

1 3.7 Hydrology and Water Quality

2 3.7.1 Introduction

3 This section describes the regulatory and environmental setting for hydrology and water quality in
4 the vicinity of the Project. It also describes the impacts on hydrology and water quality that would
5 result from the Project and measures that would minimize impacts, where feasible and appropriate.
6 Cumulative impacts on hydrology and water quality, in combination with planned, approved, and
7 reasonably foreseeable projects, are discussed in Chapter 3.11, *Cumulative Impacts*. Discussion of
8 water quality, groundwater, drainage, flooding, runoff flood hazards, tsunami, seiche zone, conflict
9 with water quality control plans and/or groundwater management plans are found in Chapter 4,
10 *Other CEQA-Required Analysis*.

11 3.7.2 Regulatory Setting

12 3.7.2.1 Federal Regulations

13 Clean Water Act

14 The objective of the Clean Water Act of 1972 (CWA) is “to restore and maintain the chemical,
15 physical, and biological integrity of the Nation’s waters.” The CWA establishes the basic structure for
16 regulating discharges of pollutants into waters of the United States (U.S.) and gives U.S.
17 Environmental Protection Agency (USEPA) the authority to implement pollution control programs
18 such as setting wastewater standards for industries. In most states, including California, USEPA has
19 delegated this authority to state agencies. In the CWA 1987 amendments, (CWA, 1987), Congress
20 directed dischargers of storm water from municipal and industrial/construction point sources to
21 comply with the National Pollutant Discharge Elimination System (NPDES) permit program.
22 Important CWA sections are:

- 23 • Sections 303 and 304 require states to promulgate water quality standards, criteria, and
24 guidelines.
- 25 • Section 401 requires an applicant for a federal license or permit to conduct any activity, which
26 may result in a discharge to waters of the U.S., to obtain certification from the state that the
27 discharge would comply with other provisions of the act. Section 401 is most frequently
28 required in tandem with a Section 404 permit request. In California, State Water Resources
29 Control Board (SWRCB) and Regional Water Quality Control Boards (RWQCB) are responsible
30 for reviewing proposed projects and issuing Water Quality Certifications.
- 31 • Section 402 establishes the NPDES, a permitting system for the discharges (except for dredge or
32 fill material) of any pollutant into waters of the U.S. USEPA delegated to the California SWRCB
33 the implementation and administration of the NPDES program in California. SWRCB established
34 nine RWQCBs. SWRCB enacts and enforces the federal NPDES program and all water quality
35 programs and regulations that cross regional boundaries. The nine RWQCBs enact, administer,
36 and enforce all programs, including NPDES permitting, within their jurisdictional boundaries.
37 Section 402(p) requires permits for discharges of storm water from industrial, construction, and
38 Municipal Separate Storm Sewer Systems (MS4s).

- 1 • Section 404 establishes a permit program for the discharge of dredge or fill material into waters
2 of the U.S, including wetlands. This permit program is administered by U.S. Army Corps of
3 Engineers (USACE).

4 **Federal Antidegradation Policy**

5 The federal antidegradation policy has been in existence since 1968. The policy protects existing
6 uses, water quality, and national water resources. It directs states to adopt a statewide policy that
7 includes the following primary provisions:

- 8 • Maintain and protect existing instream uses and the water quality necessary to protect those
9 uses;
- 10 • Where existing water quality is better than necessary to support fishing and swimming
11 conditions, maintain and protect water quality unless the state finds that allowing lower water
12 quality is necessary for important local economic or social development; and
- 13 • Where high-quality waters constitute an outstanding national resource, such as waters of
14 national and state parks, wildlife refuges, and waters of exceptional recreational or ecological
15 significance, maintain and protect that water quality.

16 **Executive Order 11988: Floodplain Management**

17 Under Executive Order 11988, all federal agencies are directed to avoid to the extent possible long-
18 and short-term adverse impacts associated with the occupancy and modification of floodplains. In
19 addition, federal agencies should avoid direct or indirect support of floodplain development
20 wherever there is a practicable alternative. The 100-year floodplain is defined as areas that will be
21 inundated by a flood event having a 1-percent (%) chance of being equaled or exceeded in any given
22 year and corresponds to flood zones A, AE, AH, AO, and D.

23 Federal Emergency Management Agency (FEMA) provides floodplain information to allow local
24 jurisdictions to regulate development in and around floodplains through Flood Insurance Studies
25 and their associated Flood Insurance Rate Maps (FIRMs). The FIRM is the official map created and
26 distributed by FEMA and National Flood Insurance Program (NFIP) that delineates Special Flood
27 Hazard Areas (SFHAs), those areas subject to inundation by the base flood, for every county and
28 community that participates in the NFIP. FIRMs contain flood risk information based on historical,
29 meteorological, hydrologic, and hydraulic data, as well as open-space conditions, flood control
30 works, and development.

31 For projects that would, upon construction, affect the hydrologic or hydraulic characteristics of a
32 flooding source, and thus result in the modification of the existing regulatory floodway, the effective
33 Base Flood Elevations, or the SFHA, a conditional letter of map revision would need to be prepared
34 and approved by FEMA prior to any work occurring.

35 **National Flood Insurance Program**

36 In order to determine the necessity to comply with NFIP regulations, FEMA issues countrywide
37 FIRMs delineating the limits of FEMA-defined flood zones throughout the country (FEMA, 2024a).
38 Flood zones are defined as follows:

- 39 • Undetermined Risk Areas: Zone D is defined as areas with possible but undetermined flood
40 hazards. No flood hazard analysis has been conducted.

- 1 • Moderate to Low-Risk Areas: Zones B, C, and X are defined as areas outside of the floodplain
2 with a 1-% annual chance of flooding, and no Base Flood Elevations or depths are shown within
3 this zone.
- 4 • High-Risk Areas: Zone A is defined as areas with a 1-% annual chance of flooding; however,
5 detailed analyses are not performed for these areas, and no depths or base flood elevations are
6 shown on FIRMs.

7 **3.7.2.2 State Regulations**

8 **Porter-Cologne Water Quality Control Act**

9 The Porter-Cologne Water Quality Control Act of 1969 established the principal program for water
10 quality control in California. The act regulates discharges to surface and groundwater and directs
11 RWQCB to develop regional basin plans. Basin plans designate beneficial uses for surface and
12 ground waters, set narrative and numerical objectives that must be attained or maintained to
13 protect the designated beneficial uses and conform to the state's antidegradation policy, and
14 describe implementation programs to protect all waters in the region. Development of basin plans
15 and the triennial review of these plans by SWRCB are necessary for compliance with CWA Section
16 303 (40 Code of Federal Regulations Part 131).

17 **State Water Resources Control Board and Regional Water Quality Control Boards**

18 SWRCB and the nine RWQCBs are responsible for the protection of water quality in the state.
19 SWRCB establishes statewide policies and regulations mandated by federal and state water quality
20 statutes and regulations. The RWQCBs are responsible for the development, implementation, and
21 amendment of basin plans that address regional beneficial uses, water quality characteristics, and
22 water quality problems. The RWQCBs are responsible for implementing the Porter-Cologne Water
23 Quality Control Act discussed above. The RWQCBs are also responsible for issuing Water Quality
24 Certifications pursuant to CWA Section 401 as previously described. The Project is within the
25 Central Valley Regional Water Quality Control Board (CVRWQCB) jurisdiction.

26 All projects resulting in waste discharges, whether to land or water are subject to Section 13263 of
27 the California Water Code. Through the mandates of this section, dischargers are required to comply
28 with Waste Discharge Requirements (WDRs) as developed by the RWQCBs. WDRs for discharges to
29 surface waters must meet requirements for related NPDES permits.

30 **California Fish and Game Code Section 1602**

31 Section 1602 of the California Fish and Game Code, as administered by California Department of Fish
32 and Wildlife (CDFW), mandates that "it is unlawful for any person to substantively divert or obstruct
33 the natural flow or substantially change the bed, channel, or bank of any river, stream, or lake
34 designated by the department, or use any material from the streambeds, without first notifying the
35 department of such activity." Streambed alteration must be permitted by CDFW through a Lake or
36 Streambed Alteration Agreement. CDFW defines streambeds as "a body of water that flows at least
37 periodically or intermittently through a bed or channel having banks and supports fish or other
38 aquatic life" and lakes as "natural lakes and manufactured reservoirs." CDFW jurisdiction includes
39 ephemeral, intermittent, and perennial watercourses, and can extend to habitats adjacent to
40 watercourses.

41 According to the Lake and Streambed Alteration Notification Instructions, the California Fish and
42 Game Code Section 1602 requires any entity (defined as a person, state or local governmental

1 agency, or public utility) to notify CDFW before beginning any activity that would do one or more of
2 the following:

- 3 • Divert or obstruct the natural flow of any river, stream, or lake;
- 4 • Change the bed, channel, or bank of any river, stream, or lake;
- 5 • Use material from any river, stream, or lake; or
- 6 • Deposit or dispose of material into any river, stream, or lake.

7 **State Antidegradation Policy**

8 In accordance with the federal Antidegradation Policy, the state policy was adopted by SWRCB to
9 maintain high quality waters in California. This state policy restricts the degradation of surface and
10 groundwaters. Implemented by the RWQCBs, the policy is necessary to achieve the federal CWA
11 goals and objectives. In particular, the policy protects bodies of water where the existing water
12 quality is higher than necessary for the protection of present and anticipated beneficial uses.
13 Pollutants regulated under the policy can be attributed to, among other sources, industrial and
14 municipal discharges. The policy requires that any activity that produces or may produce a waste or
15 increased volume or concentration of waste and that discharges or proposes to discharge into high-
16 quality waters will be required to meet WDRs to control the discharge and assure that degradation
17 of the existing water quality through pollution or nuisance will not occur (SWRCB, 1968).

18 **National Pollutant Discharge Elimination System**

19 **Municipal Separate Storm Sewer Systems**

20 CWA Section 402(p) requires the issuance of NPDES permits for five categories of storm water
21 dischargers, including MS4s. USEPA defines an MS4 as “any conveyance or system of conveyances
22 (roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, human-made
23 channels, and storm drains) owned or operated by a state, city, town, county, or other public body
24 having jurisdiction over storm water, that are designed or used for collecting or conveying storm
25 water.” SWRCB and the RWQCBs issue NPDES permits for 5 years, and permit requirements remain
26 active until a new permit has been adopted.

27 **Construction General Permit**

28 In accordance with CWA Section 402(p), which regulates municipal and industrial storm water
29 discharges under the NPDES program, SWRCB adopted a Construction General Permit, which is
30 applicable to all storm water discharges associated with construction activity. The Project would be
31 responsible for compliance with the NPDES General Permit for Storm Water Discharges Associated
32 with Construction and Land Disturbance Activities, Order WQ 2022-0057-DWQ, NPDES Number
33 (No.) CAS000002 (CGP) (SWRCB, 2022a). The CGP was adopted on September 8, 2022, and became
34 effective on September 1, 2023.

35 The main objectives of the CGP are as follows:

- 36 • Reduce erosion from construction projects or activities;
- 37 • Minimize or eliminate sediment in storm water discharges from construction projects;
- 38 • Prevent materials used at a construction site from contacting storm water;
- 39 • Implement a sampling and analysis program to monitor construction site runoff;
- 40 • Eliminate unauthorized non-storm water discharges from the construction sites;
- 41 • Implement appropriate measures to reduce potential impacts on waterways both during and
42 after construction projects; and

- 1 • Establish maintenance commitments on post-construction pollution control measures.

2 The CGP requirements apply to any construction project that either result in the disturbance of at
3 least 1 acre of land or is part of a larger common development plan. Additionally, the CGP is required
4 for related construction or demolition activities, including clearing, grading, grubbing, or excavation,
5 or any other activity that results in greater than 1 acre of land disturbance.

6 Minimum storm water control requirements under the permit are determined by project risk
7 categories. Risk categories include the sediment risk factor and the receiving water risk factor. The
8 sediment risk factor and the receiving water risk factor are combined to determine a construction
9 site's project risk level. The project risk level governs the applicable minimum best management
10 practices (BMPs), monitoring requirements, reporting requirements, and the effluent standards
11 used to assess monitoring data and compliance.

12 Once the project risk level is determined, minimum BMP requirements are specified in attachments
13 to the CGP. BMPs are separated into five overall categories:

- 14 • Good Site Management "Housekeeping",
15 • Non-storm water Management,
16 • Erosion Control,
17 • Sediment Controls, and
18 • Run-on and Runoff Controls.

19 Monitoring and reporting requirements under the permit are also dependent on the project risk
20 level. Visual monitoring of storm water and non-storm water discharges is required of all projects.
21 Water quality sampling and analysis requirements increase with risk category. Monitoring is
22 required during normal construction site hours. Rain events also trigger monitoring in the case that
23 there is a forecast of a 50-% or greater probability of precipitation and a quantitative precipitation
24 forecast of 0.5 inch or more within a period of 24 hours.

25 The CGP requires that a registered Qualified Storm Water Pollution Prevention Plan (SWPPP)
26 Developer (QSD) prepare a SWPPP, and a registered QSD, Qualified SWPPP Practitioner (QSP),
27 and/or a properly trained and supervised QSP delegate perform inspections, sampling, and BMP
28 implementation.

29 In order to obtain coverage under the CGP, the permit applicant must submit the following to
30 SWRCB:

- 31 • Notice of Intent,
32 • Risk Assessment,
33 • Site Map,
34 • SWPPP,
35 • Annual Fee, and
36 • Signed Certification Statement.

37 **Central Valley Regional Water Quality Control Board Clean Water Act Section 401**
38 **Permit/Waste Discharge Requirements**

39 Under CWA Section 401, any project requiring a federal license or permit that may result in a
40 discharge to a water of the U.S. must obtain a 401 Certification, which certifies that the project

1 would be in compliance with state water quality standards. The most common federal permit
2 triggering 401 Certification is a CWA Section 404 permit, issued by USACE. The 401 permit
3 certifications are obtained from the appropriate RWQCB, dependent on the project location and are
4 required before USACE issues a CWA Section 404 permit.

5 In some cases, a RWQCB may have specific concerns with discharges associated with a project. As a
6 result, the RWQCB may prescribe WDRs under the State Water Code (Porter-Cologne Water Quality
7 Control Act). WDRs may specify the inclusion of additional project features, effluent limitations,
8 monitoring, and plan submittals that are to be implemented for protecting or benefiting water
9 quality. WDRs can be issued to address both permanent and temporary discharges of a project.

10 **3.7.2.3 Regional and Local Regulations**

11 **Basin Plan**

12 The Water Quality Control Plan for the Sacramento River Basin and the San Joaquin River Basin
13 (Basin Plan) applies to the Project (CVRWQCB, 2019). The Basin Plan sets forth the regulatory water
14 quality standards for surface waters and groundwater within the region. The water quality
15 standards address both the designated beneficial uses for each water body and the water quality
16 objectives (WQOs) to meet them. Where multiple designated beneficial uses exist, water quality
17 standards are written to protect the most sensitive use. Also described are the implementation
18 programs and actions necessary to meet the WQOs outlined in the Basin Plan.

19 **Central Valley Flood Protection Board Encroachment Permit**

20 Any proposed activities which encroach into rivers, waterways, and floodways, within and adjacent
21 to federal and state authorized flood control projects and regulated streams, and within designated
22 floodways, require approval by Central Valley Flood Protection Board (CVFPB). The permit
23 application must be in compliance with the California Water Code, Section 8710, and California Code
24 of Regulations, Title 23. The application must also be approved by USACE.

25 **Municipal Storm Water Permit**

26 Under Phase II of its storm water program, USEPA published NPDES permit application
27 requirements for small municipal storm water discharges. Madera County is subject to the NPDES
28 General Permit for WDRs for Storm Water Discharges from Small MS4s, Water Quality Order No.
29 2013-0001-DWQ, NPDES General Permit No. CAS000004, as amended by Order WQ 2015-0133-
30 EXEC, Order WQ 2016-0069-EXEC, Order WQ 2018-0001-EXEC, and Order WQ 2018-0007-EXEC.
31 The Project is required to comply with requirements and measures outlined in this municipal
32 permit to minimize impacts to water quality and runoff hydrology for the construction and
33 operational phases.

34 **Madera County Floodplain Management Regulations**

35 Madera County Code of Ordinances Chapter 14.6, Flood Control, establishes regulations to promote
36 the public health, safety, and general welfare, and minimize public and private losses due to flood
37 conditions within flood prone, mudslide/mudflow, or flood related erosion areas. This ordinance
38 includes regulations to:

- 39 • Restrict or prohibit uses which are dangerous to health, safety, and property due to water or
40 erosion hazards, or which result in damaging increases in erosion or flood heights or velocities;

- 1 • Require that uses vulnerable to floods, including facilities which serve such uses, be protected
- 2 against flood damage at the time of initial construction;
- 3 • Control the alteration of natural floodplains, stream channels, and natural protective barriers,
- 4 which help accommodate or channel floodwaters;
- 5 • Control filling, grading, dredging, and other development which may increase flood damage; and
- 6 • Prevent or regulate the construction of flood barriers which will unnaturally divert floodwaters
- 7 or which may increase flood hazards in other areas.

8 **Madera County Storm Water and Storm Sewer System Ordinance**

9 Madera County Code of Ordinances Chapter 16.12, Storm Water and Storm Sewer Systems,
10 establishes regulations for non-storm water discharges to the storm drainage system to the
11 maximum extent practicable for the protection of health, safety, and general welfare of the residents
12 of Madera County. This ordinance applies to all water entering the storm drain system generated on
13 any developed and undeveloped lands and establishes methods for controlling the introduction of
14 pollutants into the MS4 in compliance with NPDES requirements. The objectives of these regulations
15 are:

- 16 • To regulate the contribution of pollutants to the MS4 by storm water discharges;
- 17 • To prohibit illicit connections and discharges to the MS4; and
- 18 • To establish legal authority to carry out all inspection, surveillance, monitoring, and
- 19 enforcement procedures necessary to ensure compliance with these provisions.

20 **Madera County Storm Water Resource Plan**

21 Madera County's Storm Water Resource Plan (SWRP) (County of Madera, 2017) is a watershed-
22 based storm water plan that coordinates storm water management strategies for the entire county
23 to reduce runoff volumes and pollutants in receiving waters.

24 The main goals of the SWRP are to identify and prioritize opportunities to:

- 25 • Better utilize storm water as a resource;
- 26 • Promote responsible storm water management within a sub-watershed;
- 27 • Reduce runoff volumes and pollutants entering receiving waters; and
- 28 • Realize social and community benefits not typically achieved with traditional storm water
- 29 projects.

30 Types of projects included in the SWRP include projects to capture and manage storm water, reduce
31 flooding and pollution from storm water runoff, improve and integrate biological systems such as
32 plants, and soil, and provide community benefits, including cleaner air and water.

33 **Madera County Public Works Department Grading and Erosion Control Ordinance**

34 Madera County Code of Ordinances Chapter 14.50, Grading and Erosion Control, establishes
35 minimum standards for construction activities to prevent erosion, sedimentation, and other
36 environmental damage and to promote the public health and safety of the community. This
37 ordinance requires a permit to be obtained from Madera County Engineering Division for grading
38 activities with drainage and erosion control requirements.

1 **3.7.3 Environmental Setting**

2 The Project site is located in the San Joaquin Valley southeast of the City of Madera in Madera
3 County. The general Project vicinity consists of foothills, mountains, and desert, the climates of
4 which vary in temperature and precipitation amounts.

5 **3.7.3.1 Regional Hydrology**

6 The Project site lies within the Central Valley Region (Region 5) of the California State Water
7 Resources Control Board boundaries. The Central Valley Region encompasses the Sacramento River
8 and San Joaquin River drainage basins. These drainage basins extend approximately 400 miles from
9 the California-Oregon border southward to the headwaters of the San Joaquin River and are bound
10 by the Sierra Nevada on the east and the Coast Range and Klamath Mountains on the west. Surface
11 water from the two drainage basins meet and form the Delta, which ultimately drains to San
12 Francisco Bay (CVRWQCB, 2019).

13 **3.7.3.2 Local Hydrology**

14 The Project site is situated in the San Joaquin River Basin, which covers approximately 15,880
15 square miles and includes the area drained by the San Joaquin River (CVRWQCB, 2019). The Project
16 site is within the Middle San Joaquin-Lower Chowchilla River watershed (USGS, 2023), which covers
17 approximately 5,663 square miles. The watershed is highly agricultural and includes the majority of
18 agricultural areas in the counties of Stanislaus, Merced, and Madera, and part of San Joaquin and
19 Fresno.

20 The San Joaquin River is approximately 19 miles west of the Project site. The San Joaquin River, the
21 second longest river in California, begins in the high Sierra Nevada Mountains and flows
22 approximately 100 miles to the west then turns north and flows for approximately 260 miles before
23 joining the Sacramento River.

24 The northern portion of the Project site crosses Cottonwood Creek, which runs primarily northeast-
25 southwest through the Project site. The creek is an ephemeral or intermittent drainage, so its creek
26 bed is often dry. Cottonwood Creek flows from the Fresno River and drains into the San Joaquin
27 River.

28 Precipitation and Climate

29 Madera County is located within a semi-arid climate zone, characterized by hot, dry summers and
30 mild, wet winters. The mean temperature range for the months of November through April is 46
31 degrees Fahrenheit (°F) to 60°F. The mean temperature range for the months of May through
32 October is 65°F to 80°F (NOAA, 2023).

33 Precipitation in Madera County is derived from frontal low-pressure systems that originate over the
34 Pacific Ocean and generally travel southeast through California. The majority of precipitation occurs
35 during the cooler months of the year from November through April and is infrequent during the
36 summer months. The average annual rainfall is 10.79 inches (NOAA, 2023).

1 Surface Waters

2 Agriculture is the dominant land use in the Middle San Joaquin-Lower Chowchilla River watershed.
3 Surface water in the watershed is primarily stored in several large reservoirs, which are used for
4 both irrigation and recreation purposes. The northern portion of the Project site includes a portion
5 of Cottonwood Creek.

6 Surface water quality in the Middle San Joaquin-Lower Chowchilla River watershed has been
7 impacted by agricultural pollution. Several portions of the San Joaquin River are listed as impaired
8 on the SWRCB 2020-2022 California Integrated Report 303(d) list by numerous pesticides, toxic
9 metals, and additional chemicals that promote the growth of algae (SWRCB, 2022b).

10 The Basin Plan (CVRWQCB, 2019) lists beneficial uses of major surface water bodies within the
11 Middle San Joaquin-Lower Chowchilla River watershed, including the San Joaquin River and
12 Cottonwood Creek. Existing beneficial uses within the watershed include the following:

- 13 • AGR: Agricultural Supply (irrigation and stock watering),
- 14 • REC-1: Water Contact Recreation,
- 15 • REC-2: Non-contact Water Recreation,
- 16 • WARM: Warm Freshwater Habitat, and
- 17 • WILD: Wildlife Habitat.

18 Beneficial uses of major surface water bodies within the watershed include:

- 19 • MUN: Municipal and Domestic Supply, and
- 20 • REC-1 (canoeing and rafting)

21 All surface waters are subject to narrative and quantitative WQOs described in the Basin Plan
22 (CVRWQCB, 2019). WQOs for selected constituents in inland surface waters within the Middle San
23 Joaquin-Lower Chowchilla River watershed are as follows:

- 24 • Sediment: The suspended sediment load and suspended sediment discharge rate of surface
25 waters shall not be altered in such a manner as to cause nuisance or adversely affect beneficial
26 uses.
- 27 • Settleable Material: Waters shall not contain substances in concentrations that result in the
28 deposition of material that causes nuisance or adversely affects beneficial uses.
- 29 • Suspended Material: Waters shall not contain suspended material in concentrations that cause
30 nuisance or adversely affect beneficial uses.
- 31 • Turbidity: Waters shall be free of changes in turbidity that cause nuisance or adversely affect
32 beneficial uses. Increases in turbidity attributable to controllable water quality factors shall not
33 exceed the following limits:
 - 34 ○ Where natural turbidity is less than 1 Nephelometric Turbidity Unit (NTU), controllable
35 factors shall not cause downstream turbidity to exceed 2 NTUs.
 - 36 ○ Where natural turbidity is between 1 and 5 NTUs, increases shall not exceed 1 NTU.
 - 37 ○ Where natural turbidity is between 5 and 50 NTUs, increases shall not exceed 20 %.
 - 38 ○ Where natural turbidity is between 50 and 100 NTUs, increases shall not exceed 10 NTUs.
 - 39 ○ Where natural turbidity is greater than 100 NTUs, increases shall not exceed 10 %.

1 **3.7.3.3 Floodplains**

2 Portions of the Project site are located in FEMA-designated Flood Zones AO and AE (FEMA, 2024b).
3 Flood Zone AO is identified as an area subject to inundation by 1%-annual-chance of shallow
4 flooding where average depths are between 1 and 3 feet. FEMA identifies Flood Zone AE as areas
5 subject to inundation by the 1%-annual-chance flood event.

6

1 **3.7.4 Impact Analysis**

2 This section describes the environmental impacts of the Project on hydrology and water quality.
3 This section also describes the methods used to evaluate the impacts and the thresholds used to
4 determine whether an impact would be significant. Measures to mitigate significant impacts are
5 provided, where appropriate.

6 **3.7.4.1 Methods for Analysis**

7 The evaluation of impacts to water resources involves an analysis of existing data related to
8 hydrology, flooding, drainage, and water quality and an assessment of whether the Project would
9 alter drainage patterns in a manner that would cause erosion or siltation or flooding.

10 Construction impact analysis evaluates if construction of the Project would result in significant
11 impacts related to hydrology, erosion/siltation, and flooding. Construction activities could increase
12 erosion/siltation from exposed soil and could alter existing drainage patterns which could affect
13 flooding potential. Analysis will address these temporary impacts as they relate to the Project
14 activities.

15 Permanent impacts to water resources are evaluated by estimating the conversion of pervious to
16 impervious surfaces. Conversion of pervious to impervious areas decreases infiltration, which
17 increases runoff volume and peak flow rates and the potential for erosion, siltation, and flooding.

18 **3.7.4.2 Thresholds of Significance**

19 CEQA Guidelines Appendix G (Title 14, California Code of Regulations Section 15000 et seq.) has
20 identified significance criteria to be considered for determining whether a project could have
21 significant impacts on hydrology and water quality.

22 An impact would be considered significant if construction or operation of the Project would have
23 any of the following consequences:

- 24 • Substantially alter the existing drainage pattern of the site or area, including through the
25 alteration of the course of a stream or river or through the addition impervious surfaces, in a
26 manner which would:
 - 27 ○ Result in substantial erosion or siltation on-site or off-site; or
 - 28 ○ Substantially increase the rate or amount of surface runoff in a manner which would result
29 in flooding on-site or off-site.

1 3.7.4.3 Impacts and Mitigation Measures

2 Project Construction

Impact HYD-1	Construction of the Project would not 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: <ol style="list-style-type: none"> <li data-bbox="560 493 1282 525">I. result in substantial erosion or siltation on-site or off-site.
Level of Impact	Less than Significant

4
5 Waterways in the vicinity of the Project elements for the proposed west side track alignment and
6 proposed bridge include Cottonwood Creek. Construction activities of the Project, such as
7 constructing the new track and platform, parking lot, bridges, expanded station building, and
8 drainage culvert extensions, would temporarily expose bare soil, which would be at increased risk
9 for erosion. Exposed or stockpiled soil would also be at increased risk for erosion. Project
10 construction would increase impervious surface area, which could result in increased storm water
11 runoff and localized siltation in surface receiving waters. Construction occurring within existing
12 pervious surfaces would help to control drainage, promote infiltration, and reduce runoff; however,
13 any removal of vegetation that acts as an erosion barrier or the movement of earthwork or
14 placement of construction equipment and materials could temporarily alter existing drainage
15 patterns and cause increased sediment/siltation in receiving waters.

16 To address these temporary water quality impacts, the Project would implement design features to
17 control runoff rates/amounts and the discharge of potential pollutants (i.e., sediment/siltation)
18 during construction. In accordance with the CGP, the Project would be required to implement a
19 construction SWPPP that would identify sources of sediment that could affect the quality of storm
20 water discharges. The SWPPP would include BMPs that would be in place during construction to
21 control erosion and reduce or eliminate sediment in storm water discharges. Proper
22 implementation of the construction SWPPP would avoid potential impacts to water quality.

23 BMP categories would include BMPs that address source control, pollutant control, and treatment
24 control that would conform with standard Madera County construction BMPs. Although specific
25 temporary construction-related BMPs would be selected at the time of SWPPP preparation,
26 potential BMPs would likely include fiber rolls, bonded-fiber matrix hydroseeding, and check dams
27 for erosion control, inlet protection (sand/gravel bags and geotextiles), silt fencing, sediment
28 traps/basins for sediment controls, soil berming around disturbed areas, and phasing of soil
29 disturbance during the wet season (i.e., limiting widespread grading) for effectively managing
30 erosion and pollutant (i.e., siltation) discharge during significant rainfall events. Typical
31 construction BMPs established in Madera County include:

- Cover loose stockpiled construction materials (e.g., soil, spoils, and aggregate).
- Adhere to California Storm Water Quality Association Construction BMP Guidance Handbook for sediment management, which may include watering for dust control, placement of straw bales, and sediment basins.
- Schedule grading activities to occur between May 1st through November 30th as much as possible.

- 1 • Control runoff through sediment basins, silt traps, or similar measures.
- 2 • Avoid slope construction steeper than 1:1 (1.5:1 for fills).
- 3 • Use mulching for temporary erosion control.
- 4 • Adhere to standard construction practices such as Best Available Technology Economically
- 5 Feasible and Best Conventional Pollutant Control Technology to help reduce potential
- 6 impacts related to storm water drainage systems.

7 The Project would be required to comply with all applicable federal, state, regional, and local agency
8 water quality protection laws and regulations, as well as commonly used industry standards,
9 including the CWA, Porter-Cologne Water Quality Control Act, State of California Antidegradation
10 Policies, NPDES CGP regulations, Basin Plan, the Madera County Grading and Erosion Control
11 Ordinance, CDFW, and all other applicable regulations for all construction activities. In addition,
12 existing drainage culverts would be extended to accommodate the proposed improvements where
13 applicable, and existing drainage patterns would be maintained as much as possible.

14 Construction activities could temporarily impact localized drainage patterns; however, these
15 impacts would not substantially increase the rate or volume of storm water flows. Furthermore,
16 implementation of the proposed Project design features would control storm water runoff and
17 minimize construction-related erosion and siltation impacts.

18 With adherence to existing laws and regulations and proper implementation of storm water
19 compliance requirements, potential impacts from erosion or siltation during construction would be
20 less than significant, and no mitigation is required.

Impact HYD-2	Construction and operation of the Project would not 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: <ul style="list-style-type: none"> II. substantially increase the rate or amount of surface runoff in a manner which would result in flooding on-site or off-site.
Level of Impact	Less than Significant

22 Construction of the Project would increase impervious surface area, which could result in increased
23 storm water runoff. Construction occurring within existing pervious surfaces would help to control
24 drainage, promote infiltration, and reduce runoff; however, any removal of vegetation or the
25 movement of earthwork or placement of construction equipment and materials could temporarily
26 alter existing drainage patterns, which could increase the rate or amount of surface runoff and the
27 potential for on-site or off-site flooding. Additionally, construction of the bridge and westside track
28 over Cottonwood Creek would result in discharge or fill material into waters of the U.S, which would
29 be a significant impact. Specific permitting requirements would be determined once specific
30 construction plans and phasing are determined.

31 To address these temporary impacts, the Project would be required to implement design features
32 and the construction SWPPP to maintain drainage patterns and control runoff rates/amounts during
33 construction. Construction BMPs, such as sediment basins, silt traps, and similar measures, would
34 control surface runoff. Construction activities could temporarily impact localized drainage patterns;
35 however, these impacts would not substantially increase the rate or volume of storm water flows
36 resulting in flooding.

1 Existing drainage culverts would be extended to accommodate the proposed improvements where
2 applicable, and existing drainage patterns would be maintained as much as possible. In addition, the
3 Project would be required to comply with all applicable federal, state, regional, and local agency
4 water quality protection laws and regulations, as well as commonly used industry standards,
5 including the CWA, Porter-Cologne Water Quality Control Act, State of California antidegradation
6 polices, NPDES CGP regulations, Basin Plan, Madera County Grading and Erosion Control Ordinance,
7 CDFW, and all other applicable regulations for all construction activities.

8 With adherence to existing laws and regulations and proper implementation of storm water
9 compliance requirements, potential impacts related to a substantial increase in surface runoff
10 resulting in flooding during construction would be less than significant and no mitigation is
11 required.

12 **Project Operations**

13 The Project would introduce new impervious surfaces because impermeable surfaces from the
14 concrete station platform, parking lot, and bridges would replace permeable surfaces. A significant
15 increase in impervious surface area could increase storm water runoff rates, which could result in
16 increased erosion potential and pollutant discharge (e.g., sediment/siltation) to surface receiving
17 waters, and flooding potential.

18 In compliance with the Madera County SWRP, Project design features would be implemented to
19 maintain existing drainage patterns, promote infiltration, reduce runoff volumes/amounts, and
20 minimize pollutant discharge to receiving waters. A full-capture storm water quality system, such as
21 bioretention, infiltration trench/basin, detention basin, media filtration system, or storm water
22 capture and reuse, would be designed to contain and treat all storm water runoff from impervious
23 surfaces. The storm water system would be designed to meet the proposed flow capacity and would
24 slow (detain or retain) storm water, which would reduce the runoff volume discharged and decrease
25 the peak runoff discharge velocity for design storms, thereby minimizing the potential for increased
26 runoff rates/amounts and erosion/siltation on-site or off-site. Project design features would offset
27 any increases in flow and changes to drainage patterns post-construction. Operation of the Project
28 would not alter the course of any streams or rivers.

29 In addition, existing drainage culverts would be extended to accommodate the proposed
30 improvements where applicable, and existing drainage patterns would be maintained as much as
31 possible. Bridge designs would maintain existing hydraulic capacity to prevent channel erosion and
32 siltation. Per the Madera County Grading and Erosion Control Permit, the drainage system would be
33 reviewed and approved by the Madera County prior to the approval of the Grading and Erosion
34 Control Permit. The Project would also comply with all applicable federal, state, regional, and local
35 agency water quality protection laws and regulations, including the Basin Plan, MS4 permit, Madera
36 County Storm Water Ordinance, CDFW, and all other applicable regulations for all operational
37 activities.

38 With adherence to existing laws and regulations and proper implementation of storm water
39 compliance requirements, potential impacts related to substantial erosion or siltation, and flooding
40 would be less than significant during operations.