality objectives of the North Coast, Central Valley, and Lahontan RWQCB Basin Plans. Impacts would be **less than significant**.

As discussed in Impact HYD-2, water demand for feedstock acquisition would primarily be related to dust suppression along unpaved roads. Water would be secured from various sources, including local water purveyors and local water wells. The demand would be relatively minor and spread out throughout the Working Area. As a result, feedstock acquisition would not substantially decrease groundwater supplies such that the project may impede or conflict with a groundwater sustainability management plan. Impacts would be **less than significant**.

Wood Pellet Production

Lassen Facility

Construction

As discussed in Impact HYD-1, construction activities would include demolition of the railroad siding, cement deck, and internal roadways, followed by importing 5,220 cubic yards of fill soil to raise the proposed production facilities above the 100-year floodplain to a final elevation. The total area of disturbance would be approximately 192.52 acres. Grading and construction could potentially result in adverse water quality impacts related to erosion and incidental spills of petroleum products and building materials. Because the proposed project is greater than 1 acre in size, construction impacts would be minimized through compliance with the SWRCB CGP, which is the NPDES General Permit for Storm Water Associated with Construction Activities (Construction Stormwater General Permit

Order 2022-0057-DWQ). The CGP requires preparation and implementation of a SWPPP to control runoff from construction work sites. The SWPPP would include BMPs, such as physical barriers to prevent erosion and sedimentation, construction of sedimentation basins, limitations on work periods during storm events, use of infiltration swales, protection of stockpiled materials, and a variety of other measures would substantially reduce the potential for impacts to surface water quality from occurring during construction. Through implementation of the requirements outlined in the CGP, construction-related impacts to surface water and groundwater would be minimized such that the project would not conflict or obstruct implementation of a water quality control plan, including water quality objectives of the Central Valley RWQCB Basin Plan. Impacts would be **less than significant**.

Operations

As discussed in Impact HYD-1, project operations are potential sources of stormwater pollution as a result of incidental spills of petroleum products and hazardous substances from trucks, processing equipment, and railcars. Stormwater runoff would be channeled through a stormwater drainage system, which in turn would flow into an on-site detention basin. Numerous small streams, sloughs, and marshy areas are present east of the project site. Due to shallow groundwater, the proposed stormwater detention basin is not a feasible alternative for stormwater infiltration into the subsurface. In the absence of proposed LID features, water quality impacts would be potentially significant. However, with implementation of **MM-HYD-6**, Lassen Low Impact Development Features, water quality related impacts during proposed wood pellet production would be reduced such that the project would not conflict or obstruct implementation of a water quality control plan, including water quality objectives of the Central Valley RWQCB Basin Plan. Impacts would be **less than significant**.

As discussed in Impact HYD-2, implementation of the Big Valley Groundwater Basin GSP will ensure that the groundwater basin is managed sustainably for existing and future beneficial uses of the groundwater supply. Based on the onsite pump test and basin-wide water budget analysis, local groundwater supplies are available during normal, single dry, and multiple dry years during a 20-year projection and will meet the projected water demand associated with the proposed project, in addition to existing and planned future uses of the groundwater supply (Appendix G2). As a result, the project would not substantially decrease groundwater supplies such that the project may conflict with or obstruct implementation of a groundwater sustainability plan, including the Big Valley Groundwater Basin GSP. Impacts would be **less than significant**.

Tuolumne Facility

Construction

As discussed in Impact HYD-1, the proposed project would include construction of a new wood pellet processing facility, including a woodyard, green processing area, drying area, pellet mill, project storage and loadout area. New roads for truck access and mill personnel access would be added, including a new truck access from La Grange Road at the southeast corner of the site. A new rail spur connecting to the adjacent Sierra Northern Railway line would be added for finished product loadout. Other improvements would include repurposing existing truck scales and a graded area for overflow raw material storage. Construction related water quality impacts would be the same as that described above for the Lassen Facility. Through implementation of the requirements outlined in the CGP, construction-related impacts to surface water and groundwater would be minimized such that the project would not conflict or obstruct implementation of a water quality control plan, including water quality objectives of the Central Valley RWQCB Basin Plan. Impacts would be **less than significant**.

Operations

Operation related water quality impacts would be similar as that described above for the Lassen Facility, In the absence of proposed LID features, water quality impacts would be potentially significant. However, with implementation of **MM-HYD-8**, Tuolumne Low Impact Development Features, water quality related impacts during proposed wood pellet production would be reduced such that the project would not conflict or obstruct implementation of a water quality control plan, including water quality objectives of the Central Valley RWQCB Basin Plan. Impacts would be **less than significant**.

As discussed in Impact HYD-2, the Tuolumne project site does not overlie a groundwater basin, as designated by DWR, and is therefore not regulated under SGMA. Based on the results of the groundwater budget analysis for the Tuolumne project site contributing watershed, there is sufficient groundwater recharge and groundwater in storage to satisfy the project water demand and the demands of all other groundwater users in the watershed during normal, single dry, and multiple dry years over a 20-year projection. As a result, the project would not substantially decrease groundwater supplies such that the project may conflict with or obstruct implementation of a groundwater sustainability plan. Impacts would be **less than significant**.

Port of Stockton Facility

Construction and Operation

As discussed in Impact HYD-1, the proposed project would include a new wood pellet storage and loadout facility, including a rail unloading system, two storage domes, and a ship loadout system. A new road for truck access and facility personnel access would be added on site. A new rail spur connecting to an existing nearby rail line operated by CCT would be added for pellet receipt. New rail scales and a truck scale would be installed for weighing pellets received. Construction and operation related water quality impacts would be the same as that described above for the Lassen Facility. Shallow groundwater is similarly present beneath the Port facility. In the absence of proposed LID features, water quality impacts would be potentially significant. However, with implementation of **MM-HYD-10**, Stockton Low Impact Development Features, water quality related impacts during proposed wood pellet storage and loading would be reduced such that the project would not conflict or obstruct implementation of a water quality control plan, including water quality objectives of the Central Valley RWQCB Basin Plan. Impacts would be **less than significant**.

As discussed in Impact HYD-2, the San Joaquin Valley - Tracy Groundwater Basin has a high to medium priority with regard to potential overdraft and is regulated by the County of San Joaquin GSA – Tracy, under SGMA. Based on the diversified water supplies for project operations, in combination with oversight of groundwater withdrawals by the County of San Joaquin GSA – Tracy, project related Port operations would not substantially decrease groundwater supplies such that the project may conflict with or obstruct implementation of a groundwater sustainability plan, including the Eastern San Joaquin Groundwater Subbasin GSP. Impacts would be **less than significant**.

3.9.4.3 Cumulative Impacts

Impact HYD-1 The project may violate water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality.

Feedstock Acquisition

Sustainable Forest Management Projects

Erosion

As discussed for cumulative impacts in Section 3.6, Geology and Soils, fuel management treatments generally are needed every 10 to 20 years and the associated cumulative effects occur during each access and treatment cycle. Although hillslope erosion rates recover quickly, the road system, which is typically used and maintained between treatment activities, is a chronic source of sediment. Sediment yields from high severity wildfires are much greater than the increase in sediment yields due to fuel management activities, but the recurrence interval of such wildfires can be hundreds of years. Over longer time scales, the cumulative impacts of fuel treatments, repeated at 10 to 20 year intervals, when combined with the impacts of continuous road maintenance and use, may be similar to the pulse impact from wildfires (Robichaud et al. 2010).

The cumulative effect of fuel management activities is related to their location and concentration within a given watershed as well as the degree and frequency of disturbance for each activity. The watershed-scale impacts of any fuel management activity must consider the associated activities of road use, road maintenance, increased traffic, and multiple entries with various types of equipment as well as the combined effects of all the fuel treatments being applied. However, these effects are complex and interrelated. Few studies have examined the role of different controlling factors, much less the effects and interactions of the different activities on runoff and erosion at the watershed scale. Identifying the cumulative effects of timber harvest activities is a continuing challenge, as it is almost impossible to quantify the relative contribution of each activity at each location. It follows that determining the cumulative effects of fuel treatments, which generally cause less disturbance than timber harvesting, is even more of a challenge (Robichaud et al. 2010).

Roads greatly increase runoff and erosion rates at the plot and road segment scale. The effect of these increases at the watershed scale depends on the connectivity of the road and stream networks, but several studies have indicated that roads have minimal effect on runoff at larger spatial scales. More studies have shown that unpaved forest roads are chronic sediment sources and that roads can significantly increase sediment yields on small to moderate-sized catchments. Road building, maintenance, and obliteration can generate significant short-term increases in runoff and sediment. The effects of forest roads on runoff and sediment yields can be greatly reduced by improved road placement, road designs that dissipate runoff and direct it away from streams, and the widespread use of erosion mitigation techniques (Robichaud et al. 2010).

The geographic context of water quality impacts is the defined Working Area located within a 100-mile radius from the Lassen and Tuolumne wood pellet production facilities. Erosion from unpaved roads, as a result of new road construction or road maintenance during feedstock acquisition, could result in potentially significant erosion and siltation of downstream water bodies. In addition, forest thinning operations could result in increased stormwater runoff and increased erosion, resulting in potentially significant impacts. However, with implementation of PDF-GEO-1 through PDF-GEO-6 and mitigation measure **MM-HYD-1**, Protection of Existing Water Bodies, erosion related impacts would be reduced to less than significant.

Cumulative projects within the area of influence would similarly be subject to CEQA and/or NEPA review, which would result in creation and implementation of erosion control related mitigation measures, similar to the proposed project. As a result, Impact HYD-1 would be considered **potentially significant** for both direct and cumulative erosion related impacts, but would be reduced to **less than significant**.

Hazardous Substances Spills

Forest thinning operations would include equipment and vehicle fueling and maintenance, which typically includes use of gasoline, diesel fuel, oils/lubricants, hydraulic fluids, antifreeze, coolants, solvents/cleaners, and degreasers. Incidental spills of these substances could adversely affect the water quality of stormwater and nearby surface water bodies, including streams, rivers, and reservoirs. As discussed in Section 3.9.2.2, Waiver of Waste Discharge Requirements for Discharges Related to Timber Harvesting Activities have been established for the North Coast RWQCB, Central Valley RWQCB, and Lahontan RWQCB Regions. The waivers cover discharges from nonpoint source activities that have the potential to discharge wastes that may affect waters of the state. Although the Waiver of Waste Discharge Requirements includes general requirements designed to prevent adverse impacts to water quality, in the absence of project specific measures to prevent such adverse impacts, impacts would be potentially significant. However, with implementation of PDF-HAZ-1, PDF-HYDRO-3, **MM-HYD-1**, **MM-HYD-2**, **MM-HYD-3**, and **MM-HYD-4**, water quality related impacts during forest thinning would be reduced to less than significant with mitigation. Cumulative projects within the area of influence would similarly be subject to CEQA and/or NEPA review, which would result in creation and implementation of erosion control related mitigation measures, similar to the proposed project. As a result, Impact HYD-1 would be considered **potentially significant** for both direct and cumulative water quality related impacts with respect to hazardous substances spills, but would be reduced to **less than significant with mitigation**.

Wood Pellet Production

Lassen Facility

The cumulative area of influence with respect to erosion and hazardous substances spills is the encompassing Pit River Watershed, of the larger Sacramento River and San Francisco Bay watersheds (Figure 3.9-1, Feedstock Area Hydrologic Areas), as erosion induced siltation and spills of hazardous substances can result in adverse impacts to downstream water bodies. During construction activities, the project site and cumulative projects would have the potential to result in local soil erosion during excavation, grading, trenching, and soil stockpiling. Erosion could result in sediment and other pollutants (attached to sediment) entering surface water bodies and adversely affecting water quality. In addition, the project site and cumulative projects would have the potential to result in incidental spills of petroleum products and hazardous materials from vehicles and construction equipment. However, the project and the cumulative projects would be subject to the same regulatory requirements discussed in Section 3.9.4.2, Project Impacts. Compliance with existing regulations would prevent violation of water quality standards as a result of erosion induced siltation of downstream water bodies and incidental spills of hazardous substances. Similar to the proposed project, any cumulative projects greater than 1.0 acre would be subject to provisions of the Construction General Permit, which requires implementation of a project-specific SWPPP and associated BMPs to minimize the potential for erosion and incidental spills.

During operations, the proposed project would include sources of stormwater pollution as a result of incidental spills of petroleum products and hazardous substances from trucks, processing equipment, and railcars, which in turn could result in adverse water quality impacts. However, with implementation of **MM-HYD-6**, Lassen Low Impact Development Features, water quality related impacts during proposed wood pellet production would be reduced to less than significant with mitigation. Cumulative projects within the area of influence would similarly be subject to CEQA review, which would result in creation and implementation of hazardous substances spills related mitigation measures, similar to the proposed project. As a result, Impact HYD-1 would be considered **potentially significant** for both direct and cumulative water quality related impacts with respect to hazardous substances spills, but would be reduced to **less than significant with mitigation**. As a result, the proposed project, in combination with past, present,

and reasonably foreseeable projects, would not result in cumulatively considerable impacts with respect to incidental hazardous substances spills during operations of the Lassen facility.

Tuolumne Facility

Water quality related impacts would be similar to that described for the Lassen Facility, although the cumulative area of influence with respect to water quality is the Upper Stanislaus River Watershed of the larger San Joaquin River and San Francisco Bay watersheds (Figure 3.9-1). The proposed project, in combination with past, present, and reasonably foreseeable projects would not result in cumulative considerable impacts with respect to erosion. However, during operations, the proposed project would include sources of stormwater pollution as a result of incidental spills of petroleum products and hazardous substances from trucks, processing equipment, and railcars, which in turn could result in adverse water quality impacts. However, with implementation of **MM-HYD-8**, Tuolumne Low Impact Development Features, water quality related impacts during proposed wood pellet production would be reduced to less than significant with mitigation. Cumulative projects within the area of influence would similarly be subject to CEQA review, which would result in creation and implementation of hazardous substances spills related mitigation measures, similar to the proposed project. As a result, Impact HYD-1 would be considered **potentially significant** for both direct and cumulative water quality related impacts with respect to hazardous substances spills, but would be reduced to **less than significant with mitigation**. As a result, the proposed project, in combination with past, present, and reasonably foreseeable projects, would not result in cumulatively considerable impacts with respect to incidental hazardous substances spills during operations of the Tuolumne facility.

Transport to Market

Port of Stockton

Water quality related impacts would be similar to that described for the Lassen Facility, although the cumulative area of influence with respect to water quality is the Upper Stanislaus River Watershed of the larger San Joaquin River and San Francisco Bay watersheds (Figure 3.9-1). The proposed project, in combination with past, present, and reasonably foreseeable projects would not result in cumulative considerable impacts with respect to erosion. However, during operations, the proposed project would include sources of stormwater pollution as a result of incidental spills of petroleum products and hazardous substances from the rail unloading system, two storage domes, and the ship loadout system, which in turn could result in adverse water quality impacts. However, with implementation of **MM-HYD-10**, Stockton Low Impact Development Features, water quality related impacts during proposed wood pellet production would be reduced to less than significant with mitigation. Cumulative projects within the area of influence would similarly be subject to CEQA review, which would result in creation and implementation of hazardous substances spills related mitigation measures, similar to the proposed project. As a result, Impact HYD-1 would be considered **potentially significant** for both direct and cumulative water quality related impacts with respect to hazardous substances spills, but would be reduced to **less than significant with mitigation**. As a result, the proposed project, in combination with past, present, and reasonably foreseeable projects, would not result in cumulatively considerable impacts with respect to incidental hazardous substances spills during operations of the Port of Stockton facility.

Impact HYD-2 The project would not substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin.

Feedstock Acquisition

Sustainable Forest Management Projects

Groundwater Supply

The geographic context of groundwater impacts is the defined Working Area within a 100-mile radius from the Lassen and Tuolumne wood pellet production facilities. The water demand for feedstock acquisition would primarily be related to dust suppression along unpaved roads. Water would be secured from various sources, including local water purveyors and local water wells. The demand would be relatively minor and spread out throughout the Working Area. As a result, project feedstock acquisition would not substantially decrease groundwater supplies such that the project may impede sustainable groundwater management of the basin. Cumulative projects within the area of influence would similarly be subject to CEQA and/or NEPA review, which would include assessment of groundwater impacts. Projects overlying high- and medium-priority groundwater basins designated by the California Department of Water Resources would be subject to compliance with the respective basin GSPs, thus minimizing the potential for substantially decreasing groundwater supplies. Impacts would **not be cumulatively considerable**.

Groundwater Recharge

With respect to groundwater recharge, tracked and wheeled equipment use during forest thinning operations could result in soil compaction, which in turn could decrease infiltration of precipitation and decrease groundwater recharge, resulting in potentially significant impacts. However, with implementation of **MM-HYD-5**, Minimize Soil Compaction, groundwater recharge related impacts during forest thinning would be reduced to less than significant with mitigation. Cumulative projects within the area of influence would similarly be subject to CEQA and/or NEPA review, which would include impact assessments related to potential increased impervious surfaces and denied recharge. Mitigation measures would similarly be included for those cumulative projects that result in the potential for denied recharge, such that residual impacts would be less than significant. As a result, Impact HYD-2 would be considered **potentially significant** for both direct and cumulative groundwater recharge related impacts, but would be reduced to **less than significant with mitigation**. As a result, the proposed project, in combination with past, present, and reasonably foreseeable projects, would not result in cumulatively considerable impacts with respect to feedstock acquisition.

Wood Pellet Production

Lassen Facility

Groundwater Supply

Typical 20-year water supply and demand projections are lacking due to the project existing outside of a public water system; however, the GSP prepared for the Big Valley Groundwater Basin provides long-term forecasting of inflows and outflows within the Basin. A spreadsheet-based water budget was developed for the basin as part of the GSP development. The future baseline projections with climate change result in an average overdraft of 1,000 AF less than baseline conditions, due to climate models forecasting weather in the basin being warmer with increased precipitation and more precipitation falling in the form of rain than snow. The analysis predicts that the basin will be nearly in balance through 2068, with overdraft of about 1,000 to 2,000 AFY. In addition, groundwater levels in Well 38N07E32A002M, located near the project site, have remained stable since the beginning of the measurement record in 1959, indicating a stable groundwater supply (Appendix G2).

Implementation of the GSP will ensure that the groundwater basin is managed sustainably for existing and future beneficial uses of the groundwater supply. Based on the onsite pump test and basin-wide water budget analysis, local groundwater supplies are available during normal, single dry, and multiple dry years during a 20-year projection and will meet the projected water demand associated with the proposed project, in addition to existing and planned future uses of the groundwater supply. As a result, cumulative project development would not substantially decrease groundwater supplies such that those projects may impede sustainable groundwater management of the basin. Impacts would **not be cumulatively considerable**.

Groundwater Recharge

A portion, but not all, of the production facility parcel within the project site would be paved for construction and operation of the wood pellet production facility, resulting in locally denied groundwater recharge. However, the project site is located in a mostly rural area that is predominantly unpaved and pervious to rainfall infiltration. As a result, localized denied recharge as a result of construction of the proposed wood pellet production facility would not interfere substantially with groundwater recharge. Similarly, cumulative project development, which would be subject to CEQA review, would be located in a rural area that is predominantly unpaved and pervious to rainfall infiltration. As a result, cumulative project development would not interfere substantially with groundwater recharge such that those projects may impede sustainable groundwater management of the basin. Impacts would **not be cumulatively considerable**.

Tuolumne Facility

Groundwater Supply

The Tuolumne facility site does not overlie a designated groundwater basin, as determined by DWR. Groundwater beneath the site occurs within bedrock fractures, which in general can be highly variable over relatively short distances. As a result, groundwater beneath the site is relatively localized and not subject to oversight by a Groundwater Sustainability Plan under SGMA. As discussed in Section 3.9.4.2, based on the results of the groundwater budget analysis for the Tuolumne project site contributing watershed, there is sufficient groundwater recharge and groundwater in storage to satisfy the project water demand and the demands of all other groundwater users in the watershed during normal, single dry, and multiple dry years over a 20-year projection. As a result, impacts would **not be cumulatively considerable**.

Groundwater Recharge

Impacts would be similar to those described for the Lassen facility. cumulative project development would not interfere substantially with groundwater recharge such that those projects may impede sustainable groundwater management of the basin. Impacts would **not be cumulatively considerable**.

Transport to Market

Port of Stockton

Groundwater Supply

Water demand for the Port of Stockton project site would primarily be related to potable water supplies for employees and dust suppression. Based on the diversified water supplies for project operations, in combination with oversight of groundwater withdrawals by the County of San Joaquin GSA – Tracy, project related Port operations

would not substantially decrease groundwater supplies and impacts would be less than significant. Cumulative projects within the area of influence would similarly be subject to CEQA review, which would include groundwater impact assessments with respect to the Eastern San Joaquin Groundwater Subbasin GSP and the 2020 Urban Water Management Plan, Stockton District. Groundwater supply and demand evaluations completed in compliance with these documents would minimize the potential for substantially decreasing groundwater supplies, such that groundwater supply impacts would **not be cumulatively considerable**.

Groundwater Recharge

With respect to groundwater recharge, denied recharge associated with paving of the project site would result in negligible impacts with respect to groundwater supplies due to continuous flow of shallow groundwater from the San Joaquin River to the east, the Burns Cutoff to the west and south, and the SDWC to the north. Cumulative projects within the area of influence would similarly be subject to CEQA review, which would include impact assessments related to potential increases in impervious surfaces and related decreases in groundwater recharge. As a result, cumulative project development would not interfere substantially with groundwater recharge such that those projects may impede sustainable groundwater management of the basin. Impacts would **not be cumulatively considerable**.

Impact HYD-3 The project may substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:

- result in a substantial erosion or siltation on- or off-site;
- substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite;
- create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or
- cause the proposed development, when combined with all other existing and anticipated development, to increase the water surface elevation of the base flood more than one foot at any point within the community.

Feedstock Acquisition

Sustainable Forest Management Projects

Increased Runoff

As discussed for Impact HYD-1, new road construction and existing road maintenance would result in an increase in impervious surfaces and associated increased runoff. Roads greatly increase runoff and erosion rates at the plot and road segment scale. The effect of these increases at the watershed scale depends on the connectivity of the road and stream networks. Road building, maintenance, and obliteration can generate significant short-term increases in runoff and sediment. However, with implementation of PDF-GEO-1 through PDF-GEO-6 and mitigation measure **MM-HYD-1**, Protection of Existing Water Bodies, potential significant impacts would be reduced to less than significant.

In addition, as discussed for Impact HYD-2, tracked and wheeled equipment use during forest thinning operations could result in soil compaction, which in turn could decrease infiltration of precipitation and increase stormwater runoff, resulting in excessive erosion or siltation of nearby streams, rivers, lakes, or reservoirs; off-site flooding; and exceedance of the capacity of adjacent or downstream drainage systems. The of risk soil compaction and accelerated runoff from mechanical fuel reduction treatments varies depending on factors such as methods of treatment, types of equipment used, amounts and types of materials being yarded or piled, soil types, soil moisture conditions, slope steepness, and history of past disturbance. However, with implementation of **MM-HYD-5**, Minimize Soil Compaction, stormwater runoff related impacts during forest thinning would be reduced to less than significant with mitigation.

The geographic context of stormwater runoff impacts is the defined Working Area within a 100-mile radius from the Lassen and Tuolumne wood pellet production facilities. Cumulative projects within the area of influence would similarly be subject to CEQA and/or NEPA review, which would result in creation and implementation of stormwater runoff and erosion control related mitigation measures, similar to the proposed project. As a result, Impact HYD-3 would be considered **potentially significant** for both direct and cumulative erosion related impacts, but would be reduced to **less than significant with mitigation**.

Flooding

Forest thinning operations would locally occur within 100-year floodplains, throughout the Working Area. These operations would not impede or redirect flood flows and no impacts would occur. The geographic context of flooding related impacts is the defined Working Area within a 100-mile radius from the Lassen and Tuolumne wood pellet production facilities. Cumulative projects located within this area of influence would be subject to CEQA and/or NEPA, FEMA, and local jurisdictional requirements pertaining to flooding. As a result, each cumulative project would be designed such that the project would not impede or redirect flood flows, resulting in impacts to off-site properties. Impacts would **not be cumulatively considerable**.

Wood Pellet Production

Lassen Facility

As discussed for Impact HYD-3 and illustrated on Figure 7c, flood flow modeling indicates that the project, combined with all other existing and anticipated development, will not increase the water surface elevation more than one foot in the community of Nubieber. This impact would consequently be less than significant. The geographic context of flooding related impacts is the Upper Pit River Watershed. Cumulative projects located within this area of influence would be subject to CEQA, FEMA, Lassen County, and other local jurisdictional requirements pertaining to flooding. As a result, each cumulative project would be designed such that the project would not increase the water surface elevation in the event of flood by more than one foot, resulting in impacts to off-site properties. Impacts would **not be cumulatively considerable**.

Tuolumne Facility

The project site is not located within a 100-year floodplain; therefore, no impacts would occur with respect to flooding. The geographic context of flooding related impacts is the Upper Stanislaus River watershed. Cumulative projects located within this area of influence would be subject to CEQA, FEMA, Tuolumne County, and other local jurisdictional requirements pertaining to flooding. As a result, each cumulative project would be designed such that

the project would not increase the water surface elevation in the event of flood by more than one foot, resulting in impacts to off-site properties. Impacts would **not be cumulatively considerable**.

Transport to Market

Port of Stockton

The project site is not located within a 100-year floodplain; therefore, no impacts would occur with respect to flooding. The geographic context of flooding related impacts is the San Joaquin River, Burns Cutoff and SDWC in the vicinity of Stockton. Cumulative projects located within this area of influence would be subject to CEQA, FEMA, City of Stockton, San Joaquin County, and other local jurisdictional requirements pertaining to flooding. As a result, each cumulative project would be designed such that the project would not increase the water surface elevation in the event of flood by more than one foot, resulting in impacts to off-site properties. Impacts would **not be cumulatively considerable**.

Impact HYD-4 The project would not potentially risk release of pollutants due to project inundation in flood hazard, tsunami, or seiche zones.

Feedstock Acquisition

Sustainable Forest Management Projects

Forest thinning operations would locally occur within 100-year floodplains, throughout the Working Area. Use of equipment that might result in incidental spills of petroleum products and hazardous substances would not occur during flood events or within flood waters. As a result, no impacts would occur. The geographic context of flooding related impacts is the defined Working Area within a 100-mile radius of the Lassen and Tuolumne processing facilities. Cumulative projects located within this area of influence would be subject to CEQA and/or NEPA, FEMA, and local jurisdictional requirements pertaining to flooding. As a result, each cumulative project would be designed such that releases of pollutants due to flooding would not occur. Impacts would **not be cumulatively considerable**.

Wood Pellet Production

Lassen Facility

As discussed for Impact HYD-3, the project includes a Site Design Feature (SDF-HYD-1) ensuring that no occupied structure that is not currently subject to inundation by flood will become inundated as a result of this project, which includes structures comprising the adjacent chemical storage facility. Further, as illustrated on Figure 7c, flood flow modeling indicates that the project, combined with all other existing and anticipated development, will not increase the water surface elevation more than one foot anywhere on the property of this facility. As a result, impacts would be less than significant. The geographic context of flooding related impacts is the Upper Pit River Watershed. Cumulative projects located within this area of influence would be subject to CEQA, FEMA, Lassen County, and other local jurisdictional requirements pertaining to flooding. As a result, each cumulative project would be designed such that releases of pollutants due to flooding would not occur. Impacts would **not be cumulatively considerable**.

Tuolumne Facility

The project site is not located within a 100-year floodplain; therefore, no impacts would occur with respect to flooding. The geographic context of flooding related impacts is the Upper Stanislaus River watershed. Cumulative

projects located within this area of influence would be subject to CEQA, FEMA, Tuolumne County, and other local jurisdictional requirements pertaining to flooding. As a result, each cumulative project would be designed such that releases of pollutants due to flooding would not occur. Impacts would **not be cumulatively considerable**.

Transport to Market

Port of Stockton

The project site is not located within a 100-year floodplain; therefore, no impacts would occur with respect to flooding. The geographic context of flooding related impacts is the San Joaquin River, Burns Cutoff and SDWC in the vicinity of Stockton. Cumulative projects located within this area of influence would be subject to CEQA, FEMA, City of Stockton, San Joaquin County, and other local jurisdictional requirements pertaining to flooding. As a result, each cumulative project would be designed such that releases of pollutants due to flooding would not occur. Impacts would **not be cumulatively considerable**.

Impact HYD-5 The project would not conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.

Feedstock Acquisition

Sustainable Forest Management Projects

Cumulative water quality impacts would be as described for Impact HYD-1. With implementation of PDF-GEO-1 through PDF-GEO-6 and mitigation measure **MM-HYD-1**, Protection of Existing Water Bodies, erosion related impacts during forest thinning would be reduced to less than significant levels. In addition, with implementation of PDF-HAZ-1, PDF-HYDRO-3, **MM-HYD-1**, **MM-HYD-2**, **MM-HYD-3**, and **MM-HYD-4**, water quality related impacts associated with incidental spills of petroleum products during forest thinning would be reduced to less than significant. Cumulative projects within the area of influence would similarly be subject to CEQA and/or NEPA review, which would result in creation and implementation of water quality control related project design features and mitigation measures, similar to the proposed project. As a result, the proposed project, in combination with past, present, and reasonably foreseeable projects, would not conflict with or obstruct implementation of a water quality control plan, including the Central Valley RWQCB Basin Plan, and would **not result in cumulatively considerable impacts** with respect to water quality during feedstock acquisition activities.

Cumulative groundwater supply impacts would be as described for Impact HYD-2. The water demand for feedstock acquisition would primarily be related to dust suppression along unpaved roads. Water would be secured from various sources, including local water purveyors and local water wells. The demand would be relatively minor and spread out throughout the Working Area. As a result, project feedstock acquisition would not substantially decrease groundwater supplies such that the project may impede sustainable groundwater management of the basin. Cumulative projects within the area of influence would similarly be subject to CEQA and/or NEPA review, which would include assessment of groundwater impacts. Projects overlying high- and medium-priority groundwater basins designated by the California Department of Water Resources would be subject to compliance with the respective basin GSPs, thus minimizing the potential for substantially decreasing groundwater supplies. As a result, the proposed project, in combination with past, present, and reasonably foreseeable projects, would not conflict with or obstruct implementation of a sustainable groundwater management plan. Impacts would **not be cumulatively considerable**

Wood Pellet Production

Lassen Facility

Cumulative water quality impacts would be as described for Impact HYD-1. During construction, compliance with existing regulations would prevent violation of water quality standards as a result of erosion induced siltation of downstream water bodies and incidental spills of hazardous substances. Similar to the proposed project, any cumulative projects greater than 1.0 acre would be subject to provisions of the Construction General Permit, which requires implementation of a project-specific SWPPP and associated BMPs to minimize the potential for erosion and incidental spills. During operations, implementation of **MM-HYD-6**, Lassen Low Impact Development Features, water quality related impacts during proposed wood pellet production would be reduced to less than significant with mitigation. Cumulative projects within the area of influence would similarly be subject to CEQA and/or NEPA review, which would result in creation and implementation of hazardous substances spills related mitigation measures, similar to the proposed project. As a result, the proposed project, in combination with past, present, and reasonably foreseeable projects, would not conflict with or obstruct implementation of a water quality control plan, including the Central Valley RWQCB Basin Plan, and would **not result in cumulatively considerable impacts** with respect to water quality during proposed wood pellet production.

Cumulative groundwater supply impacts would be as described for Impact HYD-2. Implementation of the Big Valley Groundwater Basin GSP will ensure that the groundwater basin is managed sustainably for existing and future beneficial uses of the groundwater supply. Based on the onsite pump test and basin-wide water budget analysis, local groundwater supplies are available during normal, single dry, and multiple dry years during a 20-year projection and will meet the projected water demand associated with the proposed project, in addition to existing and planned future uses of the groundwater supply. Cumulative projects within the area of influence would similarly be subject to CEQA and/or NEPA review, which would include assessment of groundwater impacts. As a result, cumulative project development would not substantially decrease groundwater supplies such that those projects may conflict with or obstruct implementation of a groundwater sustainability plan, including the Big Valley Groundwater Basin GSP. Impacts would **not be cumulatively considerable**.

Tuolumne Facility

Cumulative water quality impacts would be as described for Impact HYD-1. During construction, compliance with existing regulations would prevent violation of water quality standards as a result of erosion induced siltation of downstream water bodies and incidental spills of hazardous substances. Similar to the proposed project, any cumulative projects greater than 1.0 acre would be subject to provisions of the Construction General Permit, which requires implementation of a project-specific SWPPP and associated BMPs to minimize the potential for erosion and incidental spills. With implementation of **MM-HYD-8**, Tuolumne Low Impact Development Features, water quality related impacts during proposed wood pellet production would be reduced to less than significant. Cumulative projects within the area of influence would similarly be subject to CEQA and/or NEPA review, which would result in creation and implementation of hazardous substances spills related mitigation measures, similar to the proposed project. As a result, the proposed project, in combination with past, present, and reasonably foreseeable projects, would not conflict with or obstruct implementation of a water quality control plan, including the Central Valley RWQCB Basin Plan, and would **not result in cumulatively considerable impacts** with respect to water quality during proposed wood pellet production.

Cumulative groundwater supply impacts would be as described for Impact HYD-2. The Tuolumne facility site does not overlie a designated groundwater basin, as determined by DWR. Groundwater beneath the site is relatively

localized and not subject to oversight by a Groundwater Sustainability Plan under SGMA. Based on the results of the groundwater budget analysis for the Tuolumne project site contributing watershed, there is sufficient groundwater recharge and groundwater in storage to satisfy the project water demand and the demands of all other groundwater users in the watershed during normal, single dry, and multiple dry years over a 20-year projection. Cumulative projects within the area of influence would similarly be subject to CEQA and/or NEPA review, which would include assessment of groundwater impacts. As a result, cumulative project development would not substantially decrease groundwater supplies such that those projects may conflict with or obstruct implementation of a groundwater sustainability plan. Impacts would **not be cumulatively considerable**.

Transport to Market

Port of Stockton

Cumulative water quality impacts would be as described for Impact HYD-1. The proposed project, in combination with past, present, and reasonably foreseeable projects would not result in cumulative considerable impacts with respect to erosion. In addition, with implementation of **MM-HYD-10**, Stockton Low Impact Development Features, water quality related impacts during proposed wood pellet production would be reduced to less than significant with mitigation. Cumulative projects within the area of influence would similarly be subject to CEQA and/or NEPA review, which would result in creation and implementation of hazardous substances spills related mitigation measures, similar to the proposed project. As a result, the proposed project, in combination with past, present, and reasonably foreseeable projects, would not conflict with or obstruct implementation of a water quality control plan, including the Central Valley RWQCB Basin Plan, and would **not result in cumulatively considerable impacts** with respect to water quality during proposed wood pellet production.

Cumulative groundwater supply impacts would be as described for Impact HYD-2. Based on the diversified water supplies for project operations, in combination with oversight of groundwater withdrawals by the County of San Joaquin GSA – Tracy, project related Port operations would not substantially decrease groundwater supplies and impacts would be less than significant. Cumulative projects within the area of influence would similarly be subject to CEQA and/or NEPA review, which would include groundwater impact assessments with respect to the Eastern San Joaquin Groundwater Subbasin GSP and the 2020 Urban Water Management Plan, Stockton District. Groundwater supply and demand evaluations completed in compliance with these documents would minimize the potential for substantially decreasing groundwater supplies, such that cumulative project development would not conflict with or obstruct implementation of a groundwater sustainability plan, including the Eastern San Joaquin Groundwater Subbasin GSP. Impacts would **not be cumulatively considerable**.

3.9.4.4 Mitigation Measures

Feedstock Acquisition

Sustainable Forest Management Projects

MM-HYD-1 Protection of Existing Water Bodies. The following measures shall be implemented to protect existing water quality during forest thinning operations:

- All equipment and vehicle staging areas shall be a minimum of 100 feet from existing drainages, streams, reservoirs, and lakes.

- Equipment watercourse crossings shall be planned, constructed, maintained, and removed according to standards described in the California Forest Practice Rules (California Licensed Timber Operators and California Registered Professional Foresters 2020) and the National Best Management Practices for Water Quality Management on National Forest System Lands, National Core BMP Technical Guide (USDA Forest Service 2012). Measures include:
  - minimization of the number of crossings;
  - selection of crossings where the erosion potential is low;
  - use of a temporary bridge, culvert, or log culvert to minimize siltation of the stream;
  - using suitable drainage measures to disconnect the road from the waterbody;
  - providing unrestricted passage of the design flow and fish migration; and
  - removal and stabilization of the stream crossing prior to the winter rainy season.

MM-HYD-2 Spill Prevention and Response Plan. A Spill Prevention and Response Plan shall be prepared prior to forest thinning activities to provide protection to onsite workers, the public, and the environment from incidental leaks or spills of petroleum products, herbicides, or hazardous substances. The Spill Prevention and Response Plan shall be consistent with the 2011 Forest Service Region 5 Water Quality Management Handbook 2509.22, Chapter 10 (U.S. Forest Service 2011) and the National Best Management Practices for Water Quality Management on National Forest System Lands, National Core BMP Technical Guide (USDA Forest Service 2012), including, but not limited to:

- All water-drafting vehicles shall be checked daily and shall be repaired as necessary to prevent leaks of petroleum products from entering streams.
- Water-drafting vehicles shall contain petroleum-absorbent pads, which are placed under vehicles before drafting.
- Water-drafting vehicles shall contain petroleum spill kits.
- Disposal of absorbent pads shall be completed according to a Hazardous Response Plan.
- Plan for appropriate equipment refueling and servicing sites during project planning and design.
- Allow temporary refueling and servicing only at approved locations, which are well away from water or riparian resources.
- Develop or use existing fuel and chemical management plans (for example, spill prevention control and countermeasures (SPCC), spill response plan, emergency response plan) when developing the management prescription for refueling and servicing sites. SPCCs measures shall include:
  - Install or construct the containment features or countermeasures called for in the SPCC Plan to ensure that spilled oil does not reach groundwater or surface water.
  - Ensure that each SPCC Plan includes a spill contingency plan at each facility that is unable to provide secondary spill containment.
  - Ensure that clean-up of spills and leaking tanks complies with federal, State and local regulations and requirements.
  - Prepare a contingency plan when quantities of petroleum products are capable of violating Regional Water Quality Control Board Basin Plan water-quality objectives.

- Locate, design, construct, and maintain petroleum and chemical delivery and storage facilities consistent with local, State and federal regulations.
- Install contour berms and trenches around vehicle service and refueling areas, chemical storage and use areas, and waste dumps to fully contain spills.
- Locate new staging to avoid the potential for hydrologic connectivity with water bodies and watercourses. To determine necessary drainage, calculate the expected runoff using the appropriate design storm. Include any run-on from adjacent areas in the calculation.
- Use liners as needed to prevent seepage to groundwater.
- Provide training for all personnel handling fuels and chemicals in their proper use, handling, storage, and disposal.
- Avoid spilling fuels, lubricants, cleaners, and other chemicals during handling and transporting.
- Report spills and initiate appropriate clean-up action in accordance with applicable State and federal laws, rules and regulations.

MM-HYD-3 Protection of Existing Drainage Systems. If a forest thinning activity is located adjacent to a roadway with stormwater drainage infrastructure, the existing stormwater drainage infrastructure shall be marked prior to ground disturbing activities. If a drainage structure or infiltration system is inadvertently disturbed or modified during project activities, the project proponent shall coordinate with owner of the system or feature to repair any damage and ensure that restore pre-project drainage conditions are restored.

MM-HYD-4 Avoidance of Legacy Contaminated Sites. Areas of known or suspected contaminated soil shall be avoided during forest thinning operations. Known contaminated sites shall be based on the California Department of Toxic Substances Control Cortese list, as described in Section 3.8, Hazards and Hazardous Materials.

MM-HYD-5 Minimize Soil Compaction. Consistent with the 2011 Forest Service Region 5 Water Quality Management Handbook 2509.22, Chapter 10 (U.S. Forest Service 2011), the following measures shall be implemented to minimize soil compaction and increase infiltration of precipitation:

- Exclude the use of mechanical equipment in wetland and meadows except for the purpose of restoring wetland and meadow function.
- During road construction and maintenance, limit operation of equipment when ground conditions could result in excessive soil compaction, except on the road prism or other surface to be compacted.
- During restoration of equipment damaged areas, mechanically rip areas of compacted soil to allow infiltration of precipitation.
- Fell trees toward a predetermined skid pattern, also known as felling to the lead, to reduce soil disturbance.
- When restoring water crossings, remove all trail-hardening materials and fill, and restore the channel bottom to its natural gradient and width. If necessary, replace hardening material in the channel with cobble similar in size to the native bed-load.

Wood Pellet Production

Lassen Facility

MM-HYD-6 Lassen Low Impact Development Features. A proprietary biotreatment unit (i.e., Modular Wetland System) shall be installed downstream of the proposed detention basin, as infiltration is not feasible at the site. The biotreatment unit shall be designed to capture and treat stormwater pollutants, consistent with commercial/industrial developments and associated parking lots, and including oil, grease, metals, trash, and debris. Treatment design shall be finalized upon completion of final project design. Source control Best Management Practices, such as secondary containment, regular inspections, and equipment maintenance, shall also be implemented whenever possible.

MM-HYD-7 Lassen Stormwater Detention. A stormwater detention basin shall be constructed on-site and designed to provide peak flow detention for a 24-hour, 50-year storm event, with over 2 feet of freeboard during the peak of the storm event. Stormwater flow rates exiting the site shall be less than or equal to existing conditions. The top elevation of the detention basin shall be constructed a minimum of 2 feet above projected 100-year base flood elevations.

In addition, MM-GEO-1 from Section 3.6, Geology and Soils, shall be implemented.

MM-GEO-1 Engineered Septic System. The on-site septic system shall be an engineered system to address on-site constraints including poor soil conditions (insufficient percolation) and high groundwater. The system may consist of an aerobic treatment unit or other system with equivalent pretreatment characteristics. The system, including any dispersal system, shall be located a minimum of 100 feet from any domestic water well. The system shall meet the requirements for protection of water quality of the local environmental health agency and the Regional Water Quality Control Board.

Tuolumne Facility

MM-HYD-8 Tuolumne Low Impact Development Features. Soil infiltration testing shall be completed on-site to determine the suitability of the site for construction of a stormwater infiltration basin. In the event that the soils are suitable for infiltration, a stormwater detention/infiltration basin shall be constructed to minimize off-site transport of polluted stormwater runoff. In the event, on-site soils are not suitable for stormwater infiltration, a proprietary biotreatment unit (i.e., Modular Wetland System) shall be installed downstream of the proposed detention basin, as described in MM-HYD-7.

MM-HYD-9 Tuolumne Stormwater Detention. Stormwater detention basins shall be provided for stormwater runoff flowing to the north and south of the site. The stormwater detention basins shall be designed to provide peak flow detention for a 24-hour, 50-year storm event, with over 2 feet of freeboard during the peak of the storm event. Stormwater flow rates exiting the site shall be less than or equal to existing conditions.

In addition, MM-GEO-1 from Section 3.6, Geology and Soils, shall be implemented.

MM-GEO-1 Engineered Septic System. The on-site septic system shall be an engineered system to address on-site constraints including poor soil conditions (insufficient percolation) and high groundwater.

The system may consist of an aerobic treatment unit or other system with equivalent pretreatment characteristics. The system, including any dispersal system, shall be located a minimum of 100 feet from any domestic water well. The system shall meet the requirements for protection of water quality of the local environmental health agency and the Regional Water Quality Control Board.

Transport to Market

Port of Stockton

MM-HYD-10 Stockton Low Impact Development Features. A proprietary biotreatment unit (i.e., Modular Wetland System) shall be installed downstream of the proposed detention basin, as infiltration is not feasible at the site. The biotreatment unit shall be designed to capture and treat stormwater pollutants, consistent with commercial/industrial developments and associated parking lots, and including oil, grease, metals, trash, and debris. Treatment design shall be finalized upon completion of final project design. Source control Best Management Practices, such as secondary containment, regular inspections, and equipment maintenance, shall also be implemented whenever possible.

MM-HYD-11 Stockton Stormwater Detention. A stormwater detention basin shall be constructed on-site and designed to provide peak flow detention for a 24-hour, 50-year storm event, with over 2 feet of freeboard during the peak of the storm event. Stormwater flow rates exiting the site shall be less than or equal to existing conditions.

3.9.4.5 Significance After Mitigation

Impact HYD-1 The project may violate water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality.

PDF-GEO-1 through PDF-GEO-6, PDF-HAZ-1, PDF-HYDRO-3, **MM-HYD-1**, **MM-HYD-2**, **MM-HYD-3**, **MM-HYD-4**, **MM-HYD-6**, **MM-HYD-8**, **MM-HYD-10**, and **MM-GEO-1** would reduce the potential for violation of water quality standards or waste discharge requirements, or degradation of surface or ground water quality, as a result of the proposed project, such that potentially significant impacts would be reduced to **less than significant**.

Impact HYD-2 The project would not substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin.

MM-HYD-5 would reduce groundwater recharge related impacts during forest thinning, such that potentially significant impacts would be reduced to **less than significant**.

Impact HYD-3 The project may substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:

- result in a substantial erosion or siltation on- or off-site;
- substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite;

- create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or
- cause the proposed development, when combined with all other existing and anticipated development, to increase the water surface elevation of the base flood more than one foot at any point within the community.

PDF-GEO-1 through PDF-GEO-6, SDF-HYD-1, **MM-HYD-5**, **MM-HYD-1**, **MM-HYD-7**, **MM-HYD-9**, and **MM-HYD-11** would reduce the potential impacts arising from alteration of existing drainage by the proposed project, such that potentially significant impacts would be reduced to **less than significant**.

Impact HYD-4 The project would not potentially risk release of pollutants due to project inundation in flood hazard, tsunami, or seiche zones.

The proposed project components at the feedstock locations, the wood pellet production facilities in Lassen and Tuolumne Counties, and the transport to market at the Port of Stockton, would not result in a significant impact. No mitigation is required, as the potential impact is **less than significant**.

Impact HYD-5 The project would not conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.

PDF-GEO-1 through PDF-GEO-6, PDF-HAZ-1, PDF-HYDRO-3, PDF-HYDRO-3, **MM-HYD-1** through **MM-HYD-11** would reduce the potential impacts arising from conflict or obstruction of a water quality control plan or sustainable groundwater management plan, such that potentially significant impacts would be reduced to **less than significant**.

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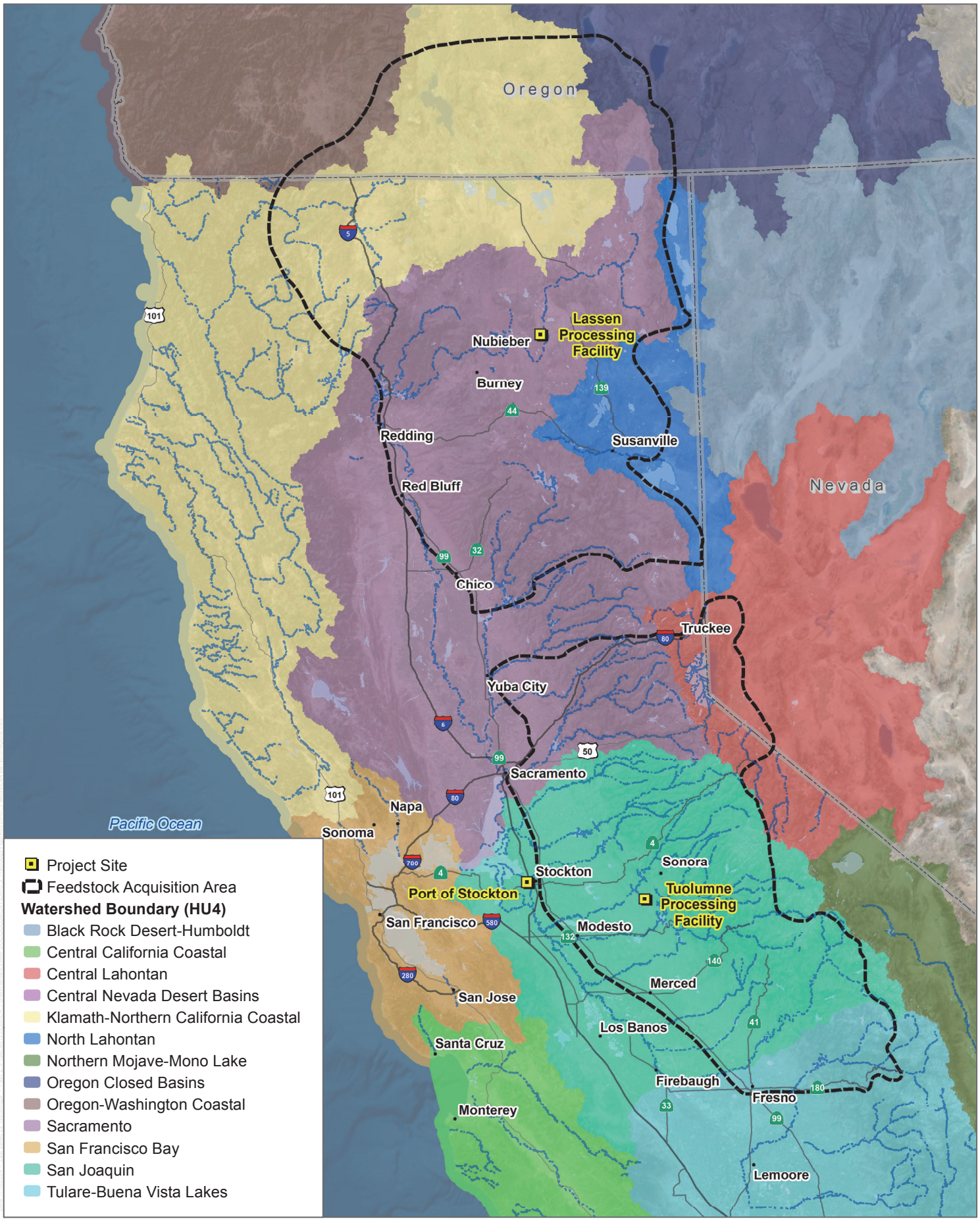

SOURCE: Bing Maps 2022, NHD 2022, CARI

DUDEK

0 25 50 Miles

FIGURE 3.9-1

Feedstock Area Hydrologic Regions

Golden State Natural Resources Forest Resiliency Demonstration Project

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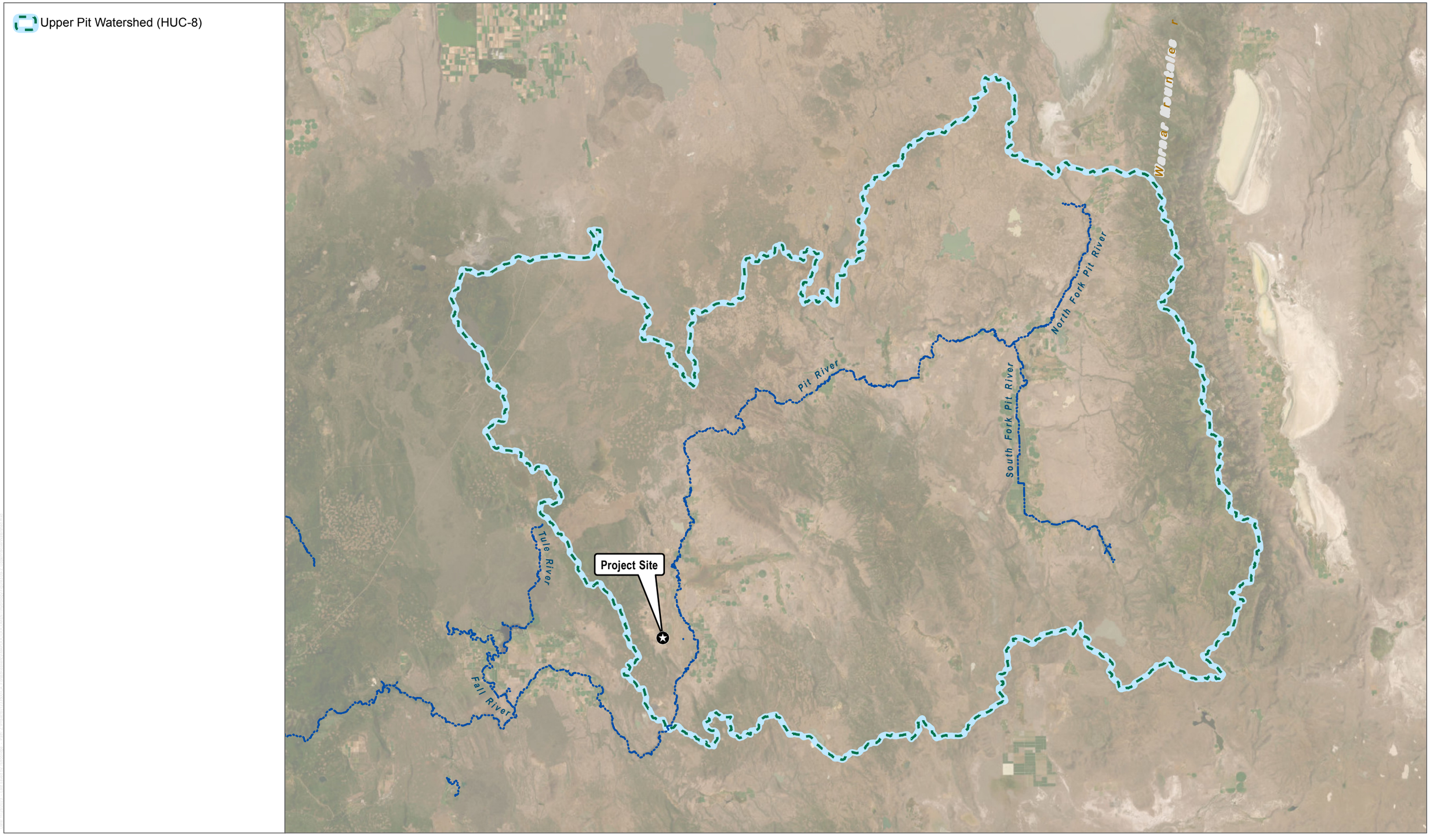

SOURCE: ESRI; USGS

DUDEK

0 4 8 Miles

FIGURE 3.9-2

Upper Pit River Watershed

Golden State Natural Resources Forest Resiliency Demonstration Project

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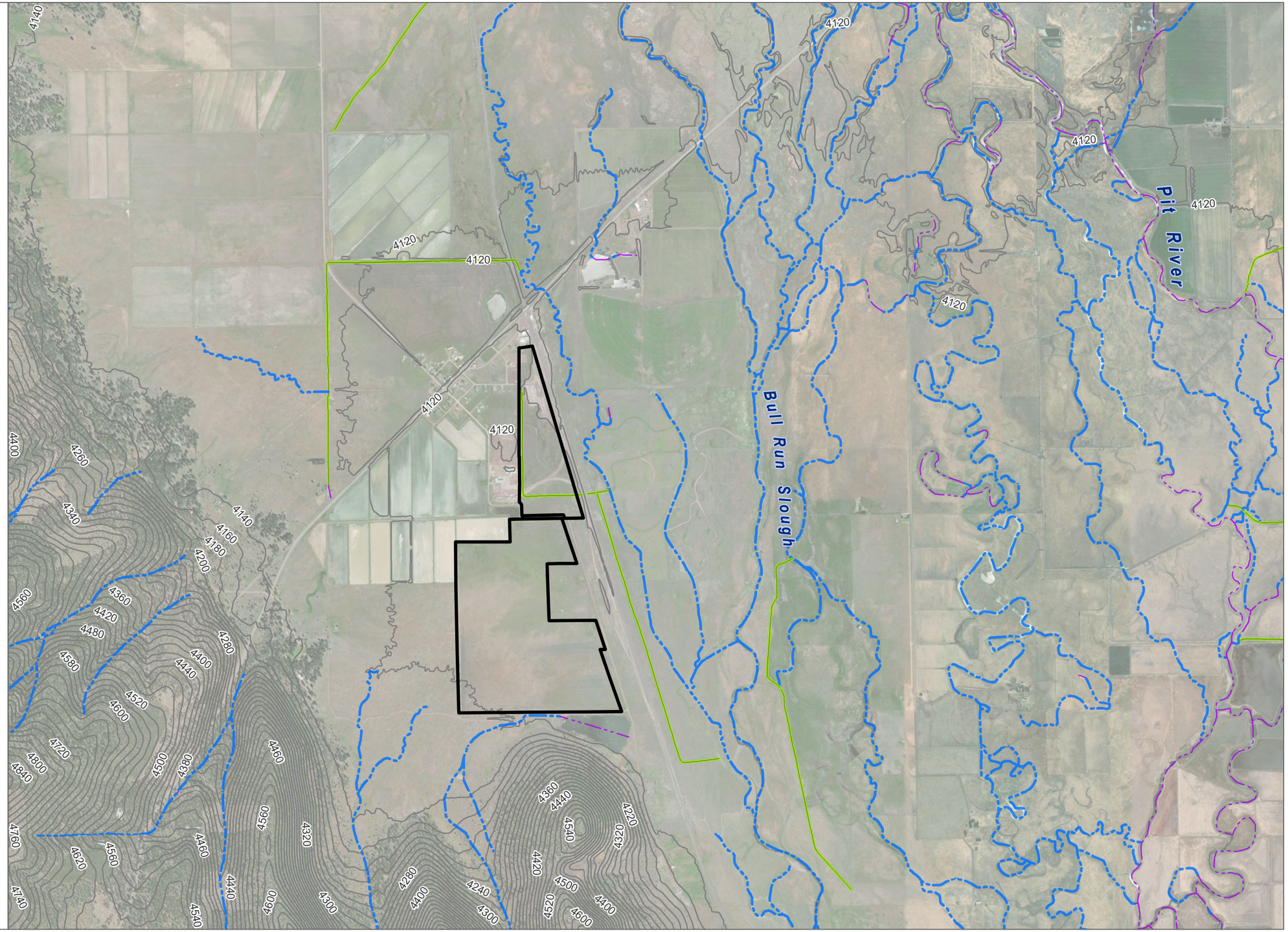
Project Site

NHD Flowline

Stream/River

Artificial Path

Canal/Ditch



SOURCE: ESRI; USGS

DUDEK

0 0.175 0.35 Miles

FIGURE 3.9-3

Lassen Surface Water Features

Golden State Natural Resources Forest Resiliency Demonstration Project

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Site Boundary

FEMA Flood Hazard Areas

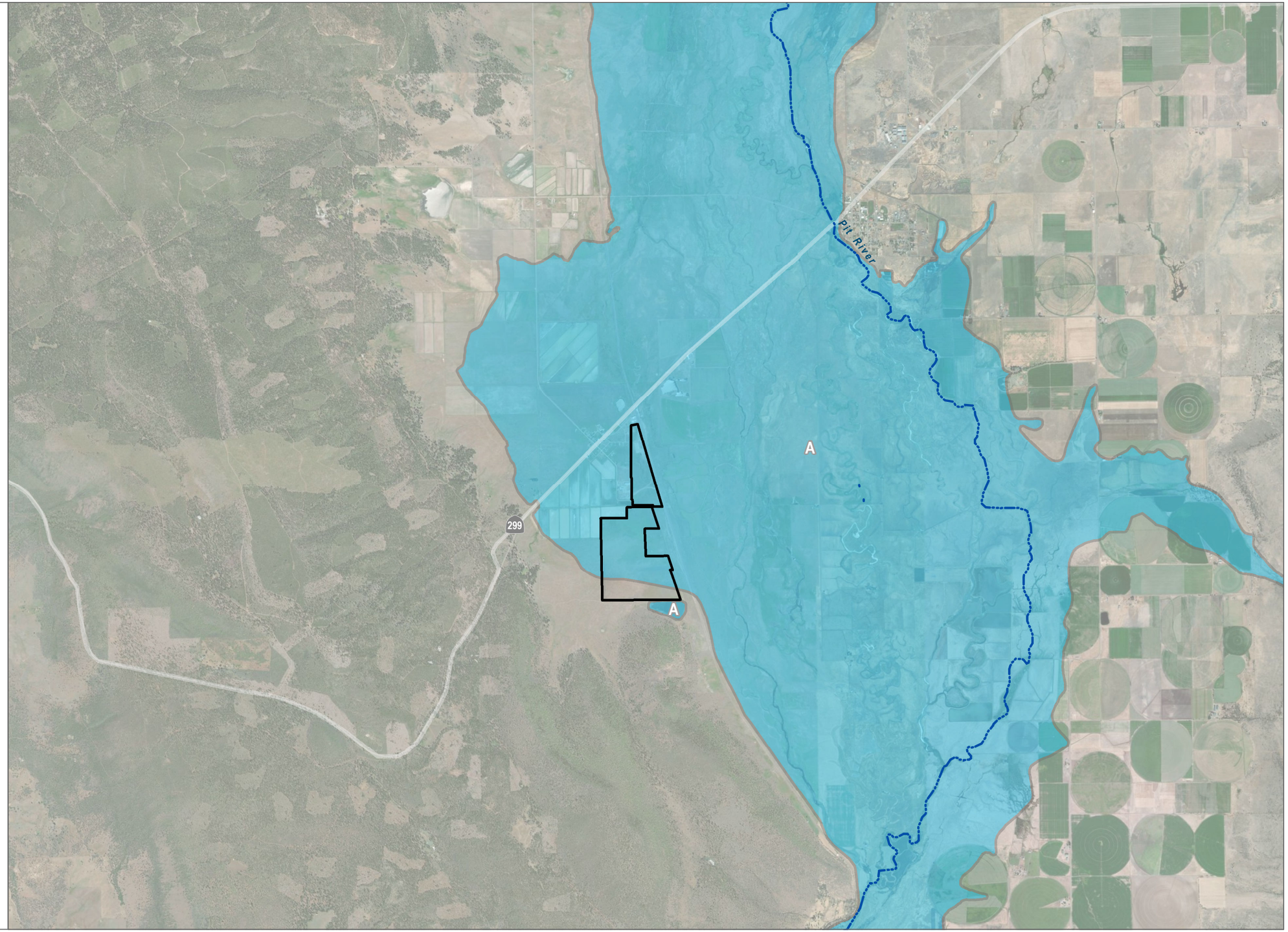
100-Year Flood Hazard Area - Special Flood Hazard Areas Subject to Inundation by the 1% Annual Chance Flood.

FEMA Flood Hazard Areas

The 1% annual chance flood (100-year flood), also know as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard Area include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A: No Base Flood Elevations determined.

Note: Zone X - Other Areas of Minimal Flooding and Zone D - Undetermined Areas not shown



SOURCE: ESRI; FEMA

DUDEK

0 2,100 4,200 Feet

FIGURE 3.9-4

Lassen FEMA Flood Zones

Golden State Natural Resources Forest Resiliency Demonstration Project

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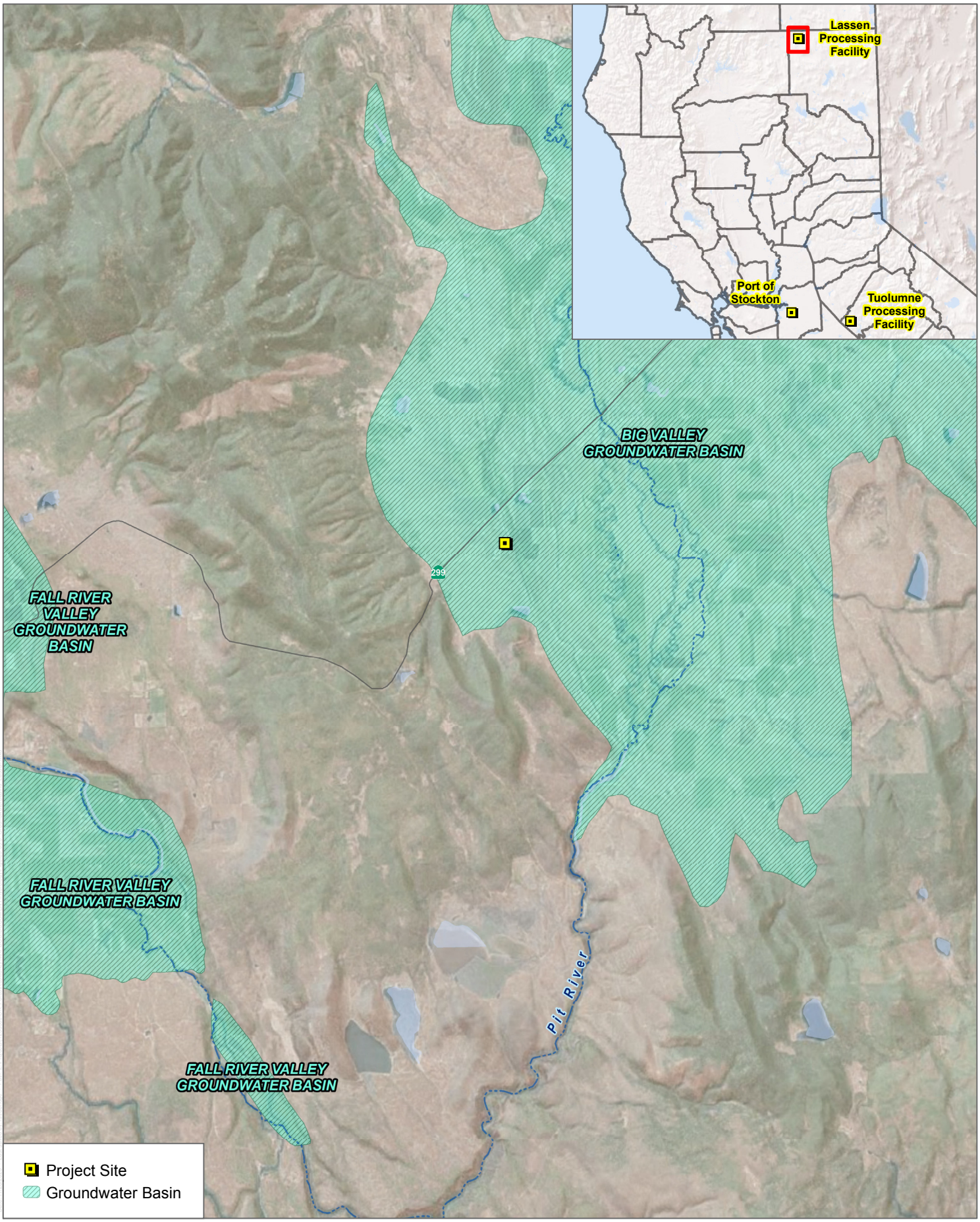

SOURCE: Bing Maps 2022, NHD 2022, CARI

DUDEK

0 1 2 Miles

FIGURE 3.9-5

Groundwater Basins - Lassen Facility

Golden State Natural Resources Forest Resiliency Demonstration Project

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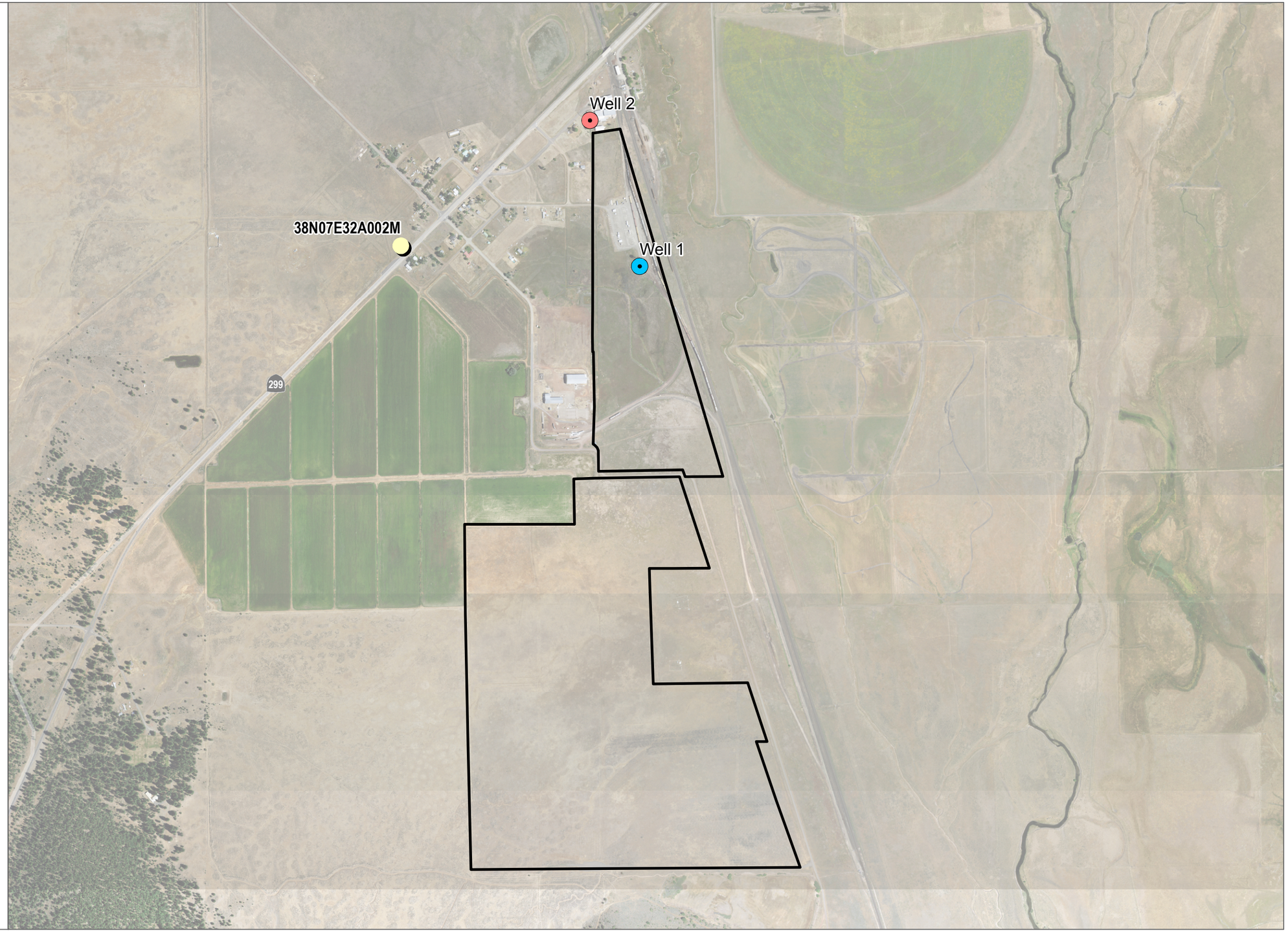
Legend

- Project Boundary
- Onsite Well (Well 1)
- Offsite Well (Well 2)



SOURCE: ESRI; DWR

DUDEK

0 600 1,200 Feet

FIGURE 3.9-6

On-Site Wells - Lassen Facility

Golden State Natural Resources Forest Resiliency Demonstration Project

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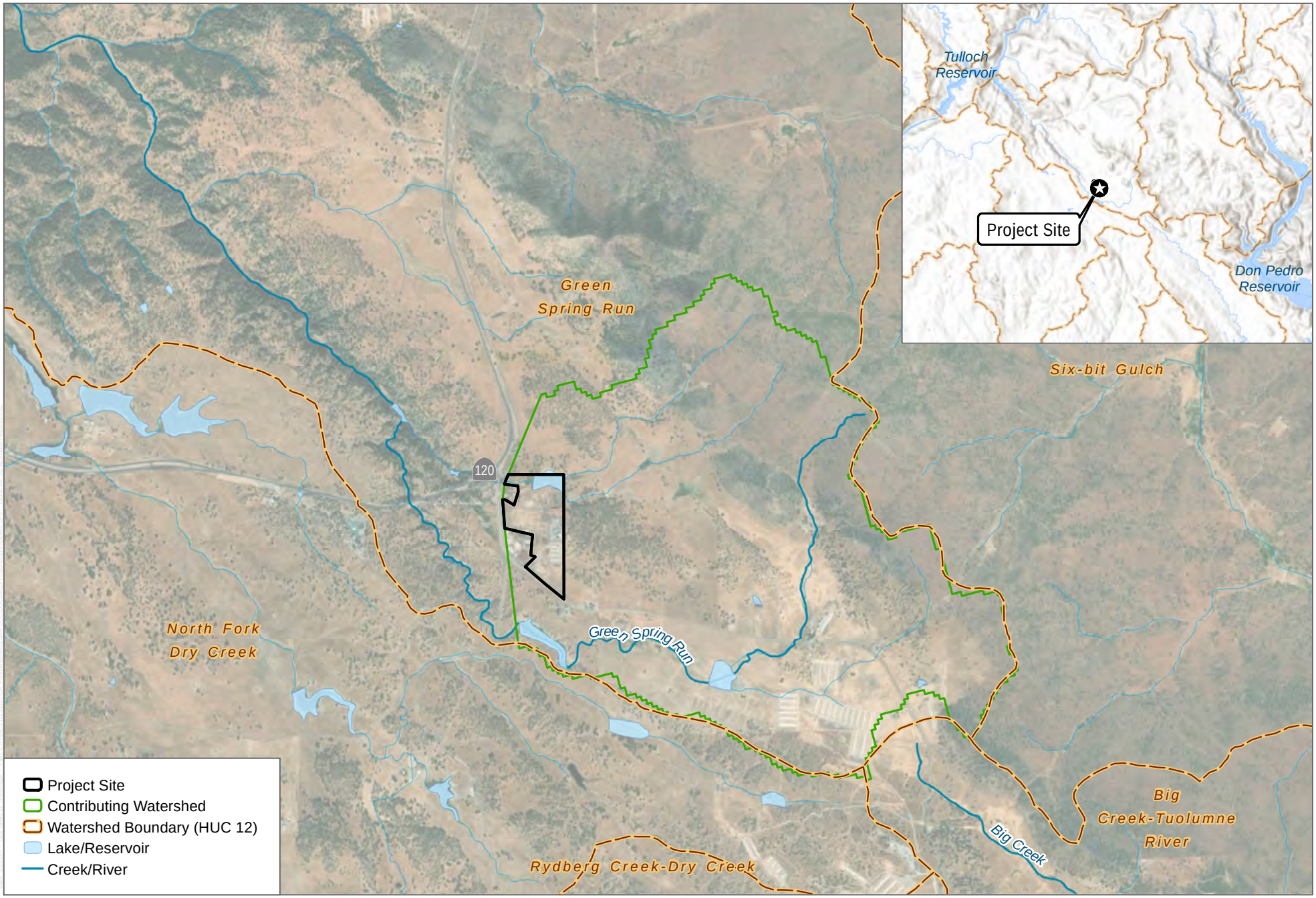

SOURCE: ESRI; USGS

DUDEK

0 0.25 0.5 Miles

FIGURE 3.9-7

Tuolumne Surface Water Features

Golden State Natural Resources Forest Resiliency Demonstration Project

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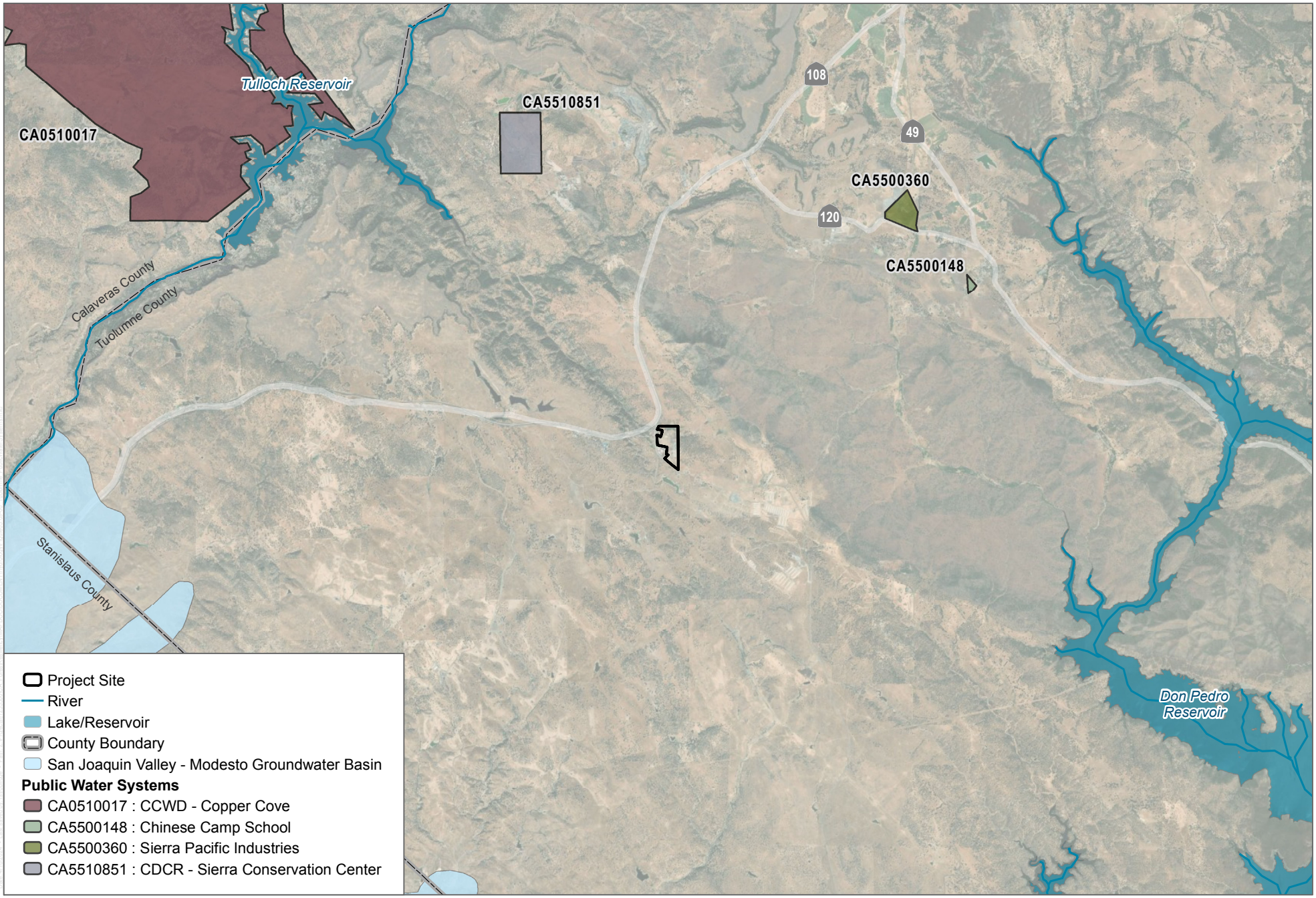

SOURCE: ESRI, SWRCB, Dudek 2024a

DUDEK

0 0.75 1.5 Miles

FIGURE 3.9-8

Public Water Systems - Tuolumne Facility

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SOURCE: ESRI, Tuolumne County, Dudek 2024a

DUDEK

0 370 740 Feet

FIGURE 3.9-9

Tuolumne On-Site Wells

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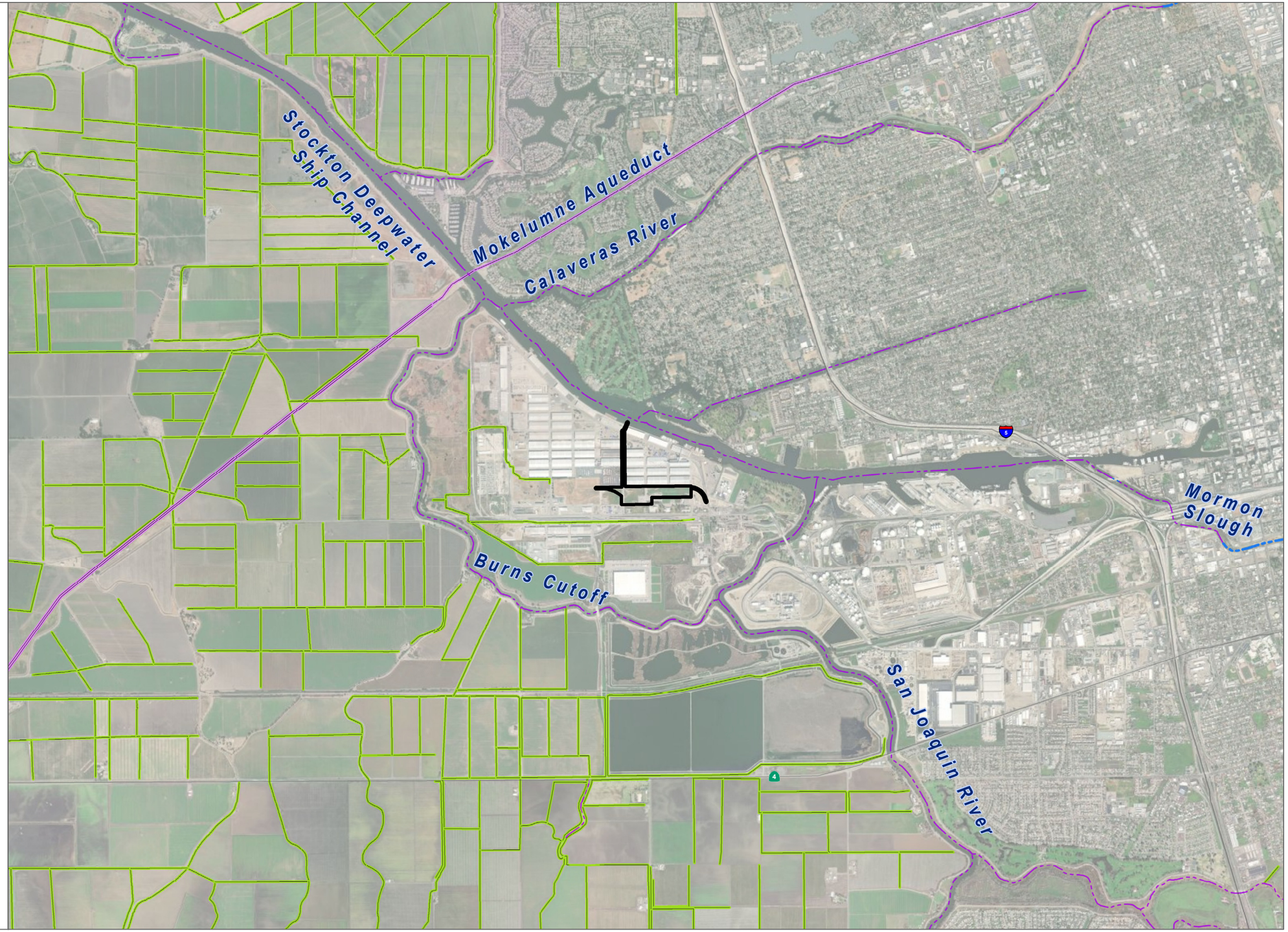
Project Site

NHD Flowline

- Stream/River
- Artificial Path
- Canal/Ditch
- Connector
- Pipeline



SOURCE: ESRI; USGS

DUDEK

0 0.275 0.55 Miles

FIGURE 3.9-10

Port of Stockton Surface Water Features

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