Appendix F Water Quality Assessment Report

Water Quality Assessment Report

Napa Forward – State Route 29 (SR-29) Improvements at Rutherford and Oakville Intersections Project – Phase 1

SR-29 at Rutherford Road and Oakville Cross Road

04-NAP-29-22.72/24.59

04-2W430

Napa County, California
September 20, 2023

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September 2023

STATE OF CALIFORNIA
Department of Transportation

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Executive Summary

The Metropolitan Transportation Commission (MTC), in cooperation with the Napa Valley Transportation Authority (NVTA) and the California Department of Transportation (Caltrans), proposes the Napa Forward – State Route (SR-) 29 Improvements at Rutherford and Oakville Intersections Project – Phase 1 (Project) to improve the operation and safety of SR-29 at the intersections of Oakville Cross Road (Post Mile [PM] 22.72) and Rutherford Road (PM 24.59). A single-lane roundabout is proposed at the intersection of SR-29 and Oakville Cross Road. Due to right-of-way limitations, a roundabout will not be feasible at the Rutherford Road intersection without substantial right-of-way impact. Hence, the Project proposes to install a traffic signal and/or other traffic calming measures at the intersection of SR-29 and Rutherford Road. The purpose of the Project is to enhance safety and traffic operations at the intersections of SR-29 and Oakville Cross Road and SR-29 and Rutherford Road.

The purpose of the *Water Quality Assessment Report* (WQAR) is to fulfill the requirements of the National Environmental Policy Act and the California Environmental Quality Act, and to provide information for National Pollutant Discharge Elimination System (NPDES) permitting. The document includes a discussion of the proposed Project, the general environmental setting of the Project area, and the regulatory framework with respect to water quality; it also provides data on surface water and groundwater resources within the Project area and the water quality of these waters, describes water quality impairments and beneficial uses, identifies potential water quality impacts/benefits associated with the proposed Project, and recommends Project features for the potential impacts.

The Project is under the jurisdiction of the San Francisco Bay Regional Water Quality Control Board (RWQCB), Region 2. The Project would include work within Caltrans' right-of-way, Napa County, and Napa Valley Wine Train's right-of-way, as well as a private property. Project improvements located within Caltrans' right-of-way would comply with the Caltrans Municipal Separate Storm Sewer System (MS4) Permit (NPDES No. CAS000003, SWRCB Order No. 2022-0033-DWQ). Project improvements located in Napa County's and Napa Valley Wine Train's right-of-way would comply with the Phase II Small MS4 Permit (NPDES No. CAS000004, SWRCB Order No. 2013-0001-DWQ, as amended by Order No. 2015-0133-EXEC, Order No. 2016-0069-EXEC, Order No. 2017-XXXX-DWQ, Order No. 2018-0001-EXEC, and Order No. 2018-0007-EXEC). The Project would also need to adhere to the requirements of the Construction General Permit (CGP) (NPDES No. CAS000002, SWRCB Order No. 2022-0057-DWQ, adopted on September 8, 2022, and will become effective on September 1, 2023) to address temporary impacts during construction.

The Project area is entirely contained within an undefined hydrologic sub-area (206.50) of the Napa River hydrologic area and San Pablo hydrologic unit. The Project's receiving water body is Napa River. The San Francisco Bay RWQCB lists Napa River as having beneficial uses and being pollutant impaired.

The Project is entirely located within the Napa Valley groundwater subbasin (2-002.01) of the Napa-Sonoma Valley groundwater basin. Project-specific groundwater studies are not yet available. Per the *Phase II Environmental Site Assessment Report and Low Threat Closure Request* developed for the Napa Wine Company (which is immediately

adjacent to the Oakville Cross Road intersection), depth to groundwater is approximately 17.5 feet below ground surface.

Permanent impacts to water quality may result from the addition of impervious area; additional impervious area would prevent runoff from naturally dispersing and infiltrating into the ground, resulting in increased concentrated flow. The Project would result in an increase of 0.34 acres of impervious area; therefore, the Project would have potential to cause stormwater impacts. Permanent stormwater treatment best management practices (BMP) such as bioretention areas, biofiltration areas, media filters, and infiltration devices would be considered to address Project impacts by promoting infiltration, reducing erosion, and collecting, retaining, and treating roadway runoff. Permanent erosion control measures such as hydroseeding, erosion control blankets, and slope paving will be applied to all Disturbed Soil Areas (DSA) to minimize post-construction erosion. Long-term dewatering operations are not anticipated; therefore, no permanent impacts to groundwater are expected.

The Project would have a total DSA of 1.64 acres. Temporary impacts can result from sediment discharge from DSAs and construction near water resources or drainage facilities that discharge to water bodies.

The risk level determination performed for this Project concluded that there is a high receiving water risk and a medium sediment risk, so the Project must follow Risk Level 2 requirements for the CGP. Risk Level 2 projects include the implementation of standard construction site BMPs, quarterly non-stormwater discharge visual inspections, and stormwater inspections pre-storm, daily during a storm event, and post-storm events. Risk Level 2 projects are also required to comply with Numeric Action Level effluent limitations for pH and turbidity. This risk level determination is based on current available information and may be updated, and potentially reduced, in later phases as more refined Project information becomes available.

Temporary construction site BMPs would be needed to limit sediment-laden flows from leaving the construction site, such as temporary fiber rolls, temporary drainage inlet protection, and street sweeping. BMPs such as spill prevention and control, materials management, and liquid waste management can be used to prevent accidental spills of toxic materials associated with construction operations.

The Project is not expected to require dewatering activities. The Project's water quality design goal would be to reduce impacts to water resources to the maximum extent practicable and preserve natural and sensitive habitats using temporary and permanent BMPs. By meeting these goals and incorporating applicable NPDES requirements, water quality impacts would be avoided.

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Acronyms

Basin Plan	*Water Quality Control Plan for the San Francisco Bay Basin*
BMP	best management practice
Caltrans	California Department of Transportation
CGP	Construction General Permit
CWA	Clean Water Act
DSA	Disturbed Soil Area
EPA	Environmental Protection Act
ESRI	Environmental Systems Research Institute
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
K	erosion factor
LID	low-impact development
LS	length-slope
MS4	Municipal Separate Storm Sewer System
MTC	Metropolitan Transportation Commission
NIS	new impervious surface areas
NNI	net new impervious surface areas
NPDES	National Pollutant Discharge Elimination System
PM	Post Mile
Project	State Route 29 Improvements at Rutherford and Oakville Intersections Project – Phase 1
R	rainfall erosivity
RIS	replaced impervious surface
RWQCB	Regional Water Quality Control Board
SR-29	State Route
SWMP	Stormwater Management Plan
SWPPP	Stormwater Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TMDL	total maximum daily load
U.S.	United States
USACE	United States Army Corps of Engineers
WDR	Waste Discharge Requirement

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1 Introduction

1.1 Approach to Water Quality Assessment

The purpose of the *Water Quality Assessment Report* is to fulfill the requirements of the National Environmental Policy Act and the California Environmental Quality Act, and to provide information for National Pollutant Discharge Elimination System (NPDES) permitting. The document includes a discussion of the proposed project, the general environmental setting of the project area, and the regulatory framework with respect to water quality. It also provides data on surface water and groundwater resources within the project area and the water quality of these waters, describes water quality impairments and beneficial uses, identifies potential water quality impacts/benefits associated with the proposed project, and recommends project features for the potential impacts.

1.2 Project Description

Project Location

The proposed State Route (SR-) 29 Improvements at Rutherford and Oakville Intersections Project – Phase 1 (Project) is located along a 2.2-mile segment of SR-29 in an unincorporated area of Napa County. The Project proposes the improvement of two intersections at: SR-29 and Rutherford Road (SR-128) in the community of Rutherford and SR-29 and Oakville Cross Road in the community of Oakville. The Project location is shown in Figure 1 and Figure 2.

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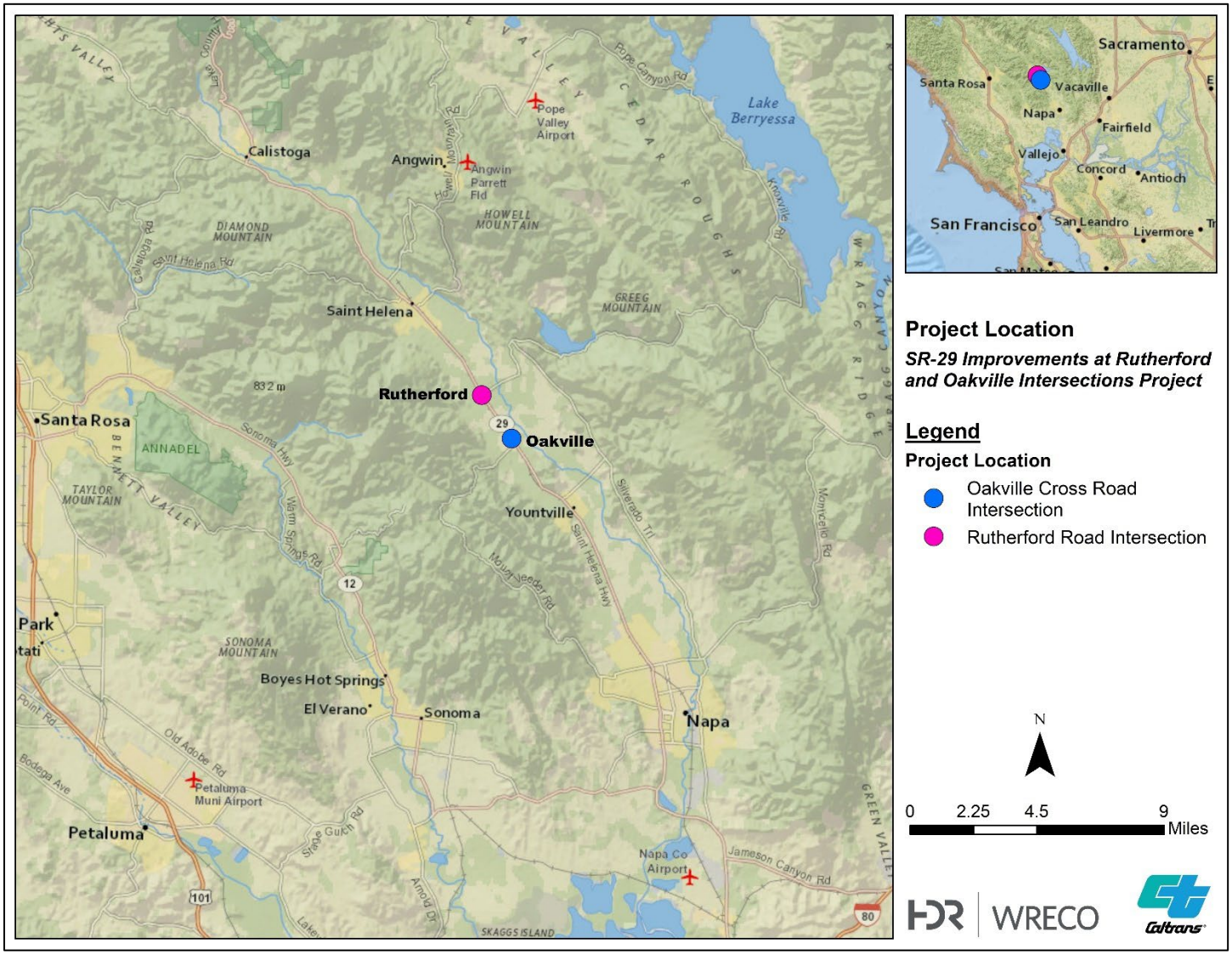
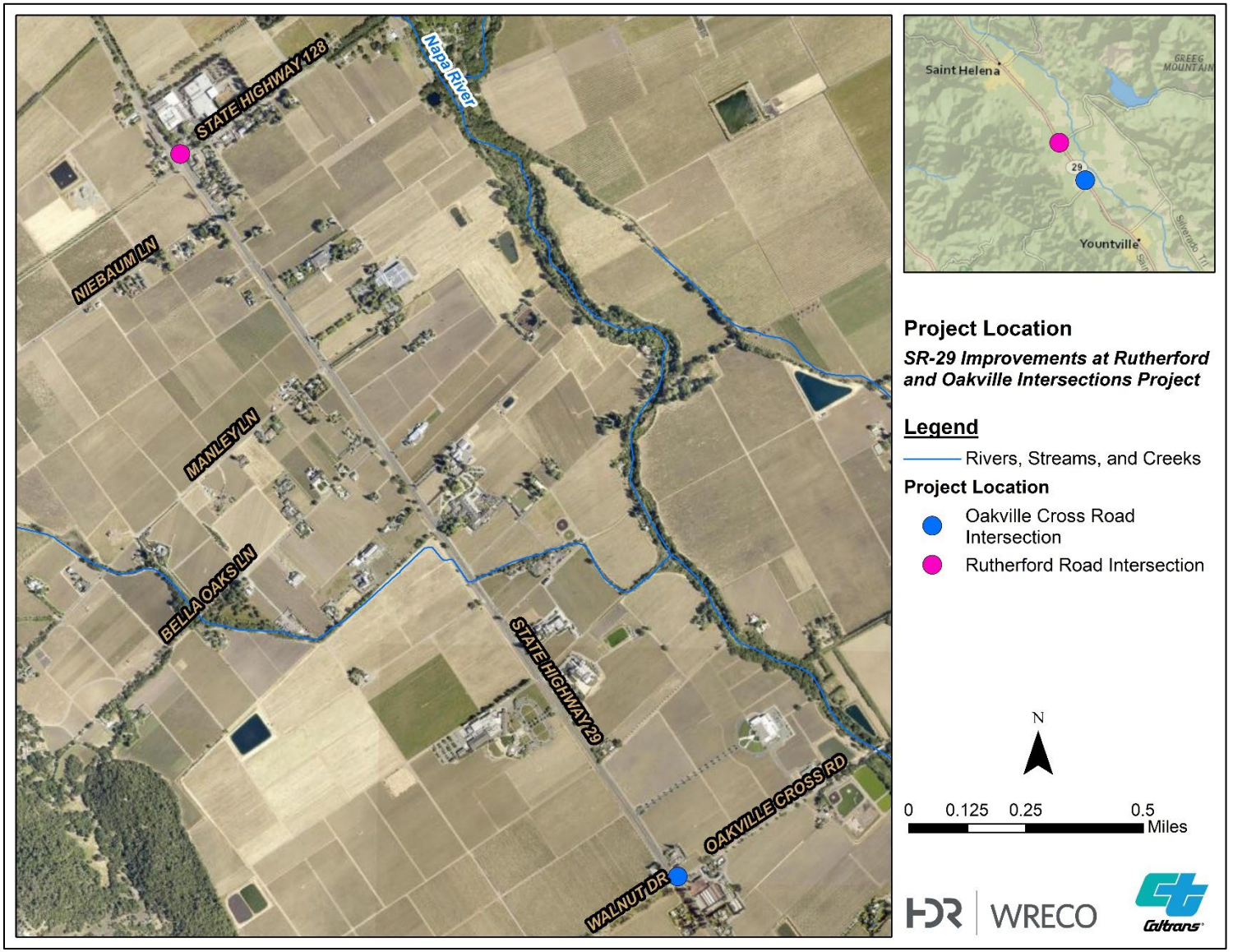
Figure 1. Project Location Map



Source: Environmental Systems Research Institute (ESRI), 2018

Figure 2. Project Vicinity Map



Source: ESRI, 2009

Project Background

In January 2020, the Metropolitan Transportation Commission (MTC) completed a preliminary traffic study to identify the causes of and potential solutions to congestion in the greater Project vicinity. The results indicated that enhanced intersection control at the two intersections would improve multimodal traffic operations performance along SR-29. Preliminary crash data analysis provided by the California Department of Transportation (Caltrans) indicates that the total rate of fatal and injury crashes at these two intersections are above the average crash rate for similar facilities statewide. Based on the results of traffic and safety analyses and feedback received from Project stakeholders, the implementation of a traffic signal and roundabout are viable options to address the operations and safety needs.

Federal Highway Administration studies indicate that a properly designed roundabout would slow down traffic and, hence, reduce the probabilities of most severe types of intersection crashes and injuries. Roundabouts also allow for continuous flow of traffic at lower speed through this segment of the corridor and would be the ideal candidate to address the safety and operations challenges associated with the corridor.

Existing Conditions

SR-29 is one of the two major north-south corridors that provides connectivity through the cities of Calistoga, St. Helena, Yountville, Napa, and American Canyon within Napa County. It is a primary freight, agricultural, and commute corridor accessing the San Francisco Bay Area and Sacramento as well as nearby Solano and Lake counties. As the gateway to the Napa Valley Wine Country, SR-29 is a main route that brings tens of thousands of tourists to the region each year. Within the Project limits, SR-29 between Whitehall Lane and Oakville Cross Road experiences heavy congestion during peak periods. The existing SR-29 corridor is uncontrolled within the Project study area. Traffic on SR-29 is not required to stop, creating a continuous traffic flow and leaving no gap for side streets to make turns. Therefore, vehicles at many of the side-street stop-controlled intersection approaches along the corridor experience difficulty turning onto SR-29.

Project Description

MTC, in cooperation with the Napa Valley Transportation Authority and Caltrans, proposes to improve the operation and safety of SR-29 at the intersections of Oakville Cross Road (Post Mile [PM] 22.72) and Rutherford Road (PM 24.59). A single-lane roundabout is proposed at the intersection of SR-29 and Oakville Cross Road. Due to right-of-way limitations, a roundabout will not be feasible at the Rutherford Road intersection without substantial right-of-way impact. Hence, the Project proposes to install a traffic signal and/or other traffic calming measures at the intersection of SR-29 and Rutherford Road.

Oakville Cross Road Intersection

Limits of construction on SR-29 extend approximately 0.5 mile northerly and southerly from the center of the Oakville Cross Road intersection, approximately 500 feet in the easterly direction along Oakville Cross Road, and approximately 200 feet in the westerly direction at the existing driveway crossing railroad tracks.

The Oakville roundabout would maintain existing traffic patterns, however, ingress to the Oakville grocery would be modified to right-in and right-out only. The Project would not preclude southbound access to the Oakville Grocery driveway (currently a left turn-in); rather traffic would be routed through the roundabout to access the grocery. Construction of the roundabout also would include the installation of new landscaping, intersection lighting, a pedestrian and bicyclist shared-use path with bike ramps, and splitter islands with curb ramps. In addition, the existing drainage would be modified to accommodate the proposed roundabout, and the existing signage within the right-of-way would be replaced or upgraded.

The existing channelization at the intersection of SR-29 and Oakville Grade Road may be restriped as part of the mainline improvement required for the construction of a roundabout at the intersection of SR-29 and Oakville Cross Road.

Rutherford Road Intersection

At the Rutherford Road intersection, the Project proposes improvements such as a traffic signal, active transportation (improvements include bicyclist and pedestrian facilities that make it safer for pedestrian and bicyclist movements at the intersection), and traffic calming measures along the mainline at the intersection. Limits of improvements on SR-29 would extend approximately 0.5 mile northerly and southerly from the center of the Rutherford Road intersection, and approximately 500 feet easterly along Rutherford Road. Driveway to the Inglenook Winery would be shifted slightly north to align with the intersection. This driveway is currently located south of the intersection.

Due to the proximity to the Napa Valley Wine Train tracks, railroad crossings improvements will also be needed at both intersections.

Purpose and Need

PURPOSE

The purpose of the Project is to enhance safety and traffic operations at the intersections of SR-29 and Oakville Cross Road and SR-29 and Rutherford Road.

- Improve travel time and reduce delay for side streets accessing SR-29
- Enhance traffic safety
- Improve turning movements

NEED

The intersections under study have been experiencing poor traffic operation and a high number of collisions due to the lack of protected turning movements.

- The number of collisions exceed statewide average for similar type of facility
- Poor intersection operation occurs during peak and non-peak periods caused by high traffic volume
- Lack of protected turning movements to allow for access to and from SR-29 due to insufficient gaps in traffic streaming

2 Regulatory Section

2.1 Federal Laws and Requirements

2.1.1 Clean Water Act

In 1972 Congress amended the Federal Water Pollution Control Act, making the addition of pollutants to the waters of the United States (U.S.) from any point source unlawful unless the discharge is in compliance with a NPDES permit. Known today as the Clean Water Act (CWA), Congress has amended it several times. In the 1987 amendments, Congress directed dischargers of stormwater from municipal and industrial/construction point sources to comply with the NPDES permit program. Important CWA sections are:

- Sections 303 and 304 require states to promulgate water quality standards, criteria, and guidelines.
- Section 401 requires an applicant for a federal license or permit to conduct any activity, which may result in a discharge to waters of the U.S., to obtain certification from the State that the discharge will comply with other provisions of the act. (Most frequently required in tandem with a Section 404 permit request. See below).
- Section 402 establishes the NPDES, a permitting system for the discharges (except for dredge or fill material) of any pollutant into waters of the U.S. The U.S. Environmental Protection Agency (EPA) delegated to the California State Water Resources Control Board (SWRCB) the implementation and administration of the NPDES program in California. The SWRCB established nine Regional Water Quality Control Boards (RWQCB). The SWRCB enacts and enforces the Federal NPDES program and all water quality programs and regulations that cross regional boundaries. The nine RWQCBs enact, administer and enforce all programs, including NPDES permitting, within their jurisdictional boundaries. Section 402(p) requires permits for discharges of stormwater from industrial, construction, and Municipal Separate Storm Sewer Systems (MS4).
- Section 404 establishes a permit program for the discharge of dredge or fill material into waters of the U.S, including wetlands. This permit program is administered by the U.S. Army Corps of Engineers (USACE).

The objective of the CWA is “to restore and maintain the chemical, physical, and biological integrity of the Nation’s waters.”

USACE issues two types of 404 permits: General and Individual. There are two types of General permits: Regional and Nationwide permits. Regional permits are issued for a general category of activities when they are similar in nature and cause minimal environmental effect. Nationwide permits are issued to authorize a variety of minor project activities with no more than minimal effects.

There are also two types of Individual permits: Standard Individual permit and Letter of Permission. Ordinarily, projects that do not meet the criteria for a Nationwide Permit may be permitted under one of USACE’s Individual permits. For Standard Individual permit, the USACE decision to approve is based on compliance with the U.S. EPA Section 404 (b)(1) Guidelines (U.S. EPA CFR 40 Part 230) (Guidelines), and whether permit approval

is in the public interest. The Guidelines were developed by the U.S. EPA in conjunction with USACE and allow the discharge of dredged or fill material into the aquatic system (waters of the U.S.) only if there is no practicable alternative which would have less adverse effects. The Guidelines state that USACE may not issue a permit if there is a least environmentally damaging practicable alternative to the proposed discharge that would have less effects on waters of the U.S. and not have any other significant adverse environmental consequences. Per the Guidelines, documentation is needed that a sequence of avoidance, minimization, and compensation measures have been followed, in that order. The Guidelines also restrict permitting activities that violate water quality or toxic effluent standards, jeopardize the continued existence of listed species, violate marine sanctuary protections, or cause "significant degradation" to waters of the U.S. In addition, every permit from USACE, even if not subject to the 404(b)(1) Guidelines, must meet general requirements. (See 33 CFR 320.4.)

2.2 State Laws and Requirements

2.2.1 Porter-Cologne Water Quality Control Act

California's Porter-Cologne Act, enacted in 1969, provides the legal basis for water quality regulation within California. This Act requires a "Report of Waste Discharge" for any discharge of waste (liquid, solid, or gaseous) to land or surface waters that may impair beneficial uses for surface and/or groundwater of the State. It predates the CWA and regulates discharges to waters of the State. Waters of the State include more than just waters of the U.S. For example, groundwater and surface waters are not considered waters of the U.S., but they are included in waters of the State. Additionally, it prohibits discharges of "waste" as defined in the Act, and this definition is broader than the CWA definition of "pollutant." Discharges under the Porter-Cologne Act are permitted by Waste Discharge Requirements (WDR), and WDR may be required even when the discharge is already permitted or exempt under the CWA.

The SWRCB and RWQCBs are responsible for establishing the water quality standards as required by the CWA, and for regulating discharges to protect beneficial uses of water bodies. Details regarding water quality standards in a project area are contained in the applicable RWQCB Basin Plan. In California, RWQCBs designate beneficial uses for all water body segments in their jurisdictions, and then set standards necessary to protect these uses. Consequently, the water quality standards developed for particular water body segments are based on the designated use and vary depending on such use. Water body segments that fail to meet standards for specific pollutants are included in a Statewide List in accordance with CWA Section 303(d). If a RWQCB determines that waters are impaired for one or more constituents and the standards cannot be met through point source or non-source point controls (NPDES permits or WDRs), the CWA requires the establishment of Total Maximum Daily Loads (TMDL). TMDLs specify allowable pollutant loads from all sources (point, non-point, and natural) for a given watershed. The SWRCB implemented the requirements of CWA Section 303(d) through Attachment IV of the Caltrans Statewide MS4, as it includes specific TMDLs for which Caltrans is the named stakeholder.

2.2.2 State Water Resources Control Board and Regional Water Quality Control Boards

The SWRCB adjudicates water rights, sets water pollution control policy, and issues water board orders on matters of statewide application, and it oversees water quality functions throughout the state by approving Basin Plans, TMDLs, and NPDES permits. RWCQBs are responsible for protecting beneficial uses of water resources within their regional jurisdiction using planning, permitting, and enforcement authorities to meet this responsibility.

2.2.3 National Pollutant Discharge Elimination System Program

Municipal Separate Storm Sewer Systems

Section 402(p) of the CWA requires the issuance of NPDES permits for five categories of stormwater dischargers, including MS4s. The U.S. EPA defines an MS4 as "any conveyance or system of conveyances (roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, human-made channels, and storm drains) owned or operated by a state, city, town, county, or other public body having jurisdiction over stormwater, that are designed or used for collecting or conveying stormwater." The SWRCB has identified Caltrans as an owner/operator of an MS4 pursuant to federal regulations. Caltrans' MS4 permit covers all Caltrans rights-of-way, properties, facilities, and activities in the state. The SWRCB or the RWQCB issues NPDES permits for five years, and permit requirements remain active until a new permit has been adopted.

Caltrans' MS4 Permit, NPDES No. CAS000003, SWRCB Order No. 2022-0033-DWQ (adopted on June 22, 2022; effective January 1, 2023) contains four basic requirements:

1. Caltrans must comply with the requirements of the CGP (see below);
2. Caltrans must implement a year-round program in all parts of the State to effectively control stormwater and non-stormwater discharges;
3. Caltrans' stormwater discharges must meet water quality standards through implementation of permanent and temporary (construction) best management practices (BMP) to the Maximum Extent Practicable, and other measures deemed necessary by the SWRCB and/or other agency having authority reviewing the stormwater component of the project; and
4. Caltrans must implement trash control measures to meet trash regulation compliance. This requirement is per the California Water Code Section 13383 Order issued to the SWRCB to Caltrans, applicable to all Caltrans projects (SWRCB, 2017). However, per the *Caltrans Trash Control Implementation Workplan CTSW-RT-21-379.08.4 (2021)*, full trash capture BMPs are only considered for Significant Trash Generating Areas.

To comply with the permit, Caltrans developed the Statewide Stormwater Management Plan (SWMP) to address stormwater pollution controls related to highway planning, design, construction, and maintenance activities throughout California. The SWMP assigns responsibilities within Caltrans for implementing stormwater management procedures and practices as well as training, public education and participation, monitoring and research, program evaluation, and reporting activities. The SWMP

describes the minimum procedures and practices Caltrans uses to reduce pollutants in stormwater and non-stormwater discharges. It outlines procedures and responsibilities for protecting water quality, including the selection and implementation of BMPs. The proposed Project will be programmed to follow the guidelines and procedures outlined in the latest SWMP to address stormwater runoff.

Construction General Permit

The Construction General Permit (CGP) (NPDES No. CAS000002, SWRCB Order No. 2022-0057-DWQ, became effective on September 1, 2023. The CGP regulates stormwater discharges from construction sites which result in a Disturbed Soil Area (DSA) of 1.0 acre or greater, and/or are smaller sites that are part of a larger common plan of development.

For all projects subject to the CGP, the applicant is required to hire a Qualified Stormwater Pollution Prevention Plan (SWPPP) Developer to develop and implement an effective SWPPP. All Project Registration Documents, including the SWPPP, are required to be uploaded into the SWRCB's on-line Stormwater Multiple Application and Report Tracking System at least 30 days prior to construction.

Waivers from CGP Coverage

Projects that disturb over 1.0 acre but less than 5 acres of soil, may qualify for waiver of CGP coverage. This occurs whenever the R factor of the Watershed Erosion Estimate (=RxKxLS) in tons per acre is less than 5. Within this CGP formula, there is a factor related to when and where the construction will take place. This factor, the 'R' factor, may be low, medium, or high. When the R factor is below the numeric value of 5, projects can be waived from coverage under the CGP, and are instead covered by the Caltrans Statewide MS4.

In accordance with SWMP, a Water Pollution Control Plan is necessary for construction of a Caltrans project not covered by the CGP.

Construction activity that results in soil disturbances of less than 1.0 acre is subject to this CGP if there is potential for significant water quality impairment resulting from the activity as determined by the RWQCB. Operators of regulated construction sites are required to develop a SWPPP, to implement soil erosion and pollution prevention control measures, and to obtain coverage under the CGP.

The CGP contains a risk-based permitting approach by establishing three levels of risk possible for a construction site. Risk levels are determined during the planning, design, and construction phases, and are based on project risk of generating sediments and receiving water risk of becoming impaired. Requirements apply according to the Risk Level determined. For example, a Risk Level 3 (highest risk) project would require compulsory stormwater runoff pH and turbidity monitoring.

Section 401 Permitting

Under Section 401 of the CWA, any project requiring a federal license or permit that may result in a discharge to a water of the U.S. must obtain a 401 Certification, which certifies that the project will be in compliance with State water quality standards. The most common federal permit triggering 401 Certification is a CWA Section 404 permit, issued

by USACE. The 401 permit certifications are obtained from the appropriate RWQCB, dependent on the project location, and are required before USACE issues a 404 permit.

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

2.3 Regional and Local Requirements

2.3.1 RWQCB Basin Plan

The Project is within the jurisdiction of the San Francisco Bay RWQCB, Region 2. The *Water Quality Control Plan for the San Francisco Bay Basin* (Basin Plan) (San Francisco Bay RWQCB, 2019) states the goals, policies, beneficial uses, and water quality objectives that apply to water bodies throughout the San Francisco Bay region, which includes the Project area. The Basin Plan has been adopted by the SWRCB, U.S. EPA, and Office of Administrative Law.

2.3.2 MS4

Project improvements are located within Caltrans' right-of-way, Napa County's right-of way, and the Napa Valley Wine Train's right-of-way. Project improvements located within Caltrans' right-of-way would comply with the Caltrans MS4 Permit (NPDES No. CAS000003, SWRCB Order No. 2022-0033-DWQ). Project improvements located in Napa County's and the Napa Valley Wine Train's right-of-way would comply with the Phase II Small MS4 Permit (NPDES No. CAS000004, SWRCB Order No. 2013-0001-DWQ, as amended by Order No. 2015-0133-EXEC, Order No. 2016-0069-EXEC, Order No. 2017-XXXX-DWQ, Order No. 2018-0001-EXEC, and Order No. 2018-0007-EXEC).

2.3.3 Stormwater Management Plan

The Bay Area Stormwater Management Agencies Association (BASMAA) Phase II Committee has developed the *BASMAA Post-Construction Manual* (2019), which provides design guidance for stormwater treatment and control projects in Marin, Sonoma, Napa, and Solano counties. Project improvements within Napa County's right-of-way would adhere to the treatment and hydromodification requirements specified within the *BASMAA Post-Construction Manual* (2019).

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3 Affected Environment/Existing Conditions

The Project area is located along SR-29 in southern Napa County and is bordered by agricultural areas to the north, Vaca and Mayacamas Mountains to the east and west, respectively, and San Pablo Bay to the south. The Rutherford Road and Oakville Cross Road intersections are approximately 2 miles apart from each other.

3.1 General Setting

3.1.1 Population and Land Use

The U.S. Census Bureau (2021) has determined that the population of Napa County, California, is approximately 136,207. Land uses surrounding the Rutherford Road intersection are classified as Agricultural Preserve, Commercial Limited, and Residential Single Building Sites. Land uses surrounding the Oakville Cross Road intersection are classified as Agricultural Preserve and Commercial Limited (Napa County, 2015).

3.1.2 Topography

The Project area is generally flat with elevations ranging from 140 feet to 160 feet along SR-29 within the Oakville Cross Road intersection and 160 feet to 180 feet within the Rutherford Road intersection (Caltrans, 2023).

3.1.3 Hydrology

Regional Hydrology

Per the watershed delineation shown in shapefiles downloaded from the California Interagency Watershed Mapping Committee (2018), the Project area is entirely contained within an undefined hydrologic sub-area (206.50) of the Napa River hydrologic area and San Pablo hydrologic unit; see Figure 3.

Local Hydrology

Napa River drains approximately 426 square miles between Mountain Saint Helena to the San Pablo Bay. Napa River and its 47 tributaries serve as a linear wilderness running north to south through farmed and partially urbanized valley areas (Friends of the Napa River, 2023).

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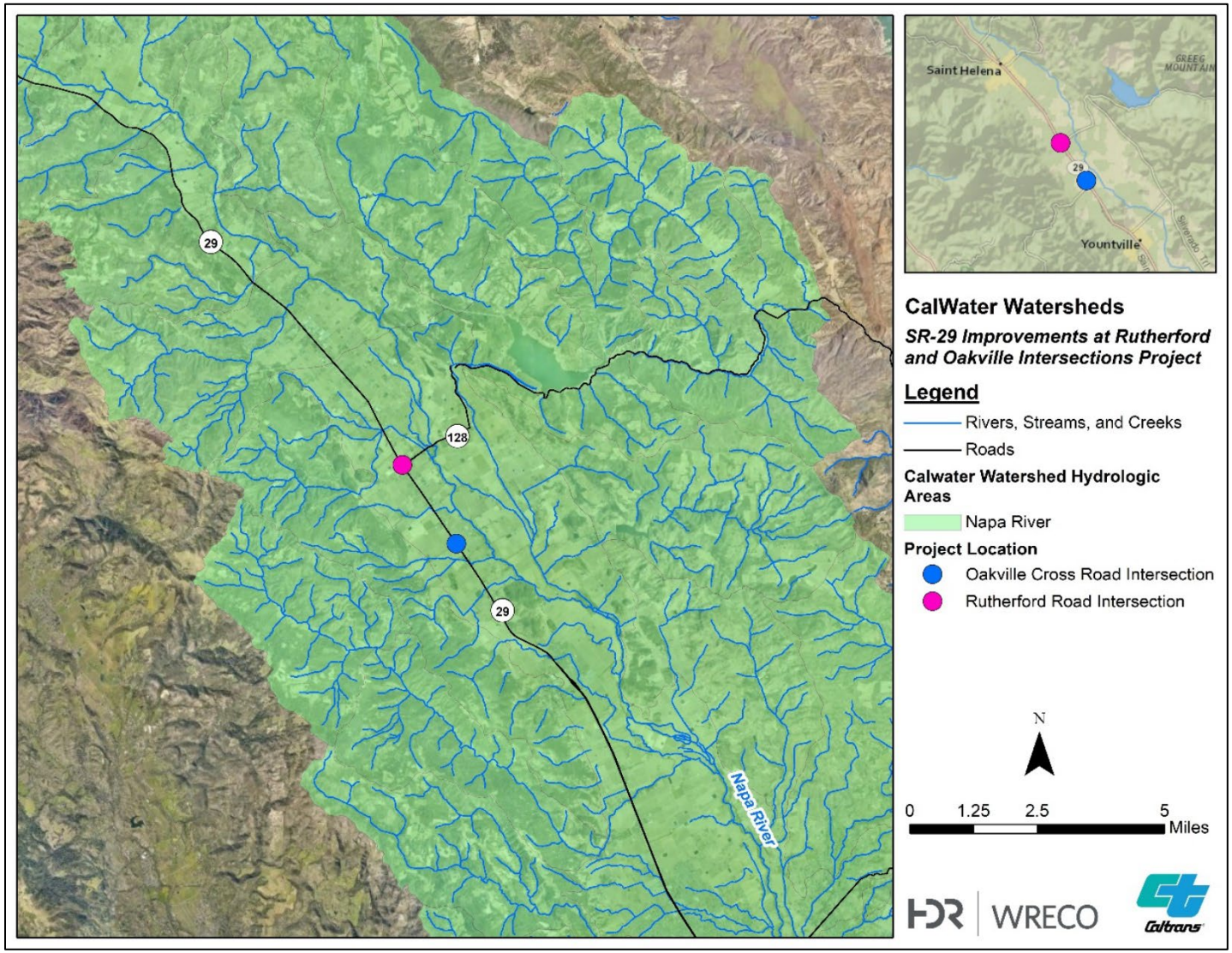
Figure 3. CalWater Hydrologic Area



Source: California Interagency Watershed Mapping Committee, 2018

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Precipitation and Climate

According to the Köppen climate classification system, the Project has a Mediterranean climate, characterized by mild, moist winters and hot, dry summers (University of California, Agriculture and Natural Resources, 2020). According to the Western Regional Climate Center (WRCC), the nearest climate station in the Project area is Oakville 1 W, California (046351). A monthly climate summary from the WRCC for the period of record of April 1, 1906, through June 30, 1981, reported the average precipitation for a calendar year as 32.49 inches. The majority of rainfall occurs between the months of November and March. The warmest month is July with an average high of 85.1 degrees Fahrenheit (°F) and an average low of 51.9 °F. The coolest month is December with an average high of 47.6 °F and an average low of 34.1 °F (WRCC, 2023).

Surface Waters

OAKVILLE CROSS ROAD

Stormwater at the Oakville Cross Road intersection flows away from the roadway's centerline towards the eastern and western edges of the roadway and then through several conveyance systems. South of the intersection, gutter systems run parallel to the roadway, conveying stormwater south. An existing stormwater system composed of several inlets captures the runoff and discharges to a grassy ditch running parallel to the SR-29 northbound lane and adjacent to the right-of-way line. Stormwater runoff northwest of the intersection along the southbound lane is collected by an existing ditch and conveyed northwest away from the Project limits. Runoff within the stretch of roadway along the northbound lane, northeast of the intersection, sheet flows to the adjacent properties onto the vineyards (Caltrans, 2022b). Stormwater ultimately drains to the Napa River, which is located about 0.5 mile east of the Oakville Cross Road intersection.

RUTHERFORD ROAD

The drainage pattern for the Rutherford Road intersection is similar to that of the Oakville Cross Road intersection. Stormwater sheet flows away from the SR-29 centerline and concentrates along the roadway outer edges to be conveyed away from the Project limits (Caltrans, 2022b). Stormwater also drains to the Napa River, which is located approximately 0.5 mile east of the Rutherford Road intersection.

SURFACE WATER QUALITY OBJECTIVES/STANDARDS AND BENEFICIAL USES

According to the Basin Plan, the overall goals of the water quality regulation are to protect and maintain thriving aquatic ecosystems and the resources those systems provide to the society, and to accomplish these in an economically and socially sound manner. The RWQCB establishes and enforces WDRs or point and non-point source pollutants at levels necessary to meet numerical and narrative water quality objectives (San Francisco Bay RWQCB, 2019).

In general, the objectives are intended to govern the concentration of pollutant constituents in the main water mass. The Basin Plan lists water quality objectives for surface water for the following: bacteria, bioaccumulation, biostimulatory substances, color, dissolved oxygen, floating material, oil and grease, population and community

ecology, pH, radioactivity, salinity, sediment, settleable material, suspended material, sulfide, tastes and odors, temperature, toxicity, turbidity, and un-ionized ammonia (San Francisco Bay RWQCB, 2019).

The Basin Plan states the "the beneficial uses of any specifically Identified water body generally apply to all its tributaries." The Basin Plan lists the following existing beneficial uses for the Project's receiving waters (Table 1) (San Francisco Bay RWQCB, 2019).

Table 1. Beneficial Uses for Project Receiving Waters

Water Body	Beneficial Uses												
	AGR	*MUN*	*GWR*	*COMM*	*COLD*	*MIGR*	*RARE*	*SPWN*	*WARM*	*WILD*	*REC-1*	*REC-2*	*NAV*
Napa River–-nontidal	E	E	E	E	E	E	E	E	E	E	E	E	E

Source: San Francisco Bay RWQCB, 2019
Notes:
AGR – agricultural supply
MUN – municipal and domestic supply
GWR – groundwater recharge
COMM – commercial and sports fishing
COLD – cold freshwater habitat
MIGR – fish migration
RARE – preservation of rare and endangered species
SPWN – fish spawning
WARM – warm freshwater habitat
WILD – wildlife habitat
REC-1 – water contact recreation
REC-2 – non-water-contact recreation
NAV – navigation
E – existing beneficial use

WATER QUALITY IMPAIRMENTS AND TOTAL MAXIMUM DAILY LOADS

Water body segments that fail to meet standards for specific pollutants are included in a Statewide List in accordance with the CWA Section 303(d). If a RWQCB determines that waters are impaired for one or more constituents, the CWA requires the establishment of TMDLs to specify allowable pollutant loads from all sources for a given watershed. The *2020-2022 California Integrated Report* (Clean Water Act Section 303(d) List and 305(b) Report) lists Napa River as having the following water quality impairments (Table 2).

Table 2. 303(d) Listed Pollutants

Water Body	Water Quality Impairment	Potential Source	TMDL Completion Date
Napa River	Pathogens	Onsite Wastewater Systems (Septic Tanks)	December 2007
	Sediment	Agriculture Road Construction	September 2009

Source: SWRCB, 2022

Floodplains

Per the Project's *Drainage Report* (2022b), the Project crosses the Federal Emergency Management Agency (FEMA) floodplains and Flood Insurance Rate Maps (FIRM) listed in Table 3. The Project is located within the FEMA Zone X outside of the 100-year floodplain zone. Zone X areas are classified as being outside of the 0.2 percent-annual-chance flood (Caltrans, 2022b).

Table 3. FEMA FIRM Number

RWQCB	FIRM Number
San Francisco Bay RWQCB	06055C0385E
San Francisco Bay RWQCB	06055C0395E

Source: Caltrans, 2022b

Municipal Supply

The *Caltrans District 4 Work Plan* (2022a) identifies two drinking water reservoirs/recharge facility areas within Napa County. One of these drinking water reservoirs/recharge facility areas, Lake Hennessey, is located approximately 3 miles northeast of the proposed Rutherford Road intersection improvement. Lake Hennessey potentially receives runoff from SR-128 (Rutherford Road); however, it is not expected to receive any runoff from the Project due to the distance between the Project and Lake Hennessey. The other drinking water reservoir/recharge facility area, Rector Reservoir, is located approximately 3 miles east of the proposed Oakville Cross Road intersection improvement. The Rector Reservoir does not receive runoff from the Oakville Cross Road intersection.

Groundwater Hydrology

The Project is entirely located within the Napa Valley groundwater subbasin (2-002.01) of the Napa-Sonoma Valley groundwater basin. The Napa Valley subbasin covers approximately 45,895 acres of Napa County and is bounded to the north, east, and west by portions of the Coast Ranges and on the south by San Pablo Bay. The primary water-bearing formations include Recent and Pleistocene Alluvium, the Pleistocene Huichica Formation, and the Pliocene Sonoma Volcanics (Department of Water Resources, 2003).

Groundwater studies are not yet available. Per the *Phase II Environmental Site Assessment Report and Low Threat Closure Request* (Vista Environmental Consulting, 2017) developed for the Napa Wine Company (which is immediately adjacent to the Oakville Cross Road intersection), depth to groundwater is approximately 17.5 feet below ground surface. This section will be updated once site-specific groundwater levels are confirmed.

Groundwater Quality Objectives/Standards and Beneficial Uses

The Basin Plan has water quality objectives listed for all groundwaters of the Napa Valley groundwater subbasin (2-002.01). Groundwater objectives consist primarily of narrative objectives combined with limited number of numerical objectives. In addition, the SWRCB establishes basin- and/or site-specific numerical groundwater objectives as necessary. Per the Basin Plan, at a minimum, groundwater shall not contain

concentrations of bacteria, chemical constituents, radioactivity, or substances producing tastes and odors (San Francisco Bay RWQCB, 2019).

The Basin Plan lists the Napa Valley groundwater subbasin (2-002.01) as having the following existing beneficial uses: Municipal and Domestic Water Supply (MUN), Industrial Process Supply (PRO), Industrial Service Supply (IND), and Agricultural Water Supply (AGR).

3.1.4 Geology/Soils

Based on available information from Caltrans Water Quality Planning Tool (2023), the Project is underlain by alluvium and terrace of Pliocene to Holocene age.

Soil characteristics for the Project area were obtained from the U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service's *Web Soil Survey* (2023). Soils near the Rutherford Road intersection are classified as Bale clay loam with 0 to 2 percent slopes. Soils near the Oakville Cross Road intersection are classified as Bale loam with 0 to 2 percent slopes. Soils at both intersections are classified as Hydrologic Soil Group B (USDA, 2023). Soils classified as Hydrologic Soil Group B have moderately low runoff potential and moderately high infiltration (USDA, 2007).

Per the Project's *Initial Site Assessment Overview Study* (Geocon Consultants, Incorporated, 2022), soil in the Project areas may contain elevated levels of hydrocarbons and aerially deposited lead from roadway use, pesticides from agricultural use, herbicides, metals, and polycyclic aromatic hydrocarbons near the Wine Train's right-of-way.

Soil Erosion Potential

The erosion factor (K) indicates the erodibility of the fine-earth fraction of the soil. The factor is given as a percentage or fraction ranging from 0.02 to 0.69; the higher the value, the more susceptible the soil is to sheet and rill erosion by water. The Caltrans Water Quality Planning Tool (2023) identifies the K factor within the Project area to be 0.28 (Appendix A), which suggests the soils have moderate potential for erosion. The *Caltrans District 4 Work Plan* (2022a) does not identify any slopes prone to erosion near or within the Project area.

3.1.5 Biological Communities

The following sections summarize the information from the Project's *Site Reconnaissance for Biological Resources Memorandum* (WSP, 2021), which provides detailed information regarding the biological resources within the Project area.

Riparian Habitat and Wetlands

Per the *Site Reconnaissance for Biological Resources Memorandum* (WSP, 2021), there are no streams, wetlands, or other bodies of water within the Project footprint.

Special-Status Species

Per the *Site Reconnaissance for Biological Resources Memorandum* (WSP, 2021), there is potential for California red-legged frog (*Rana draytonii*), foothill yellow-legged frog

(*Rana boylii*), Delta smelt (*Hypomesus transpacificus*), and California freshwater shrimp (*Syncaris pacifica*) to exist within the Project area; however, it is unlikely for California red-legged frog and highly unlikely for foothill yellow-legged frog, Delta smelt, and California freshwater shrimp to exist within the Project area, as there is no suitable habitat for these species.

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4 Environmental Consequences

4.1 Introduction

The following sections present the potential temporary and permanent water quality impacts from the Project activities. Potential temporary and permanent water quality impacts, as well as project features, were evaluated for the Project as a whole because it is anticipated that the Rutherford Road and Oakville Cross Road intersection improvements will result in similar impacts and project features.

Temporary water quality impacts can result from the sediment discharge from DSAs and construction near water resources or drainage facilities that discharge to water bodies. Permanent impacts to water quality can result from the addition of impervious area; this additional impervious area could prevent runoff from naturally dispersing and infiltrating into the ground, resulting in increased concentrated flow. The estimates for DSA, and existing, post-Project, and replaced impervious surface (RIS) for the Project are listed in Table 4. The DSA includes the proposed impervious area work, planned grading, and other unpaved areas that may be disturbed due to construction. The new impervious surface areas (NIS) consist of areas of net new impervious surface areas (NNI) and RIS. NNI considers impervious surface that would be replaced down to subgrade or native soil. The post-construction treatment area (PCTA) is equal to the NIS because the NNI is less than 50 percent of the total post-Project impervious area. The DSA and impervious area values will be further refined during the design phase once the limits of grading, construction staging locations, and other areas of improvement have been further developed.

Implementation of water quality project features required for all construction projects in compliance with federal, state, and local requirements would minimize the potential for water quality impacts to nearby drainage facilities and water bodies.

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Table 4. Project DSA and Impervious Areas

Jurisdiction	Disturbed Soil Areas (acre)	Impervious Areas						
		Existing (acre)	***Post-Project (acre)***	***Permanently Removed (square feet)***	***NNI (square feet)***	***RIS (square feet)***	***NIS (square feet)***	***PCTA (square feet)***
Caltrans	0.97	2.12	2.10	6,098.40	-871.20	30,927.60	30,056.40	30,056.40
Napa County	0.32	0.40	0.49	1,742.40	3,920.40	6,534.00	10,454.40	10,454.40
Napa Valley Wine Train	0.35	0.20	0.47	1,742.40	11,761.20	0.00	11,761.20	11,761.20
Total	1.64	2.72	3.06	9,583.20	14,810.40	37,461.60	52,272.00	52,272.00

Source: GHD, 2023

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4.2 Potential Impacts to Water Quality

4.2.1 Anticipated Changes to the Physical/Chemical Characteristics of the Aquatic Environment

The following sections describe the specific physical and chemical characteristics of stormwater that can potentially be impacted by the Project.

Currents, Circulation, or Drainage Patterns

The Project would result in an increase in impervious area of 0.34 acre that would not allow water to be infiltrated or dispersed over unpaved surfaces. It is the goal of the Project to maintain the watershed's drainage patterns. The Project would convey flows to the existing drainage systems and incorporate water quality treatment elements to reduce the impacts of added impervious area.

Suspended Particulates (Turbidity)

The Project would result in the creation of additional impervious area, which would increase the amount of runoff not infiltrated or dispersed over unpaved surfaces. While the added impervious area could result in an increase of sediment-laden flow directly discharging into receiving waters, stormwater impacts would be minimized through proper implementation of permanent stormwater treatment measures and design pollution prevention (DPP) BMPs.

Permanent erosion control measures would be applied to all exposed areas once grading or soil disturbance work is completed as a permanent measure to achieve final slope stabilization. These measures may include hydraulically applying a combination of hydroseed with native seed mix, hydromulch, straw, tackifier, and compost to promote vegetation establishment, and installing fiber rolls to prevent sheet flow from concentrating and causing gullies. The Project area is mostly flat; however, for steeper slopes or areas that may be difficult for vegetation to establish, measures such as netting, blankets, or slope paving could be considered to provide stabilization.

The Caltrans MS4 permit contains provisions to reduce pollutant loadings from the facility once construction is complete. The permit stipulates that permanent measures to control pollutant discharges must be considered and implemented for all new or reconstructed highway facilities that have an increase in NNI of 10,000 square feet.

The Phase II Small MS4 permit also contains provisions to reduce pollutant loadings from the facility once construction is complete. The Phase II Small MS4 permit specifies that permanent measures to control pollutant discharges must be considered and implemented for all projects that create and/or replace 5,000 square feet or more of impervious surface.

The Project would create approximately 14,810 square feet of impervious area so the Project would be required to implement stormwater treatment controls under both the Caltrans MS4 and Phase II Small MS4 permits. The treatment BMP strategy for areas within Caltrans' right-of-way would comply with the Caltrans MS4 permit and would follow Caltrans' *Project Planning and Design Guide* (2019b). The treatment BMP strategy for

areas within Napa County's right-of-way would comply with the Phase II Small MS4 permit and would follow the BASMAA Phase II Committee's *BASMAA Post-Construction Manual* (2019).

Potential treatment BMPs and low-impact development (LID) measures that could be considered for the Project are listed in Table 5. The final drainage design, selection of treatment BMPs, types, and locations, and determination of impervious area treated would be refined during the Plans, Specifications, and Estimate Phase when detailed design information is developed.

Table 5. Permanent Project Features and LID Measures (BMPs)

Project Feature (BMP)	Purpose
Permanent Erosion Control	
Hydroseed	Water-based mixture of wood/paper fiber (straw), stabilizing emulsion (tackifier), fertilizer, compost, and native seed mix to be applied to unvegetated slopes.
Permanent Fiber Rolls	Degradable fibers rolled tightly and placed on the toe and face of slopes to intercept runoff.
Erosion Control Netting/Blankets	Netting/blankets placed on steep slopes to reduce soil erosion.
Drainage Facilities	
Energy Dissipation Devices • Flared end sections • Tee dissipaters	Devices placed at pipe inlets and/or outlets to reduce scour and velocity of stormwater flows prior to discharge to receiving waters.
Rock Slope Protection	Angular rocks placed on streambanks, outfalls, and/or slopes to reduce soil erosion at locations where vegetation cannot be maintained.
Source Control Measures	
Drain Inlet Markers	Markers that inform people to not add pollutants into storm drains.
Protection of Existing Vegetation	Protection of existing trees and/or landscaped areas that would not be disturbed from Project activities.
Plant Selection	Selection of diverse species based on pest- and/or disease-resistance, drought-tolerance, and/or attraction to beneficial insects.
Irrigation Practices for Landscaping	Implementation of an effective irrigation system for landscaped areas and practices to conserve water.
Pesticide Management for Landscaping	Reduction of insect pests, plant diseases, and weeds without the use of pesticides and quick-release synthetic fertilizers.
Treatment Measures	
Bioretention Areas	Areas that intercept stormwater runoff and remove sediment and pollutants through infiltration in vegetation and biologically active soils.
Biofiltration Areas	Areas that intercept stormwater runoff and remove sediment and pollutants through filtration through the vegetation, update by plant biomass, sedimentation, adsorption to soil particles, and infiltration through the soil.
Media Filters	Sand filters that remove sediment and total suspended solids (metals, trash, nutrients).
Infiltration Devices	Devices designed to infiltrate stormwater into the surface.

Source: Caltrans, 2019b; BASMAA, 2019

Oil, Grease, and Chemical Pollutants

Trash and heavy metals associated with vehicle tire and break wear, oil and grease, and exhaust emissions are the primary pollutants associated with transportation corridors. Generally, roadway stormwater runoff has the following pollutants: total suspended solids, nitrate nitrogen, total Kjeldahl nitrogen, phosphorus, ortho-phosphate, copper, lead, and zinc. The pollutants are dispersed from combustion products produced by fossil fuels and the wearing of brake pads and tires. In addition, pollutants are dispersed from tree leaves that have been exposed through aerial particulates from exhaust and heavy metals from breaking. As discussed in Section 3.1.4, soils in the Project area may contain elevated levels of hydrocarbons, aerially deposited lead, pesticides, herbicides, metals, and polycyclic aromatic hydrocarbons.

As discussed in Section 4.1, the Project would implement treatment BMPs to remove pollutants from the stormwater runoff before discharging into receiving waters. If treatment BMPs are implemented, the goal of the Project would be to fully treat the PCTA of 1.2 acres. The implementation of treatment BMPs and source control measures would further reduce impacts to water quality.

According to the Caltrans District 4 December 2022 Trash Generation Ratings mapping application (Michael Baker International, Incorporated, 2022) (Figure 4), the Project is designated has having low Significant Trash Generating Areas, and therefore, is not required to implement trash capture devices.

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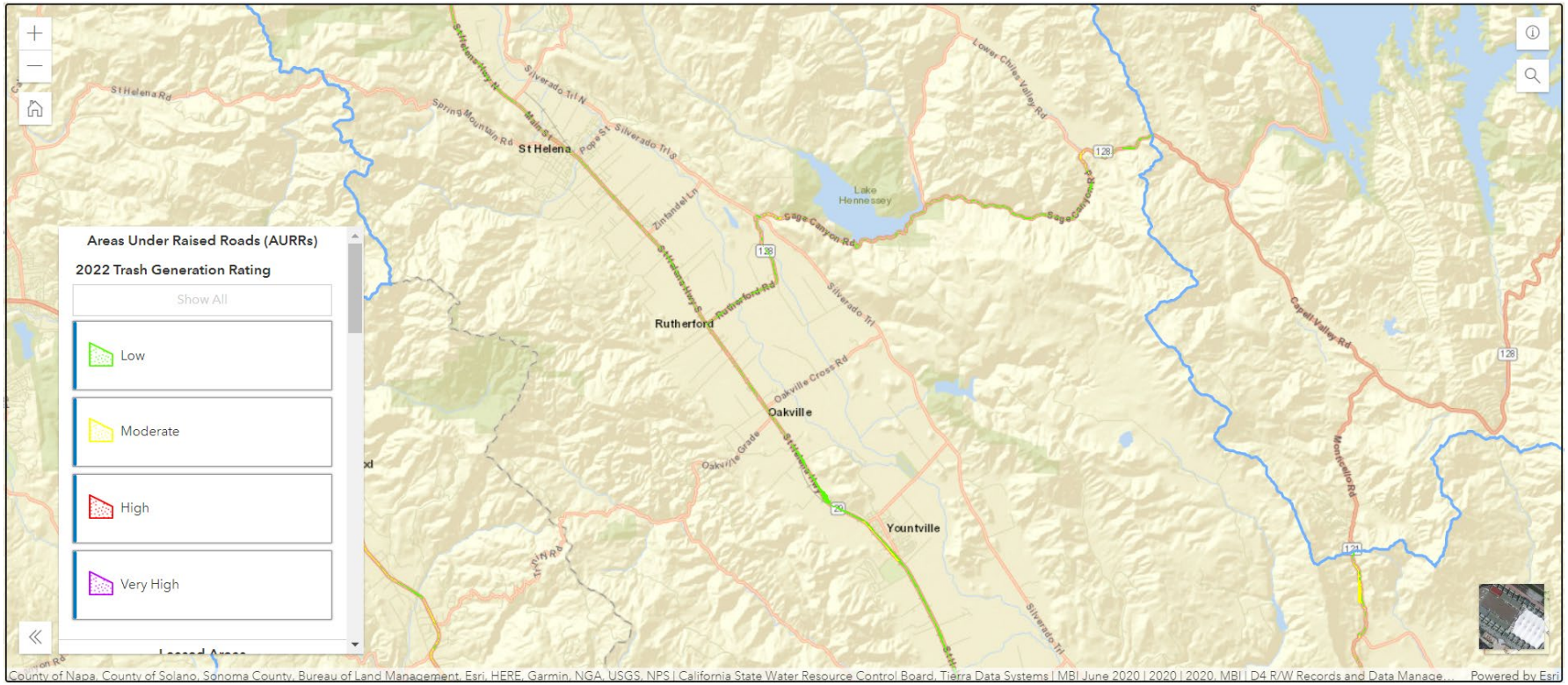
Figure 4. Caltrans District 4 December 2022 Trash Generation Ratings



Source: Michael Baker International Incorporated, 2022

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Flood Control Functions

The Project would not change the overall land use. Per the Project's *Drainage Report*, Project improvements would not adversely impact the FEMA floodplains. The goal of the Project is to avoid and minimize any impacts to the existing floodplains and their beneficial uses. (Caltrans, 2022b)

Erosion and Accretion Patterns

Increases in impervious areas can result in the modification of runoff hydrographs to existing receiving water bodies by increasing the flow volumes and rates and peak durations from the loss of unpaved overland flow routes and infiltration capacity. These hydromodification impacts can cause increased bed and bank erosion, loss of habitat, increased sediment transport and deposition, and increased flooding potential.

Per the Caltrans MS4 permit, projects that add 10,000 square feet or more of new impervious surface with any impervious portion of the project located within a Threshold Drainage Area must conduct a rapid assessment of stream stability at each stream crossing within that Threshold Drainage Area. A Threshold Drainage Area is defined as an area draining to a location at least 20 channel widths downstream of a stream crossing (pipe, swale, culvert, or bridge) within project limits. This Project does not cross any streams; therefore, it is not required to conduct a rapid assessment of stream stability or implement hydromodification management measures within Caltrans' right-of-way.

Per the Phase II Small MS4 permit, projects that create or replace 1 acre or more of impervious surface area (with a net increase in impervious area) must implement hydromodification management measures. This Project proposes to create or replace less than 1 acre of impervious surface within Napa County's right-of-way and Napa Valley Wine Train's right-of-way; therefore, it is not required to implement hydromodification management measures within either right-of-way.

Aquifer Recharge/Groundwater

The Project would result in the addition of impervious surface and reduction of available unpaved area that previously allowed runoff to infiltrate into native soils. Increases in impervious surface have the potential to reduce runoff infiltrating through native soil, which could result in loss in volume or amount of water that previously recharged localized aquifers and reduce regional groundwater volumes. The reduction in groundwater recharge also has potential to impact beneficial uses of groundwater basins. These impacts are anticipated to be negligible because the increase in impervious surface created by the Project is minimal compared to the overall watershed, and as discussed earlier in this section, stormwater treatment BMPs would allow for stormwater infiltration to minimize impacts to groundwater. In addition, long-term dewatering operations are not anticipated for this Project. Therefore, permanent impacts to groundwater are not expected.

4.2.2 Anticipated Changes to the Biological Characteristics of the Aquatic Environment

The following sections summarize the permanent Project-related impacts based on information from the Project's *Site Reconnaissance for Biological Resources Memorandum* (WSP, 2021), which provides detailed information regarding the biological resources within the Project area.

Special Aquatic Sites

Per the *Site Reconnaissance for Biological Resources Memorandum* (WSP, 2021) there are no streams, wetlands, or other bodies of water within the Project footprint; therefore, there would be no impacts to special aquatic sites.

Habitat for Fish and Other Aquatic Organisms

Per the *Site Reconnaissance for Biological Resources Memorandum* (WSP, 2021), it is unlikely for the Project to affect habitat for fish or other aquatic organisms which have potential to be within the Project area as there is no suitable habitat for these species.

4.2.3 Anticipated Changes to the Human Use Characteristics of the Aquatic Environment

Existing and Potential Water Supplies; Water Conservation

No Project runoff would discharge to Lake Hennessey or Rector Reservoir; therefore, impacts to existing or potential water supplies are not anticipated.

Recreational or Commercial Fisheries

Napa River has the beneficial use of commercial and sport fishing. The Project would not change or impact these beneficial uses; however, the added impervious area could increase sediment and other pollutants within the Napa River watershed and impact the water quality features of these beneficial uses. To minimize impacts, the Project would implement stormwater treatment BMPs to remove these pollutants from stormwater runoff before discharging into Napa River. Therefore, the Project is not expected to have permanent impacts on recreational or commercial fisheries.

Other Water-Related Recreation

Napa River has the beneficial uses of water contact recreation and noncontact water recreation. Napa River's recreation beneficial uses would not be impacted by the Project, and Napa River would maintain the water quality features associated with these beneficial uses. The Project would construct stormwater treatment BMPs to filter sediment and other pollutants from stormwater runoff before discharging into Napa River. Therefore, there are no anticipated permanent impacts on water-related recreation.

Parks, National and Historic Monuments, National Seashores, Wild and Scenic Rivers, Wilderness Areas, etc.

There are no historic monuments, national seashores, or wild and scenic rivers within the Project vicinity; therefore, no impacts on these are anticipated.

Traffic/Transportation Patterns

The overall goal of the Project is to enhance safety and traffic operations at the intersections of SR-29 and Oakville Cross Road and SR-29 and Rutherford Road. Project improvements will allow for safer vehicle, pedestrian, and bicycle access once construction is complete. Additionally, the intersection improvement at Oakville Cross Road/SR-29 would provide U-Turn movements for all vehicles.

4.2.4 Temporary Impacts to Water Quality

Project cut-and-fill, grading, and excavation activities have the potential to increase erosion and result in temporary water quality impacts. Sediment-laden flow can result from runoff over DSAs and enter storm drainage facilities. Additional sources of sediment that could result in increases in turbidity include uncovered or improperly covered active and non-active stockpiles, unstabilized slopes and construction staging areas, and construction equipment not properly maintained or cleaned. Earth moving and other construction activities can cause minor erosion and runoff of topsoil into the drainage systems within the Project during construction, which can temporarily affect water quality.

Impacts can occur during construction-related activities. Soil erosion, especially during heavy rainfall, can increase the suspended solids, dissolved solids, and organic pollutants in stormwater runoff generated within the Project limits. These conditions would persist until the completion of construction activities and implementation of long-term erosion control measures.

Fueling or maintenance of construction vehicles could occur within the Project site during construction, so there would be a risk of accidental spills or releases of fuels, oils, or other potentially toxic materials. An accidental release of these materials could pose a threat to water quality if contaminants enter the local receiving waters and storm drains. The magnitude of the impact from an accidental release depends on the amount and type of material spilled.

Per the Project's *Initial Site Assessment Overview Study* (Geocon Consultants, Incorporated, 2022), it is unlikely that groundwater will be encountered with the planned excavation depths. Therefore, dewatering operations are not anticipated.

Construction activities would implement construction site BMPs to minimize short-term impacts. The following outlines temporary measures that may be taken during Project construction.

Construction General Permit Risk Level Assessment

The Project would disturb 1.64 acres of soil and must comply with the CGP, which includes performing a risk level assessment to determine the required monitoring and sampling of stormwater during construction. The risk level assessment is determined from the combined receiving water risk and sediment risk.

The Project's receiving water body, Napa River, has the combined beneficial uses of cold freshwater habitat, fish migration, and fish spawning and is impaired for sediment. Therefore, the Project's receiving water risk is high.

The sediment risk factor is determined from the product of rainfall erosivity (R) factor, the K factor, and the length-slope (LS) factor. The R, K, and LS factor information is included in Appendix A of this report. Using the method described in the U.S. EPA's Rainfall Erosivity Factor Calculator for Small Construction Sites (2022), for a construction duration of approximately 18 months, the calculated R factor at the Project is 123.1. The Caltrans Water Quality Planning Tool (2023) identifies the K factor to be 0.28 and the LS factor to be 0.89. The product of these values is 30.68 tons per acre (123.10 x 0.28 x 0.89); because this value is between 15 and 75, the Project would be classified as having a medium sediment risk.

Table 6 summarizes the receiving water and sediment risks and presents the calculated Risk Level. The sediment risk would be updated during the design phase as detailed Project information becomes available. The factors used to determine the planning watershed sediment and receiving water risks are included in Appendix A.

Table 6. Risk Factors

R Factor	K Factor	LS Factor	Product (R*K*LS)	Sediment Risk	Receiving Water Risk	Risk Level
123.1	0.28	0.89	30.68	Medium	High	2

Source: Caltrans, 2023; San Francisco Bay RWQCB, 2019; U.S. EPA, 2022

The high receiving water and medium sediment risks result in the Project being classified as Risk Level 2. Therefore, in addition to implementation of standard construction site BMPs, the contractor would be required to perform quarterly non-stormwater discharge visual inspections, in addition to inspections pre-storm, daily during a storm event, and post-storm. Risk Level 2 projects are also required to comply with Numeric Action Level effluent limitations for pH and turbidity. This assessment may be updated during the design phase as detailed Project information becomes available.

4.2.5 Construction Site BMPs

Potential temporary impacts to water quality can be avoided or minimized by implementing standard BMPs recommended for a particular construction activity. The selected temporary BMPs should be consistent with the practices required under the Caltrans MS4 and Phase II Small MS4 permits. Compliance with the requirements of these permits and adherence to their conditions would reduce or avoid potential construction-related impacts.

Temporary erosion control measures can be applied to all areas during construction, including the trapping of sediment within the construction area through the placement of barriers, such as fiber rolls, to prevent sheet flow from concentrating and establishing gullies. Other methods of minimizing erosion impacts include the implementation of hydromulching and/or limiting the amount and length of exposure of graded soil. In addition to these erosion control measures, the use of compost is strongly encouraged by Caltrans. Compost not only improves erosion resistance and vegetation

establishment, but it also helps immobilize heavy metals that are common along highways. Compost can be considered during the design phase of the Project.

The suggested minimum temporary control BMPs that the Project may consider are included in Table 7. Further evaluation of the BMPs necessary for this Project to comply with the Caltrans MS4 permit and Phase II MS4 permit would be detailed during the design phase.

Table 7. Construction Site Project Features (BMPs)

Project Feature (BMP)	Purpose
Vehicle Tracking and Dust Control	
Stabilized Construction Access	Reduce dirt and mud tracking onto roads and public rights-of-way through rock pads or construction mud mats.
Street Cleaning/Sweeping	Prevent tracked soils, sand, and other debris from entering streets and paved areas by removing it from roadways.
Dust/Wind Erosion	Reduce dust generation from DSAs through water or commercial stabilizers to prevent or alleviate dust nuisance generated by construction activities. Covering small stockpiles or areas is an alternative to applying water or dust palliatives.
Erosion and Sediment Control	
Rolled Erosion Control Products	Stabilize soils by placing geotextiles, plastic covers, and erosion control blankets and mats on disturbed areas.
Temporary Hydraulic Mulch	Temporarily protect soil surfaces from wind and water erosion by spraying a wood mulch and water mixture.
Temporary Hydroseeding	Temporarily protect soils from wind and water erosion by spraying a fiber, seed, fertilizer, and stabilizing liquid mixture.
Drainage Inlet Protection	Prevent sediment from entering storm drain systems through excavation around the inlet perimeter or reusable barrier around the drain entrances.
Temporary Fiber Roll	Intercept stormwater runoff, reduce velocity, release runoff as sheet flow, and provide some sediment removal along slopes using straw, flax, or synthetic fiber roll.
Temporary Silt Fence	Detain sediment-laden water through the use of a geotectile fence at the bottom of slopes.
Temporary Check Dam	Small barrier constructed of rock, gravel bags, sandbags, fiber rolls, or other proprietary products placed across constructed swale or drainage ditch to reduce the effective slope of channel.
Scheduling	Plan that details sequence of construction activities and BMP implementation, taking local climate into consideration to reduce amount and duration of soil exposed to erosion by wind, rain, runoff, and vehicle tracking, and to perform the construction activities and control practice in accordance with the schedule.
BMP Inspection and Maintenance	Inspection and maintenance of BMPs before, during, and after rain events, to ensure that BMPs are implemented and operating properly.
Preservation of Existing Vegetation	Protection of existing trees, vines, shrubs, and grasses that protect soil from erosion.

Project Feature (BMP)	Purpose
Non-Stormwater and Waste/Material Management	
Water Conservation	Implement procedures for reducing amount of water needed for construction activities.
Concrete Management	Implement procedures for reducing/eliminating stormwater runoff contamination from concrete curing, cutting, drilling, and coring activities through containment structures.
Temporary Concrete Washout Facilities	Prevention, reduction, or elimination of pollutant discharges from material delivery and storage to the stormwater system or watercourses by minimizing the storage of hazardous materials onsite, storing materials in watertight containers and/or a completely enclosed designated area, installing secondary containment, conducting regular inspections, and training employees and subcontractors.
Paving and Grinding Operations	Implement procedures for handling and removing materials during pavement preparation, paving, surfacing, resurfacing, paint striping, and thermoplastic striping and placement during construction.
Material Delivery and Storage	Implement procedures for delivery and storage of materials during construction.
Stockpile Management	Implement procedures for stockpiling of construction materials during construction.
Sanitary Waste	Implement procedures for preventing waste from portable sanitary facilities from entering storm drain systems, natural waterways, and channels.
Solid Waste	Implement procedures for collecting and disposing solid waste materials.
Liquid Waste	Implement procedures for preventing non-hazardous liquid waste from entering storm drain systems.
Spill Prevention and Control	Implement procedures for preventing and responding to pollutant discharges into drainage systems.
Contaminated Soil	Implement procedures for identification and handling of contaminated soils on a construction site.
Illicit Connection/Discharge Waste	Recognize and report illicit connections/illegally discharged material on a construction site.
Vehicle and Equipment Cleaning	Procedures and practices designed to eliminate or reduce the discharge of pollutants to stormwater from vehicle and equipment cleaning operations.
Vehicle and Equipment Fueling	Procedures and practices are designed to prevent fuel spills and leaks and reduce or eliminate contamination of stormwater.
Vehicle and Equipment Maintenance	Prevention or reduction of the contamination of stormwater resulting from vehicle and equipment maintenance by running a “dry and clean site.”

Source: Caltrans, 2019a; California Association of Stormwater Quality Agencies, 2019

4.2.6 Long-term Impacts during Operation and Maintenance

The added impervious area would have a minimal increase to stormwater pollution effects because runoff from Project activities would be treated with stormwater treatment facilities and diverted into existing drainage systems. Pollution and runoff sources are not

expected to change. These impacts would be reduced through the implementation of stormwater treatment BMPs and DPP BMPs. These BMPs are discussed in Section 4.2.1.

4.3 Cumulative Impacts

There may be cumulative impacts from other projects that are underway or planned for the area. As this Project and other concurrent or planned projects would be subject to NPDES permit requirements and have their own BMPs, the cumulative impacts are expected to be minimal.

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5 Avoidance and Minimization Measures

5.1 Avoidance and Minimization Measures for Water Resources

There are currently no identified Project impacts to jurisdictional features. The Project would incorporate project features and standardized measures that are listed in Section 4 for permanent and temporary impacts. With the implementation of these project features, any adverse impacts to water quality would be minimal. Biological permits for the Project are also not anticipated at this time. Therefore, no avoidance, minimization, and/or mitigation measures for water quality are required.

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6 References

BASMAA Phase II Committee

2019 *BASMAA Post-Construction Manual*

California Association of Stormwater Quality Agencies

2019 *Stormwater Best Management Practice Online Handbook: Construction*

California Department of Transportation

2019a *Construction Site Best Management Practice Manual*

2019b *Project Planning and Design Guide*

2021 *Trash Control Implementation Workplan for the San Francisco Bay Region CTSW-RT-21-379.08.4.*

2022a *District 4 Work Plan*

2022b *State Route 29 (SR-29) Improvements at Rutherford and Oakville, Intersections Project Drainage Report.*

2023 *Water Quality Planning Tool.* <http://svctenvims.dot.ca.gov/wqpt/wqpt.aspx> (Last accessed: February 22, 2023).

California Interagency Watershed Mapping Committee

2018 CalWater Boundaries. <https://gispublic.waterboards.ca.gov/portal/home/item.html?id=be2edf6d62f54e7a82594ad7f5464209> (Last accessed: February 22, 2023).

Department of Water Resources

2003 *Napa-Sonoma Valley Groundwater Basin, Napa Valley Subbasin.* <https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Groundwater-Management/Bulletin-118/Files/2003-Basin-Descriptions/2_002_01_NapaValleySubbasin.pdf> (Last accessed: February 22, 2023).

Environmental Systems Research Institute

2018 National Geographic Style Basemap. <https://www.arcgis.com/home/item.html?id=3d1a30626bbc46c582f148b9252676ce> (Last accessed: February 9, 2023).

Environmental Systems Research Institute

2009 World Imagery Basemap. <https://www.arcgis.com/home/item.html?id=10df2279f9684e4a9f6a7f08febac2a9> (Last accessed: February 9, 2023).

Friends of the Napa River

2023 The River. <https://www.fonr.org/the-river> (Last accessed: February 6, 2023).

Geocon Consultants, Incorporated

2022 *Initial Site Assessment Overview Study*

GHD

2023 *DSA.xlsx*

Michael Baker International, Incorporated

2022 Caltrans District 4 December 2022 Trash Generation Ratings. <https://giswest.mbakerintl.com/bakerportal/apps/instant/interactivelegend/index.html?appid=5aa49232bfe84eb4bf7e47f64fcfb9d5> (Last accessed: February 28, 2023).

Napa County

2015 Napa County Zoning Map. <https://www.countyofnapa.org/DocumentCenter/View/8436/Napa-County-Zoning-Map?bidId=> (Last accessed: February 2, 2023).

San Francisco Bay Regional Water Quality Control Board

2019 *Water Quality Control Plan for the San Francisco Bay Basin*

State Water Resource Control Board

2017 *California Water Code Section 13383 Order to Caltrans*

2022 *2020-2022 California Integrated Report* (Clean Water Act Section 303(d) List and 305(b) Report). <https://www.waterboards.ca.gov/water_issues/programs/water_quality_assessment/2020_2022_integrated_report.html> (Last accessed: February 22, 2023).

2022 National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities. Order No. 2022-0057-DWQ, NPDES No. CAS000002, will be effective September 1, 2023.

2022 National Pollutant Discharge Elimination System (NPDES) Statewide Storm Water Permit Waste Discharge Requirements (WDRs) for State of California Department of Transportation. Order No. 2022-0033-DWQ, NPDES No. CAS000003, effective January 1, 2023.

2013 National Pollutant Discharge Elimination System (NPDES) Statewide Storm Water Permit Waste Discharge Requirements (WDRs) for Storm Water Discharges from Small Municipal Separate Storm Sewer Systems (MS4s). Order No. 2013-0001-DWQ, as amended by Order No. 2015-0133-EXEC, Order No. 2016-0069-EXEC, Order No. 2017-XXXX-DWQ, Order No. 2018-0001-EXEC, and Order No. 2018-0007-EXEC, NPDES No. CAS000004, effective July 1, 2013.

United States Census Bureau

2021 QuickFacts Napa County, California. <https://www.census.gov/quickfacts/fact/table/napacountycalifornia/PST045222> (Last accessed: February 2, 2023).

United States Department of Agriculture

2007 *Natural Resources Conservation Service National Engineering Handbook*. Chapter 7: Hydrologic Soil Groups. <https://directives.sc.egov.usda.gov/OpenNonWebContent.aspx?content=17757.wba> (Last accessed: February 6, 2023).

2023 Natural Resources Conservation Service Web Soil Survey. <https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx> (Last accessed: February 6, 2023).

United States Environmental Protection Agency

2022 Rainfall Erosivity Factor Calculator for Small Construction Sites

University of California, Agriculture and Natural Resources

2020 Ecology and Management of Annual Rangeland Series – Part 1: Mediterranean Climate. <https://anrcatalog.ucanr.edu/pdf/8540.pdf> (Last accessed: February 22, 2023).

Vista Environmental Consulting

2017 *Phase II Environmental Site Assessment and Low Threat Case Closure Request*. <https://documents.geotracker.waterboards.ca.gov/esi/uploads/geo_report/5718484699/T0605591139.PDF> (Last accessed: March 1, 2023).

Western Regional Climate Center

2023 Oakville 1 W, California (046351). <https://wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca6351> (Last accessed: February 2, 2023).

WSP

2021 *Site Reconnaissance for Biological Resources for the SR-29 Project Memorandum*

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Appendix A Risk Level Calculations

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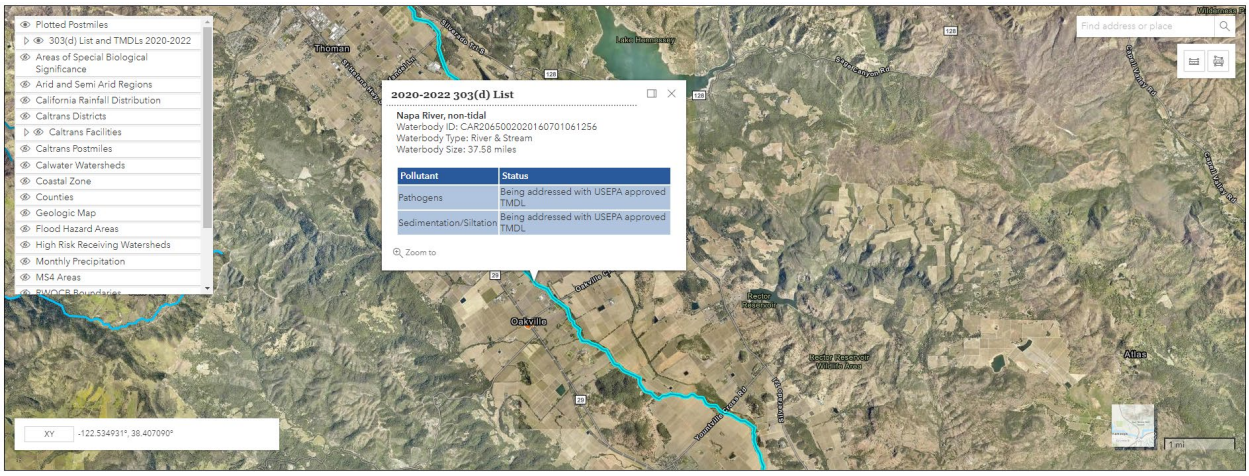
Receiving Water Body Risk Level: High

303(d) Listing for Sediment:



Source: Caltrans, 2023

Napa River has all three COLD, SPWN, and MIGR beneficial uses:

Water Body	Beneficial Uses												
	AGR	***MUN***	***GWR***	***COMM***	***COLD***	***MIGR***	***RARE***	***SPWN***	***WARM***	***WILD***	***REC-1***	***REC-2***	***NAV***
Napa River–- nontidal	E	E	E	E	E	E	E	E	E	E	E	E	E

Source: San Francisco Bay RWQCB, 2019

Sediment Risk Level: Medium

R Factor: 123.1

Coordinates:

Latitude 38.449470

Longitude -122.414043

Construction Duration:

April 29, 2024 – December 16, 2025

Facility Information

Start Date: 04/29/2024	**Latitude:** 38.4495
End Date: 04/28/2025	**Longitude:** -122.4140

Calculation Results

Rainfall erosivity factor (R Factor) = **91.58**

A rainfall erosivity factor of 5.0 or greater has been calculated for your site's period of construction.

You do NOT qualify for a waiver from NPDES permitting requirements and must seek Construction General Permit (CGP) coverage. If you are located in an area where EPA is the permitting authority (pdf), you must submit a Notice of Intent (NOI) through the NPDES eReporting Tool (NeT).Otherwise, you must seek coverage under your state's CGP.

Facility Information

Start Date: 04/29/2025	**Latitude:** 38.4495
End Date: 12/15/2025	**Longitude:** -122.4140

Calculation Results

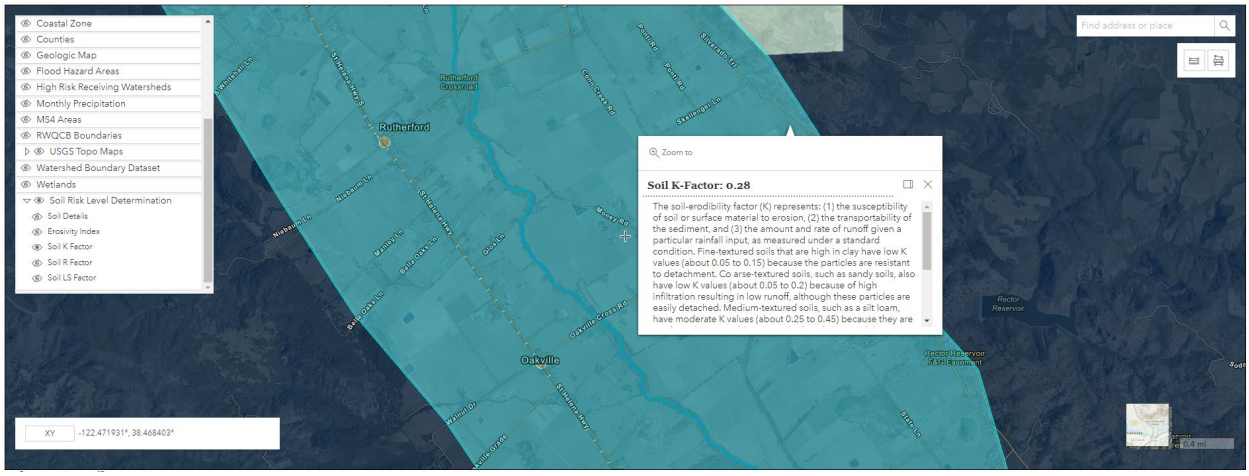
Rainfall erosivity factor (R Factor) = **31.52**

A rainfall erosivity factor of 5.0 or greater has been calculated for your site's period of construction.

You do NOT qualify for a waiver from NPDES permitting requirements and must seek Construction General Permit (CGP) coverage. If you are located in an area where EPA is the permitting authority (pdf), you must submit a Notice of Intent (NOI) through the NPDES eReporting Tool (NeT).Otherwise, you must seek coverage under your state's CGP.

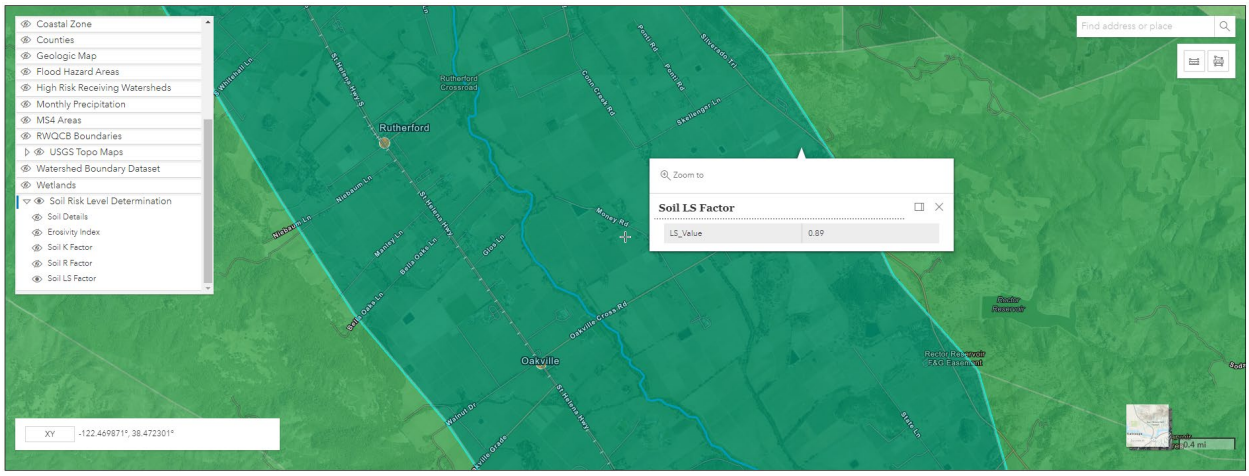
Source: U.S. EPA, 2023

K Factor: 0.28



Source: Caltrans, 2023

LS Factor: 0.89



Source: Caltrans, 2023

Combined Risk Level – 2

	A	B	C
1	**Sediment Risk Factor Worksheet**		**Entry**
2	**A) R Factor**		
3	Analyses of data indicated that when factors other than rainfall are held constant, soil loss is directly proportional to a rainfall factor composed of total storm kinetic energy (E) times the maximum 30-min intensity (I30) (Wischmeier and Smith, 1958). The numerical value of R is the average annual sum of EI30 for storm events during a rainfall record of at least 22 years. "Isoerodent" maps were developed based on R values calculated for more than 1000 locations in the Western U.S. Refer to the link below to determine the R factor for the project site.		
4	http://cfpub.epa.gov/npdes/stormwater/LEW/lewCalculator.cfm		
5		**R Factor Value**	123.1
6	**B) K Factor (weighted average, by area, for all site soils)**		
7	The soil-erodibility factor K represents: (1) susceptibility of soil or surface material to erosion, (2) transportability of the sediment, and (3) the amount and rate of runoff given a particular rainfall input, as measured under a standard condition. Fine-textured soils that are high in clay have low K values (about 0.05 to 0.15) because the particles are resistant to detachment. Coarse-textured soils, such as sandy soils, also have low K values (about 0.05 to 0.2) because of high infiltration resulting in low runoff even though these particles are easily detached. Medium-textured soils, such as a silt loam, have moderate K values (about 0.25 to 0.45) because they are moderately susceptible to particle detachment and they produce runoff at moderate rates. Soils having a high silt content are especially susceptible to erosion and have high K values, which can exceed 0.45 and can be as large as 0.65. Silt-size particles are easily detached and tend to crust, producing high rates and large volumes of runoff. Use Site-specific data must be submitted.		
8	Site-specific K factor guidance		
9		**K Factor Value**	0.28
10	**C) LS Factor (weighted average, by area, for all slopes)**		
11	The effect of topography on erosion is accounted for by the LS factor, which combines the effects of a hillslope-length factor, L, and a hillslope-gradient factor, S. Generally speaking, as hillslope length and/or hillslope gradient increase, soil loss increases. As hillslope length increases, total soil loss and soil loss per unit area increase due to the progressive accumulation of runoff in the downslope direction. As the hillslope gradient increases, the velocity and erosivity of runoff increases. Use the LS table located in separate tab of this spreadsheet to determine LS factors. Estimate the weighted LS for the site prior to construction.		
12	LS Table		
13		**LS Factor Value**	0.89
14			
15	**Watershed Erosion Estimate (=RxKxLS) in tons/acre**		30.67652
16	**Site Sediment Risk Factor**		**Medium**
17	Low Sediment Risk: < 15 tons/acre		
18	Medium Sediment Risk: >=15 and <75 tons/acre		
19	High Sediment Risk: >= 75 tons/acre		
20			

Receiving Water (RW) Risk Factor Worksheet	Entry	Score
A. Watershed Characteristics	yes/no	
A.1. Does the disturbed area discharge (either directly or indirectly) to a **303(d)-listed waterbody impaired by sediment** (For help with impaired waterbodies please visit the link below) or has a **USEPA approved TMDL implementation plan for sediment**?: http://www.waterboards.ca.gov/water_issues/programs/tmdl/integrated2010.shtml	**Yes**	**High**
OR		
A.2. Does the disturbed area discharge to a waterbody with designated beneficial uses of SPAWN & COLD & MIGRATORY? (For help please review the appropriate Regional Board Basin Plan) http://www.waterboards.ca.gov/waterboards_map.shtml		

Combined Risk Level Matrix

Receiving Water Risk \ Sediment Risk	Low	Medium	High
Low	Level 1	Level 2	
High	Level 2		Level 3

Project Sediment Risk: Medium
Project RW Risk: High
Project Combined Risk: Level 2

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