



Grant Avenue Bridge Rehabilitation Project  
Initial Study / Proposed Mitigated Negative Declaration



THE CITY OF  
NOVATO  
CALIFORNIA

**Capital Improvement Project ID# 09-003**

October 2018

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Grant Avenue Bridge Rehabilitation Project  
Initial Study / Proposed Mitigated Negative Declaration

**Prepared for:**



THE CITY OF  
NOVATO  
CALIFORNIA

City of Novato Department of Public Works

922 Machin Avenue

Novato, CA 94945

**Prepared by:**



GHD

2235 Mercury Way, Suite 150

Santa Rosa, California 95407

**October 2018**

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# 1. Project Information

<b>Project Title</b>	Grant Avenue Bridge Rehabilitation Project
<b>Lead Agency Name &amp; Address</b>	City of Novato 922 Machin Avenue Novato, CA 94945
<b>Contact Person &amp; Information</b>	Gosia Woodfin Engineer (415) 899-8997 <a href="mailto:gwoodfin@novato.org">gwoodfin@novato.org</a>
<b>Project Location</b>	The Project would be located along Grant Avenue, Eighth Street and Virginia Avenue, within the City of Novato in Marin County, California.
<b>Project Sponsor's Name &amp; Address</b>	The Project would be implemented by the City of Novato, which has obtained grant authorization from the Caltrans Highway Bridge Replacement and Rehabilitation (HBRR) program for partial federal funding.
<b>General Plan Designation</b>	As a public right-of-way, Grant Avenue has no specific General Plan designation. Parcels surrounding the roadway and bridge have various General Plan land use designations, including Medium Density Multi-Family Residential, Low Density Residential, Mixed Use, Neighborhood Commercial, and Community Facilities.
<b>Zoning</b>	As a public right-of-way, Grant Avenue does not have a zoning designation. Parcels surrounding the roadway and bridge have various zoning designations, including Residential, Mixed Use, Business and Professional Office, Neighborhood Commercial, and Planned District.
<b>Description of Project</b>	Rehabilitate and widen the existing Grant Avenue vehicle and pedestrian bridge, as well as stabilize the banks and channel on the upstream portion of Novato Creek to minimize scouring of bridge foundations.
<b>Surrounding Land Uses and Setting</b>	Grant Avenue is an east-west two-lane roadway that carries traffic between the downtown districts and residential areas of west Novato. Nearby active land uses include an elementary school, residential areas, a commercial shopping center, and a City park.
<b>Other Public Agencies Whose Approval may be Required</b>	Please refer to Section 1.6 for a list of regulatory agencies that may have permitting or approval authority over certain aspects of the Project.

## 1.1 Project Background

The City of Novato (City) proposes to rehabilitate an existing vehicle and pedestrian bridge on Grant Avenue over Novato Creek between Eighth Street and Virginia Avenue. The Project would be implemented by the City, which has obtained grant authorization from the Caltrans Highway Bridge Replacement and Rehabilitation (HBRR) program for partial federal funding.

The existing bridge (Caltrans Bridge No. 27C0021) was built in 1936 and is structurally sound. However, by today's standards, it is not wide enough to carry both vehicular and bicycle traffic. The existing guard rails on the bridge do not conform to current State standards and pedestrian traffic is currently limited to the north side of the bridge via a separate bridge adjacent to the vehicle bridge. A pedestrian bridge that was located on the south side of the bridge was removed in 2005 as it had deteriorated beyond repair.

Rehabilitation of the bridge would include widening the full length of bridge to its current south (downstream) side installing a new concrete topping slab and polyester concrete surface, new Caltrans Standard Barriers, and new 5-foot wide sidewalks on either side of the bridge. To protect against future scouring of bridge foundations, the Project would also repair existing rock slope protection (RSP) on the bank and install scour counter measures (SCM) within the channel of Novato Creek beneath and north (upstream) of the bridge.

## 1.2 Project Objectives

As noted in the City's Capital Improvement Program (CIP) Budget Report, the primary objective of the Project is to "rehabilitate the existing vehicle bridge by providing separate bicycle and pedestrian facilities and replacing substandard railings" (Novato 2010).

Supporting objectives for the Project are noted in a Preliminary Environmental Study (PES) Form approved for the Project by Caltrans (Caltrans 2011), as follows:

- Improve streetscape conditions and safety of pedestrians, bicyclists, and motorists within the public right-of-way of the Project limits.
- Widen the existing bridge to accommodate bike lanes and sidewalks; and
- Provide scour mitigation to protect bridge foundations.

### 1.2.1 CEQA Requirements

This Project is subject to the requirements of the California Environmental Quality Act (CEQA). The City of Novato is the CEQA lead agency. Prior to making a decision to approve the Project, the City must identify and document the potential significant environmental effects of the Project in accordance with CEQA. This Initial Study/Proposed Mitigated Negative Declaration (IS/MND) has been prepared under the direction of the City to satisfy the requirements of CEQA (Public Resources Code, Div 13, §21000-21177) and the State CEQA Guidelines (California Code of Regulations, Title 14, §15000-15387).

This IS/MND will be circulated for public and agency comment for 30 days. During the comment period, written comments may be e-mailed, delivered, or mailed to the following address:

Gosia Woodfin  
City of Novato, Department of Public Works  
922 Machin Avenue  
Novato, CA 94945  
(415) 899-8997  
gwoodfin@novato.org

### 1.3 Project Location

The Project would be located within the City of Novato, Marin County, California (see Figure 1, Vicinity Map). The specific location of the Project is where Grant Avenue crosses Novato Creek, immediately east of the intersection of Grant Avenue and Virginia Avenue (see Figure 2, Project Location).

### 1.4 Existing Uses

Grant Avenue is an east-west two-lane road that carries traffic to and from the downtown districts to the residential areas of west Novato. The existing two-lane bridge (Caltrans Bridge No. 27C0021v) over Novato Creek, just east of the intersection of Grant and Virginia avenues, was constructed in 1936. The existing bridge is approximately 36 feet long, 34 feet wide at the east end of the bridge, and 42 feet wide at the west end of the bridge. The bridge contains 11-foot wide traffic lanes in each direction, and 8- to 9-inch high concrete curbs with guard rails.

There are no street lights, or electroliers, located on the existing bridge. Two electroliers are located on the north side of Grant Avenue beyond each end of the bridge, supported on existing power poles. Known utilities at the site include overhead utility lines, a 12-inch cast iron water main, and a 2-inch PG&E gas line. The water main and gas line are located underneath the north side of the bridge. A reinforced concrete pedestrian bridge constructed in 1975 spans the creek adjacent to the north side of the bridge.

### 1.5 Project Characteristics

The Project includes bridge rehabilitation, intersection modifications, and channel improvements to Novato Creek beneath and upstream of the bridge. The Project components are described separately below and are shown on Figure 3, Site Plan and Figure 4, Scour Prevention Plan.

#### 1.5.1 Bridge Rehabilitation

The Project's bridge rehabilitation includes modification of the existing bridge, construction of a bridge expansion to the south of the existing bridge, traffic realignment, expansion of the existing roadway approaches, and removal of an existing pedestrian bridge. The southern barrier and overhang of the existing bridge would be removed and replaced with a new 2-foot-wide median. A new approximately 6-foot sidewalk would be installed on the north side of the existing bridge.

The bridge widening would add a single span of pre-cast pre-stressed concrete voided slab structure approximately 72-feet long. The new widened portion of bridge would be approximately

23 feet wide, accommodating one 11-foot travel lane, a 5-foot shoulder, a 6-foot sidewalk and a 1-foot wide Type 26 barrier along the southern edge of deck. The new widened bridge would be supported on reinforced concrete cap abutments outside the creek banks and behind the existing wingwalls at each end of the bridge.

The total rehabilitated bridge would be approximately 54 feet wide. This would include 1-foot wide, 3-foot tall Type 26 Caltrans Standard Barriers; 6-foot sidewalks that would house new utility conduits for potential future use; one 15-foot wide traffic lane; one 11-foot wide traffic lane; 5-foot shoulder/bike lanes; and a 2-foot-wide center median island. The roadway approaches to the bridge would be widened to accommodate the bridge. Traffic re-alignment would include shifting the centerline to the south on the widened bridge and along the eastern approach and eliminating the median islands near the intersection of Grant and Virginia avenues. No additional roadway lanes would be added.

The existing pedestrian bridge parallel to the north of the existing roadway bridge would be demolished. The rehabilitated bridge would not have a slope greater than 1:20, therefore, landings and handrailing meeting American with Disabilities Act (ADA) standards would not be required; all improvements will meet ADA standards.

The bridge rehabilitation would result in approximately 1,680 square feet of new bridge, 1,700 square feet of reconstructed impervious surface on the existing bridge, and 1,400 square feet of expanded roadway approaches. Storm water would be conveyed as sheet flow via new sidewalk curbs. Drainage of the bridge deck would be accomplished via surface drainage into the existing City storm drain system. The Project would closely maintain the existing slopes to enable the existing facilities to collect storm water runoff.

The City would be responsible for maintenance of the bridge. It is estimated that maintenance visits by the City would be conducted on an as-needed basis, estimated to be approximately twice a year for the purposes of this impact assessment. This bridge is also part of the Caltrans inspection program, which could necessitate limited additional maintenance activity at the site.

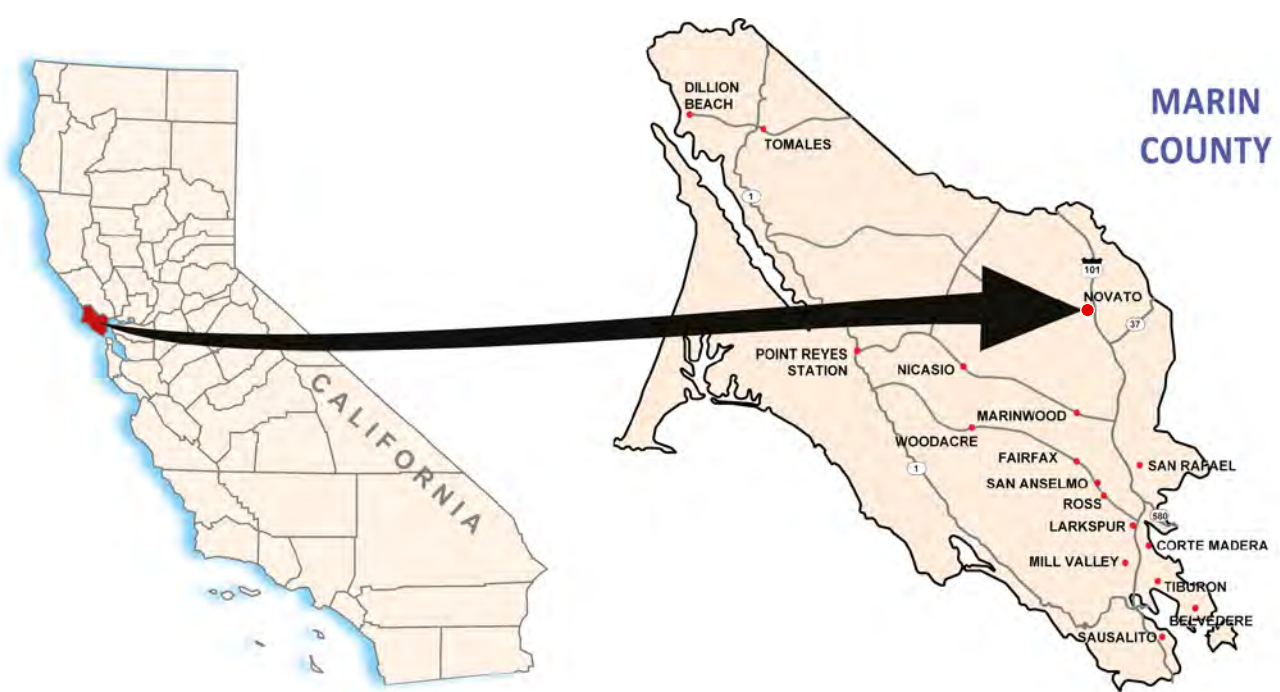
### **Design and Lighting**


The concrete barrier surfaces of the rehabilitated bridge would be finished with a fieldstone-formed relief texture and match the texture, color, and pattern of the bridge barrier architectural surface located at Simmons Lane, in the City of Novato. This aesthetic treatment is designed to match the City of Novato's established aesthetic for concrete bridges around the City.

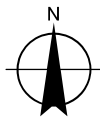
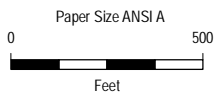
The rehabilitated bridge would not include any new lighting or landscaping. New street lights would be placed on City Standard street lights beyond and near each corner of the bridge. The street lights would be light emitting diode (LED) globe-style luminaire with glare shielding and a 12-foot textured-finish decorative pole and base.

#### **1.5.2 Intersection Modifications**

The existing 3-legged intersection of Grant Avenue and Virginia Avenue currently operates as a non-standard two-way stop controlled intersection. The project would modify the Grant Avenue/Virginia Avenue intersection to an all-way stop control intersection. This would include removal of medians, and each approach would consist of a single stop controlled lane.



Legend  
 Project Location



CITY OF NOVATO  
 GRANT AVENUE BRIDGE REHABILITATION  
 CIP PROJECT NO. 09-003

Project No. 11110085  
 Revision No.  
 Date 09/12/2018

Map Projection: Lambert Conformal Conic  
 Horizontal Datum: NAD 1983 2011  
 Grid: NAD 1983 2011 StatePlane California III FIPS 0403 Ft US

Vicinity Map

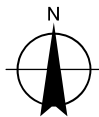
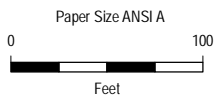
FIGURE 1

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Legend

- Project Location
- Temporary Access & Staging
- Novato Creek



CITY OF NOVATO  
GRANT AVENUE BRIDGE REHABILITATION  
CIP PROJECT NO. 09-003

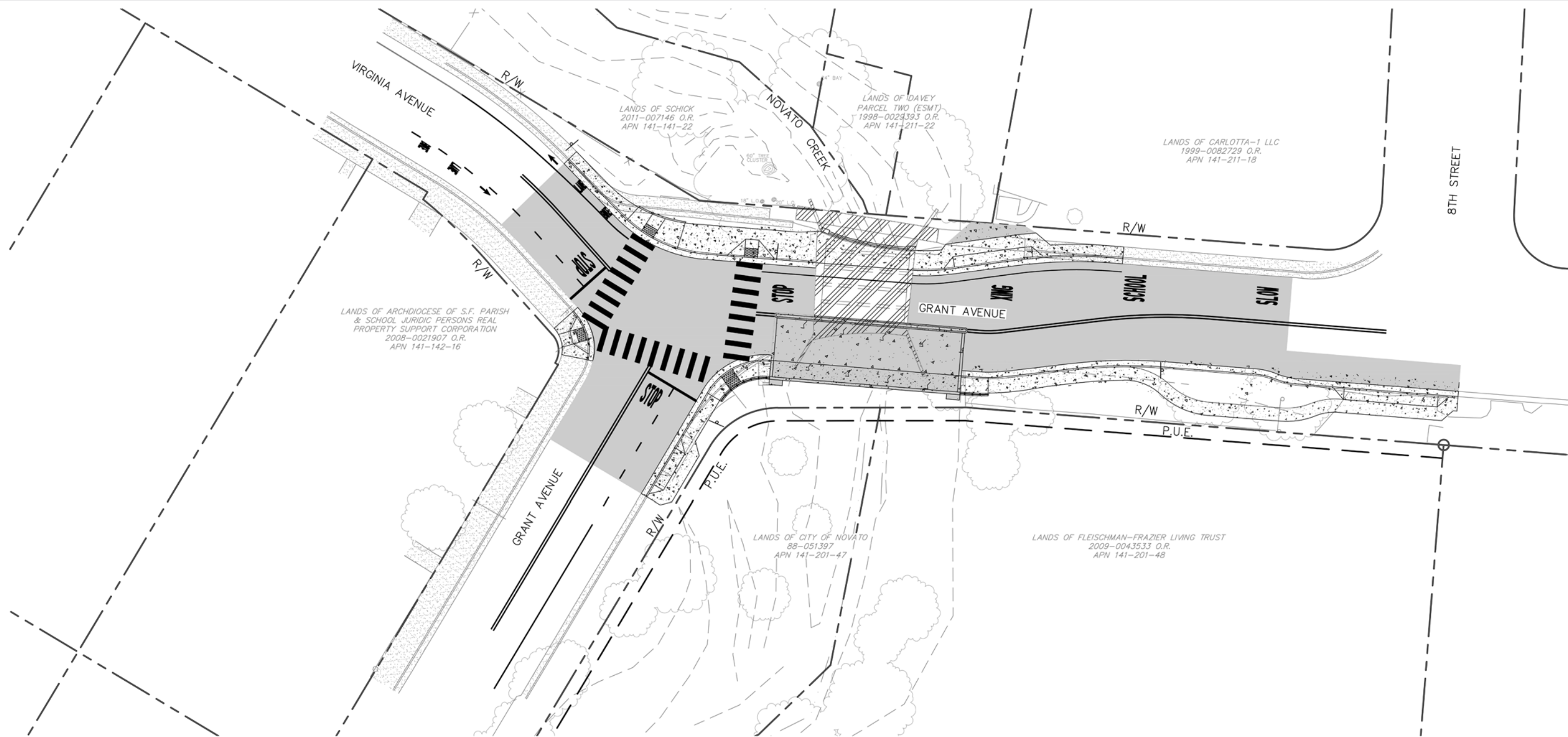
Project No. 11110085  
Revision No.  
Date 09/12/2018


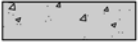






Map Projection: Lambert Conformal Conic  
Horizontal Datum: NAD 1983 2011  
Grid: NAD 1983 2011 StatePlane California III FIPS 0403 Ft US

Project Location

FIGURE 2

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LEGEND			
	EXISTING BRIDGE STRUCTURE		NEW BRIDGE STRUCTURE
	RIGHT OF WAY		TRAFFIC STRIPING
	PUBLIC UTILITY EASEMENT		NEW CONCRETE SIDEWALKS, CURB, GUTTER AND PEDESTRIAN RAMPS
	NEW HMA SURFACE		TRUNCATED DOMES



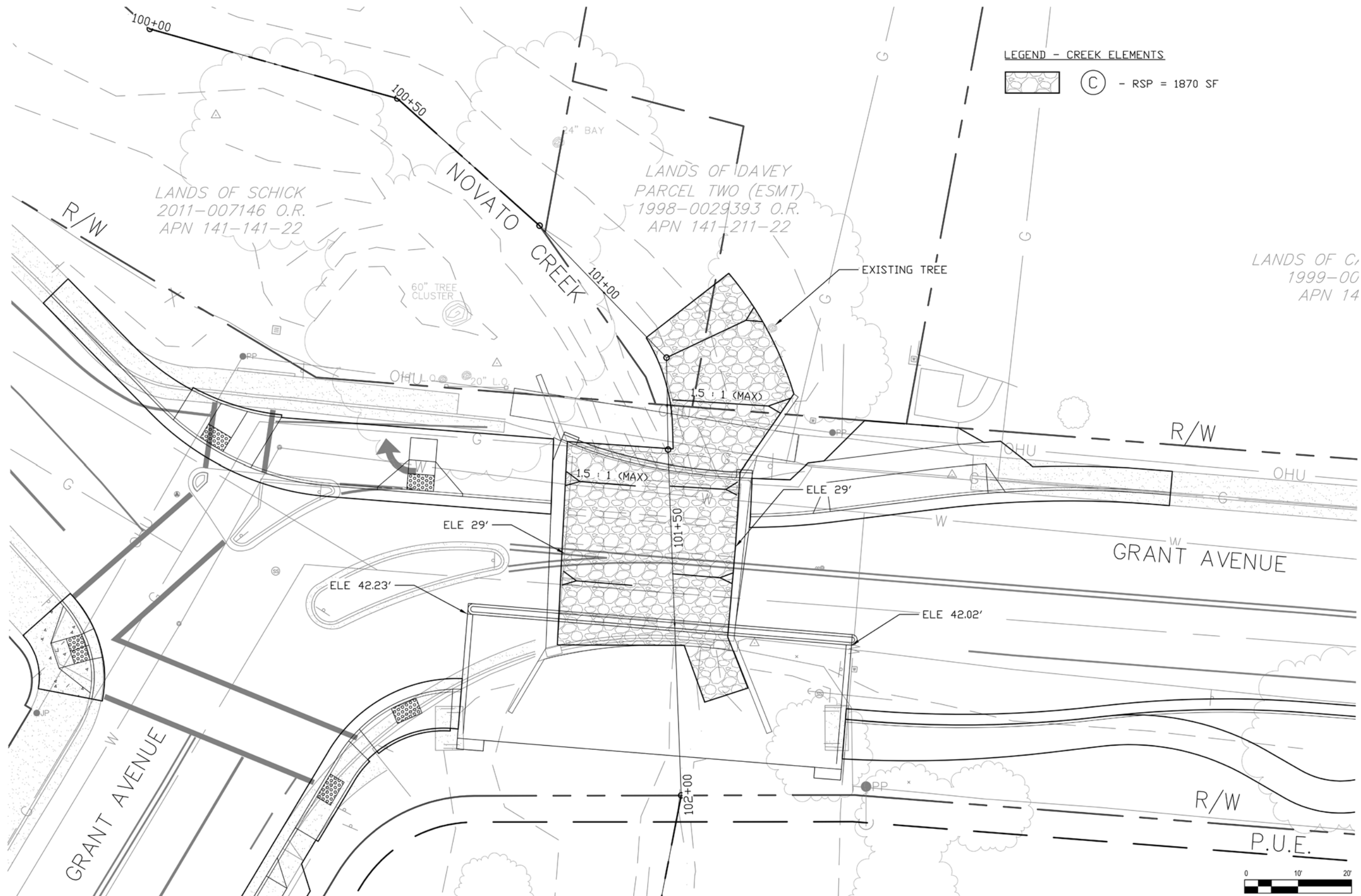
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 Date 09/12/2018



Site Plan

Figure 3

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LEGEND - CREEK ELEMENTS

  - RSP = 1870 SF

LANDS OF SCHICK  
2011-007146 O.R.  
APN 141-141-22

LANDS OF DAVEY  
PARCEL TWO (ESMT)  
1998-0029393 O.R.  
APN 141-211-22

LANDS OF C.  
1999-00  
APN 14

GRANT AVENUE

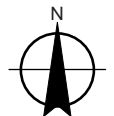
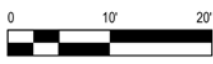
GRANT AVENUE

ELE 29'

ELE 29'

ELE 42.02'

ELE 42.23'



CITY OF NOVATO  
GRANT AVENUE BRIDGE REHABILITATION  
CIP PROJECT NO. 09-003

Project No. 11110085  
Revision No. -  
Date 10/02/2018

Scour Prevention Plan

Figure 4

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Print date: October 2, 2018 9:39 AM

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### 1.5.3 Utilities

The existing 12-inch water main attached to the bridge and an existing 2-inch PG&E gas line on the north side of the bridge would remain in place. It is not anticipated that any utilities would be carried on the new bridge structure. However, the weight of potential future utilities that may be attached to the outside of the structure in the future are considered in the design.

Existing overhead PG&E, Comcast, and Frontier lines and associated poles located on south of the existing bridge would be very close to the proposed demolition activities and overlap the proposed bridge widening; therefore, the poles and lines would be temporarily relocated to allow clearance for construction equipment. The utility pole would be temporarily relocated to approximately 25 feet southwest of the existing pole, and outside of the construction area. The temporary pole location is within the right of way and public utilities easement (ROW/PUE). PG&E is responsible for the final pole relocation, and the permanent relocation position is currently unknown and outside of the City's decision-making authority. In addition, an existing portion of a previously abandoned sanitary sewer main and a sanitary sewer manhole would be removed at the new widened bridge near the eastern abutment.

### 1.5.4 Novato Creek Bank Stabilization and Rock Slope Protection/Scour Counter Measures

To protect against future scouring of bridge foundations, the Project would install rock slope protection (RSP) and scour counter measures (SCM) within the channel of Novato Creek beneath and upstream (north) of the bridge.

RSP/SCM elements include placement of new riprap where water velocities and shear stresses or the physical site constraints may preclude the use of bioengineering techniques. Where possible, the use of bioengineering techniques will be used. In areas where conventional riprap protection is warranted, integration of live staking will be considered where adequate conditions exist (this is essentially a bioengineering technique known as "vegetated riprap"). Additionally, any new riprap placed at the immediate upstream boundary of the bridge abutments would be integrated with an existing bay tree (approximately 24" diameter at breast height) in a way that doesn't harm the tree and provides protection of its root system.

The total amount of RSP/SCM permanently placed on the banks and channel bed of Novato Creek would be approximately 250 cubic yards, with approximately 480 cubic yards of soil being excavated. The size of the RSP/SCM to be placed in the creek would vary, with a maximum size of 1.0 ton. The RSP/SCM would result in permanent impacts to approximately 1,870 square feet and 80 linear feet of stream bank. The excavated soil would be stockpiled within the construction zone, to be used later during bank restoration. Where adequate conditions for growth exist, live willow cuttings would be placed in the interstitial space within the RSP/SCM at the appropriate lower bank elevations (just above bank toe).

The design and installation of the RSP/SCM would be in accordance with Federal Highway Administration Guidelines (Hydraulic Engineering Circular No's, HEC-18, HEC-20 and HEC-23). However, where applicable, SCM and RSP installation within the creek channel and lower bank would be designed in accordance with fish passage criteria and guidelines set by the California Salmonid Stream Restoration Manual (CDFW 2010) and the National Marine Fisheries Service

(NMFS) Anadromous Salmonid Passage Facility Design (NMFS 2011). The City would be responsible for maintenance of the RSP/SCM upstream of the bridge, and the County of Marin would be responsible downstream of the bridge. It is estimated that maintenance visits by the City and County would be conducted on an as-needed basis, estimated to be approximately twice a year for the purposes of this impact assessment.

The Project would include the removal of deleterious materials (broken concrete, embedded debris, etc.); minor slope contouring or shaping where prudent; installation of biodegradable erosion control blankets; and planting of native riparian vegetation. The plant species will be selected based on appropriate species for the watershed as well as on the bank zone planting location and the canopy cover present. Existing trees, including two large coast live oak trees (*Quercus agrifolia*), approximately 17" and 20" diameter at breast height) would be preserved and integrated into the planting palette.

#### 1.5.5 Project Construction

Project construction is anticipated to begin in the summer of 2019 and require approximately five months to complete. Construction activities within the channel of Novato Creek would be performed only between June 15 and October 15. Construction activities outside of the creek banks, such as road and sidewalk enhancements and tree trimming, may take place before and after these dates. Typical daily construction hours would be between 7:00 a.m. and 6:00 p.m. Monday through Friday, and between 10:00 a.m. and 5:00 p.m. on Saturdays in compliance with Municipal Code Chapter 14.22.070, Noise and Construction Hours.

#### **Construction Zone, Access, and Staging Areas**

The Project's area of potential effect (APE) is shown on Figure 2. The APE is congruent with the Project's construction zone and would be approximately 1.8 acres in size. The estimated area of physical disturbance would be approximately 0.4 acre in size at the bridge site. During construction, worker vehicles and haul trucks would access the Project area from U.S. Highway 101 and local City streets, including DeLong Avenue, Redwood Boulevard, Novato Boulevard, Tamalpais Avenue, and Grant Avenue. Access into the creek channel would occur from an existing driveway/ramp from Grant Avenue, south of the bridge on the creek's west bank (see Figure 2, Project Location).

The majority of the Project construction would take place within the existing City right-of-way for Grant Avenue, though a temporary construction easement (TCE) would be required for access to private residential properties north of Grant Avenue at the east end of the bridge to allow for work area access. Staging areas would be used by contractors for construction-related equipment, materials storage, and stockpiling. Due to the urban setting of the Project, staging space is limited, and the Contractor would be required to stage the delivery of materials and equipment based on Project need for the immediate construction activity under way. In some cases, it may be necessary for equipment to be delivered and removed daily. Staging areas for construction equipment and supplies would be located on either side of the bridge within the City right-of-way, TCE areas, and in traffic lanes during such time that they are closed to vehicle traffic during construction.

## Traffic Handling and Detour Route

It is expected that K-rail would be placed on the inside shoulder of the existing structure while widening is being constructed. Therefore, bridge construction would generally not interfere with traffic on Grant Avenue, although there would be periodic lane closures for particular construction activities. The duration of periodic lane closures is currently unknown. For the purposes of analysis, it is reasonable to assume that periodic lane closures may occur for up to half of the duration of construction.

There would also be periods where Grant Avenue would be closed to vehicular traffic at each end of the bridge. However, construction would be completed in a way to allow pedestrian and bicycle traffic to cross the bridge at all times. The duration of bridge closure to vehicular traffic is currently unknown, but is anticipated to be episodic. For the purposes of analysis, this document assumes that the bridge may be closed at each end to vehicular traffic for up to a quarter of the construction period. Emergency responders would be notified in advance of closure dates. A traffic detour route would utilize Novato Boulevard and Seventh Street during construction (see Figure 5, Detour Plan). From the Grant Avenue / Virginia Avenue intersection, eastbound traffic would be detoured to use Grant Avenue to Novato Boulevard to Seventh Street. From the Grant Avenue / Eighth Street intersection, westbound traffic would be detoured to use Grant Avenue to Seventh Street to Novato Boulevard. It can also be reasonably assumed that drivers would exercise the option of using other routes, such as Novato Boulevard to Diablo/DeLong Avenue to Redwood Boulevard, depending on the ultimate destination and traffic conditions.

## Bridge Rehabilitation

Construction of the bridge widening would require partial removal of the existing bridge structure along the southern edge of the deck and at the top of the wingwalls at each end of the existing bridge. The existing curbs and guardrails on the bridge would be removed, as would the pedestrian bridge located adjacent to the north side of the bridge. The south side of the bridge would be widened by approximately 23.5 feet.

The cap abutments would be supported by 36" Cast-In-Drilled-Hole (CIDH) piles. Pile depth is estimated to be approximately 50-feet below ground surface at the abutments. Piles would be located outside of the existing wingwall foundations. It is anticipated that three pile shafts would be located at each of the abutments. Total area of disturbance for the abutments is estimated as 2,500 square feet.

The center pile of Abutment 1, the western abutment, would be located approximately one foot behind the existing wingwall spread footing. This pile would be designed with an isolation casing, as necessary during the final design phase, so as to not impact the existing structure. The piles at Abutment 2, the eastern abutment, are further away from the existing wingwall spread footing and isolation casings are not warranted.

Although the top portion of the existing wingwalls would be removed to allow for the depth of the new superstructure to span over the creek, they would remain in place to support the embankments at each abutment. The removal of the small portion of the wingwalls would not impact their capacity.

## **Installation of Rock Slope Protection, Scour Counter Measures and Bank Stabilization**

Installation of RSP and SCM would require operation of mechanized construction equipment within the Novato Creek channel, including an excavator and front end loader. Access into the creek channel would occur from an existing driveway/ramp from Grant Avenue, south of the bridge on the creek's west bank. As noted above, RSP and SCM design will be consistent with fish passage guidelines of the California Salmonid Stream Restoration Manual (CDFW 2010) and the NMFS Anadromous Salmonid Passage Facility Design (NMFS 2011).

Clearing and grading along the stream banks for placement of approximately 250 cubic yards of RSP in Novato Creek would extend approximately 80 feet upstream of the bridge measured along the creek centerline. Approximately 480 cubic yards of earthen excavation would be required to install the RSP and SCM. The excavated soil would be stockpiled within the Project construction zone, to be used later during bank restoration. The RSP and SCM to be placed under the bridge would be installed in contour with the channel so as not to reduce the capacity of the channel under the bridge. The RSP and SCM to be placed on the eastern bank of Novato Creek would extend upstream approximately 10 feet from the beginning of the bend in Novato Creek. The extent of riprap along the eastern bank would be at a minimum equal to the water surface elevation of a five-year flood. The maximum slope of the RSP and SCM on the east bank would be 1:1 (horizontal:vertical) to prevent failure and sliding of rocks. RSP and SCM would also be installed along the west bank of Novato Creek upstream of the western bridge abutment and an existing corrugated metal retaining structure to help protect the bridge's foundation.



Where adequate conditions for growth exist, willow cuttings would be placed in the voids of the RSP/SCM at the lower bank elevations. Following the placement of willow cuttings, stockpiled soil would be placed over the RSP/SCM and hand-raked for even distribution.

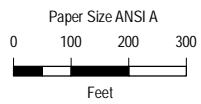
## **Dewatering and Fish Protection**

Construction activities within the banks of Novato Creek would be performed between June 15 and October 15, which would correspond to times when there is little or no precipitation and when stream flow would be lowest. If water is not present in the channel during the construction period, then Project construction would not require dewatering or water diversion. If water is present in the channel, the flow would be diverted by placing coffer dams upstream and downstream of the active construction areas using sand bags, and directing flow through a fish exclusion barrier and screened pipe to an energy dissipation device at the point of discharge below the Project area. The length of the pipe would be the minimum necessary to safely convey the flow through the construction site, and would be placed on the streambed at natural grade or at the toe of the stream bank. Based on the channel configuration, Project design, and Project construction activities, the worst-case scenario for water diversion would include dewatering of up to 350 linear feet of stream for a maximum period of three months.

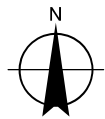


LEGEND

-  Detour Route
-  Project Site/Road Closure



Map Projection: Mercator Auxiliary Sphere  
 Horizontal Datum: WGS 1984  
 Grid: WGS 1984 Web Mercator Auxiliary Sphere



CITY OF NOVATO  
 GRANT AVENUE BRIDGE REHABILITATION  
 CIP PROJECT NO. 09-003

Project No. 1110085  
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 Date 09/12/2018

Detour Plan

FIGURE 5

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Cofferdams would be constructed using sand bags and lining to prevent seepage. Any water intake structure would be installed, operated, and maintained in accordance with current NMFS, United States Fish and Wildlife Services (USFWS), and California Department of Fish and Wildlife (CDFW) criteria or as developed in cooperation with NMFS, USFWS, and CDFW to accommodate site-specific conditions. Fish protection fence-screens would be installed upstream of the creek bypass intake and downstream of the bypass discharge point per NMFS criteria and in the presence of a qualified biologist. It is anticipated that the bypass pump, either a noise-attenuated diesel or electric pump, would be located north of the intersection of Grant Avenue and Virginia Avenue. Water would be released or pumped downstream at an appropriate rate to maintain downstream flows at all times and the outlet of all diversions shall be positioned such that the discharge of water does not result in bank erosion or channel scour. Monitoring of the stream diversion would be performed by a NMFS-approved biologist and would occur periodically each day such devices are in operation to ensure proper function.

Fish, if present in the work area, would be collected with a seine net and relocated no earlier than 48 hours prior to dewatering the work site by a NMFS-approved biologist. Fish would be relocated 200 feet downstream of the dewatered area to suitable pool habitat unaffected by construction activities. Non-listed fish also collected in the seine net would be relocated to a different pool further downstream.

After the coffer dam is installed and the bypass flow is set up, there may be remaining pools within the dewatered area. If necessary, the biologist would use a dipnet, depending on water levels, to remove the remaining fish. Smaller screened electric pumps may also be used to reduce water down to levels that ensure that no fish remain.

Diverted flows would be returned to the stream channel immediately downstream of the work area. Upon Project completion, the diversion pipe and coffer dam material would be removed from the channel in a manner that minimizes disturbance to downstream flows and water quality.

### **Tree Removal and Revegetation**

This Project may require tree removal. One walnut tree (*Juglans* sp.) may be required to be removed from the southeast bank in order to widen the bridge deck. It is also anticipated that the removal of the existing pedestrian bridge adjacent to the north side of the bridge would require trimming of overhanging trees including two coast live oak trees (*Quercus agrifolia*) and a bay tree (*Umbellularia californica*). There are currently plantings of native tree and understory species within the Project vicinity which appear to be part of a restoration project. These plantings are not anticipated to be affected by construction activities.

Once the bridge rehabilitation and RSP/SCM placement are complete, exposed and disturbed areas would be revegetated. A native grass seed mix and mulch would be applied to new earthen slopes on the new roadway approach embankments on the south side of bridge, as well as to areas disturbed for creek access and disturbed areas outside of the RSP/SCM footprint. Valley oak (*Quercus lobata*) or other native riparian trees would be planted near the top of bank of the new roadway approach embankments on the south side of the bridge. Riparian plants would also be planted below the top of bank in areas disturbed outside of the new RSP/SCM footprint. Biodegradable rolled erosion control products may also be used on steeper slopes or near the top of bank, as warranted.

## Utility Replacement

Existing overhead PG&E, Comcast, and Frontier facilities located on the south side of the bridge would be relocated. This would likely require the relocation of two utility poles south outside of the construction zone.

## Haul Volumes and Truck Trips

The number of construction-related vehicles traveling to and from the Project would vary on a daily basis but would likely be less than 20 vehicle trips a day. Higher volumes can be expected during certain operations such as large concrete pours where volumes may be as high as 40 vehicles. As shown in Table 1-1 below, it is estimated that Project construction would result in the demolition and off-haul of approximately 496 cubic yards (CY) of construction waste, including concrete, asphalt concrete, steel, and miscellaneous waste, including wood, vegetation, and soil unsuitable for reuse as fill. In addition, approximately 1,317 CY of construction materials would be required for the Project, including RSP/SCM, concrete, asphalt concrete, aggregate base, and fill material. Based on the estimated demolition and construction volumes, the Project is estimated to require approximately 44 haul trips during the demolition process (assuming the use of 12 CY capacity haul trucks) and approximately 132 delivery truck trips during construction process (assuming the use of 8 CY haul trucks for concrete and 12 CY capacity haul trucks for other materials). Some excess soil would be reused onsite, and the remainder of excavated soil would be disposed of at the Redwood Landfill in Novato, or another approved landfill or disposal area.

Table 1-1 Estimated Haul Volumes and Truck Trips

Material	Cubic Yards	Estimated Haul Truck Trips (round trip) <sup>1</sup>
<b>Demolition</b>		
Concrete	125	11
Asphalt/Concrete	51	5
Steel	26	3
Miscellaneous Demolition Waste	44	4
Excess Soil	250	21
<b>Total</b>	<b>496</b>	<b>44</b>
<b>Construction</b>		
RSP/SCM	250	21
Concrete	492	62
Asphalt Concrete	18	2
Aggregate Base	53	5
Fill (Net Import)	504	42
<b>Total</b>	<b>1,317</b>	<b>132</b>

Notes: 1. Haul trip estimates assume 12 cubic yards of material per truck for all materials except concrete. Haul trips for concrete assumes 8 cubic yards per truck.

## Construction Workers and Equipment

The estimated size of the construction workforce at any one time during construction is anticipated to range between 6 to 10 workers. Generally, construction equipment would include the following items listed in Table 1-2 below.

Table 1-2 Anticipated Construction Equipment

Project Activity	Anticipated Construction Equipment	
Clear and Grub	<ul style="list-style-type: none"> <li>• Excavator</li> <li>• Skid dozer</li> </ul>	<ul style="list-style-type: none"> <li>• Transfer trucks (2 or more)</li> <li>• Chipper</li> </ul>
Demolition	<ul style="list-style-type: none"> <li>• Excavator</li> <li>• Skid dozer with drill bit</li> <li>• Compressor</li> <li>• Pick-up trucks</li> </ul>	<ul style="list-style-type: none"> <li>• Bulldozer</li> <li>• Sweeper</li> <li>• Transfer trucks (2 or more)</li> </ul>
Formwork and Concrete	<ul style="list-style-type: none"> <li>• Flatbed Truck</li> <li>• Forklift</li> </ul>	<ul style="list-style-type: none"> <li>• Crane truck</li> <li>• Concrete trucks</li> </ul>
Polyester Overlay, AC, Striping	<ul style="list-style-type: none"> <li>• Overlay machine</li> <li>• Materials truck</li> <li>• AC machine</li> <li>• Large roller</li> <li>• Small roller</li> <li>• Sweeper</li> </ul>	<ul style="list-style-type: none"> <li>• AC dump trucks (4 or more)</li> <li>• Skid dozer with front loader</li> <li>• Oil truck</li> <li>• Thermoplastic truck</li> <li>• Striping machine</li> </ul>

### 1.6 Public Agencies Whose Approval Is Required

Construction and operation of the Project would be conducted to meet applicable regulations. Table 1-3 lists the federal, State, local, and regional regulatory/permitting agencies that may have permitting or approval authority over certain aspects of the Project.

Table 1-3 Public Agencies Whose Approval Is Required

Agency	Potential Permit/Approval
<b>Federal Agencies</b>	
United States Army Corps of Engineers	Section 404 permit pursuant to the federal Clean Water Act for work within the ordinary high water line of Novato Creek.
National Marine Fisheries Service	Consultation by the Corps under Section 7 of the federal Endangered Species Act for listed species that may be affected by the Project.
<b>State Agencies</b>	
Caltrans	Approval of federal funding using previously approved NEPA Categorical Exclusion has already occurred.
Regional Water Quality Control Board	Section 401 water quality certification pursuant to the federal Clean Water Act for work within the channel and banks of Novato Creek.
California Department of Fish and Wildlife	1602 Streambed and Lake Alteration Agreement, pursuant to the Fish and Game Code, for any activity requiring streambed alterations. Approval of any future potential take of State-listed wildlife and plant species covered under the California Endangered Species Act.
State Water Resources Control Board	Phase II Small MS4 General Permit [for stormwater] and/or General Construction Permit.

## 2. Determination

The environmental factors checked below would be potentially affected by this Project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages.

- |  |   |  |
|--|---|--|
| <input type="checkbox"/> Aesthetics                      | <input type="checkbox"/> Agriculture Resources                    | <input checked="" type="checkbox"/> Air Quality                        |
| <input checked="" type="checkbox"/> Biological Resources | <input checked="" type="checkbox"/> Cultural Resources            | <input type="checkbox"/> Geology /Soils                                |
| <input type="checkbox"/> Greenhouse Gas Emissions        | <input checked="" type="checkbox"/> Hazards & Hazardous Materials | <input checked="" type="checkbox"/> Hydrology / Water Quality          |
| <input type="checkbox"/> Land Use / Planning             | <input type="checkbox"/> Mineral Resources                        | <input checked="" type="checkbox"/> Noise                              |
| <input type="checkbox"/> Population / Housing            | <input type="checkbox"/> Public Services                          | <input type="checkbox"/> Recreation                                    |
| <input type="checkbox"/> Transportation/Traffic          | <input type="checkbox"/> Utilities / Service Systems              | <input checked="" type="checkbox"/> Mandatory Findings of Significance |

On the basis of this initial evaluation:

- I find that the proposed Project COULD NOT have a significant effect on the environment and a NEGATIVE DECLARATION will be prepared.
- I find that although the proposed Project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the Project have been made by or agreed to by the Project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.
- I find that the proposed Project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.
- I find that the proposed Project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.
- I find that although the proposed Project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an EARLIER EIR or NEGATIVE DECLARATION pursuant to applicable legal standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed Project, nothing further is required.

  
\_\_\_\_\_  
Lead Agency Signature

  
\_\_\_\_\_  
Date

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### 3. Environmental Effects of the Project

#### 3.1 Aesthetics

	Potentially Significant Impact	Less-Than-Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
Would the Project:				
a. Have a substantial adverse effect on a scenic vista?			✓	
b. Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?				✓
c. Substantially degrade the existing visual character or quality of the site and its surroundings?			✓	
d. Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?			✓	

Discussion:

**a, c) Adverse Effect on a Scenic Vista or Substantially Degrade Existing Visual Character or Quality – *Less than Significant***

The Project is not located along a hillside or ridgeline and would not obstruct existing views of ridgelines and foothills. No impact on a scenic vista would occur.

Novato Creek in this reach is lined with trees, with adjacent parcels developed as a church and apartment building. No single-family residences are adjacent to the project area, and all are shielded from view by the trees along Novato Creek. The permanent improvements proposed to the bridge would be visible only from areas immediately adjacent to the bridge due to the flat terrain and intervening vegetation. There are limited views from the bridge to the foothills to the west, but most long-distance views are blocked due to trees, vegetation, and the terrain. The bridge, therefore, is not considered a scenic vista point, nor has it been identified as a scenic resource in the Novato General Plan (Novato 1996).

Views in the immediate vicinity would be temporarily altered by the presence of construction equipment, materials, and workers during construction, which is anticipated to last approximately five months. The changes to these views would be visible only to the public in the immediate vicinity during construction, including the public on immediately adjacent land uses and those traveling on the affected section of Grant Avenue. Because the construction activities would be temporary in nature and of a relatively short duration (approximately 5 months), the potential impact on visual quality is less than significant.

As described in the Project Description, removal of one walnut tree located on the southeast bank in order to widen the bridge deck may be required. In addition, it is anticipated that removal of the existing pedestrian bridge adjacent to the north side of the bridge would require trimming of

overhanging trees including two large coast live oak trees and a large bay tree. The Project does not include removal or trimming of heritage trees, and would not affect the existing plantings of native tree and understories within the Project vicinity. The Project would include re-vegetation of exposed and disturbed areas after the bridge rehabilitation and RSP/SCM placement are complete. Valley oak or other native riparian trees would be planted near top of bank of the new roadway approach embankments on the south side of the bridge. Riparian plants would also be planted below the top of bank in areas disturbed outside of the new RSP/SCM footprint. Therefore, tree removal and trimming activity anticipated as a result of the Project would not substantially alter the visual nature of the project area.

Upon completion of the Project, there would not be substantial alteration to the visual nature of the area or any obstructions to scenic vistas. The Project would include architectural treatments similar to other City bridges and would retain a similar aesthetic style. Based upon these minimal visual changes, the Project would not have an adverse effect on a scenic vista or substantially degrade the existing visual character of the Project area; therefore, the impact would be less than significant.

**b) Damage Resources within a State Scenic Highway – *No Impact***

There are no officially designated state scenic highways in Marin County (Caltrans 2018). Segments of Highway 37 and Highway 101 in Marin County are listed as “eligible” for designation as scenic highways; however, these highways are not located within the area of the Project site. No impact would occur.

**d) Create a New Source of Substantial Light or Glare which would Adversely Affect Day or Nighttime Views in the Area – *Less than Significant***

Project construction would not include nighttime work. Therefore, construction activities would not result in a source of substantial light that would adversely affect nighttime views in the area. Construction activities would include clearing and grubbing of the work area, demolition work to remove the existing pedestrian bridge and modify the southern barrier and overhang of the existing bridge, CIDH piling, formwork and concrete installation, and paving overlay and striping. The construction equipment anticipated for the Project is identified by phase in Table 2. Considering the nature of construction activities, equipment, and materials, there would be very little, if any, daytime glare resulting from the Project. The only potential for Project-related glare would be from reflective surfaces (e.g., windshields) on construction equipment as they carry out construction activities. However, these instances of glare would be momentary and passing, depending on sky conditions, and the impact on daytime views in the area would be less than significant.

The concrete barrier surfaces of the rehabilitated bridge would be finished with a fieldstone-formed relief texture and would match the City of Novato’s established aesthetic for concrete bridges around the City. The rehabilitated bridge would not include new lighting. New street lights would be placed on City Standard street lights beyond and near each corner of the bridge. The street lights would replace the two existing electroliers that are located beyond each end of the bridge and supported on existing power poles. The existing electroliers are anticipated to be removed as part of the utility pole relocation effort. The new street lights would be LED globe-style luminaire with glare shielding and a 12-foot textured-finish decorative pole and base.

The proposed street lights would replace existing nighttime lighting and conform to City Standards. Therefore, the Project would not include new sources of daytime glare or change nighttime lighting and illumination levels in the area. Centerline striping would not produce glare in amounts that would adversely affect day or nighttime views. The impact would be less than significant.

### 3.2 Agriculture and Forest Resources

	Potentially Significant Impact	Less-Than-Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
Would the Project:				
a. Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?				✓
b. Conflict with existing zoning for agricultural use, or a Williamson Act contract?				✓
c. Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?				✓
d. Result in the loss of forest land or conversion of forest land to non-forest use?				✓
e. Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?				✓

Discussion:

**a, b, c, d, e) Convert Farmland or Conflict with Existing Zoning for Agricultural/Forest Land Use – No Impact**

The Project area is located within the Novato City limits and is categorized as “Urban and Built-Up Land” according to the Marin County map prepared pursuant to the Farmland Mapping and Monitoring Program (CDC 2011). The Project site is not located on land mapped as prime farmland, unique farmland, or farmland of statewide or local importance. Therefore, no impact to farmland would occur.

Neither construction nor operation of the Project would conflict with zoning regulations for agricultural use, forest land, result in the loss of forest land, or result in the conversion of forest land to non-forest use. Additionally, the Project site is not located on land enrolled in Williamson Act contracts (CDC 2013). No impact would occur.

No active or otherwise established agricultural or forested production lands are found at the Project site or in its vicinity. The Project would consist of an in-kind rehabilitation of an existing public structure involving negligible or no expansion of use. The Project would not cause a change in land use patterns which would convert farmlands or forestlands. The Project would have no impact on conversion of farmland or forest land to non-agricultural or non-forest use.

### 3.3 Air Quality

	Potentially Significant Impact	Less-Than-Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
Would the Project:				
a. Conflict with or obstruct implementation of the applicable air quality plan?				✓
b. Violate any air quality standard or contribute substantially to an existing or projected air quality violation?		✓		
c. Result in a cumulatively considerable net increase of any criteria pollutant for which the Project region is nonattainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?			✓	
d. Expose sensitive receptors to substantial pollutant concentrations?			✓	
e. Create objectionable odors affecting a substantial number of people?			✓	

Discussion:

**a) Conflict with or obstruct implementation of the applicable air quality plan – No Impact**

Per the BAAQMD Air Quality CEQA Guidelines, the BAAQMD considers a project consistent with the Clean Air Plan (Plan) if it: 1) can be concluded that a project supports the primary goals of the Plan (by showing that the project would not result in significant and unavoidable air quality impacts); 2) includes applicable control measures from the Plan; and 3) does not disrupt or hinder implementation of any Plan control measures.

The primary goals of the 2017 Clean Air Plan are to protect air quality, public health, and the climate. Because the Project would not result in a significant and unavoidable air quality impact (refer to Impacts 3.3.b,c,d below), the Project would not conflict with any goals of the Plan. The Plan includes 55 Control Measures in five categories: stationary and area source; mobile source; transportation control; land use and local impact; and energy and climate. The Project does not include new stationary sources, new permanent mobile sources, does not introduce a new land use, and would not use a substantial amount of energy during operation. In addition, the magnitude and nature of this Project are too small to affect air quality or implementation of the Plan’s control measures. The Project would not conflict with or obstruct the air quality plan; therefore, there would be no impact.

The Project is exempt from the federal air quality conformity requirements for transportation projects, which are included under 40 CFR 93, Determining Conformity of Federal Actions to State or Federal Implementation Plans. Table 2 in Section 126 of the federal regulations includes a list of

exempt highway and transit projects. Such projects may proceed toward implementation even in the absence of a conforming transportation plan and Transportation Improvement Program (TIP). 40 CFR §93.126, Exempt Projects, includes the following exempt project in Table 2 (Exempt Projects) under “Safety”:

- Widening narrow pavements or reconstructing bridges (no additional travel lanes).
- b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation – *Less than Significant with Mitigation***

Construction of the Project would result in emissions of dust and equipment/vehicle exhaust. The BAAQMD CEQA Air Quality Guidelines provide preliminary screening criteria for a lead agency to consider in making a conservative determination of a project’s construction-related impacts on criteria air pollutants.

The first screening criterion is land-use based (i.e.: for residential, commercial, and industrial projects). According to the BAAQMD Guidelines, if a project’s characteristics (i.e., square footage, acreage, number of dwelling units) are less than associated screening criteria, then the lead agency does not need to perform a detailed air quality assessment of the project’s air pollutant emissions and a less-than-significant impact would occur. The BAAQMD CEQA Guidelines do not include specific screening criteria for bridge rehabilitation or roadway improvement projects. However, when compared to the screening criteria established for residential, commercial, and industrial projects, it is reasonable to assume that the areal extent of construction activities associated with a bridge rehabilitation project would be substantially less than the screening criteria for the residential, commercial, or industrial projects and therefore would not warrant a detailed air quality assessment. For example, detailed air quality assessments are not required for construction of projects such as single family residential developments comprised of less than 114 dwelling units, City parks that are less than 67 acres in size or construction of office and commercial buildings that are less than 277,000 square feet (BAAQMD 2011). In comparison, the Project would be conducted during one construction season (i.e., approximately five months) and the total construction disturbance area is estimated to be 0.4 acre, well below screening criteria for other types of land use projects.

The second screening criterion is that all applicable Basic Construction Mitigation Measures be included in the Project design and implemented during construction. The Project does not currently incorporate the BAAQMD’s recommended basic construction mitigation measures. Therefore, the Project does not meet this criterion without mitigation.

The third criterion identifies construction activities (asbestos demolition, multiple construction phases occurring at the same time, extensive site preparation, transport of over 10,000 cubic yards of soil) that would preclude a Project from a less-than-significant conclusion. Specifically, the BAAQMD’s guidance provides the following screening guidance for construction activities:

- a) Demolition activities inconsistent with District Regulation 11, Rule 2: Asbestos Demolition, Renovation and Manufacturing;
- b) Simultaneous occurrence of more than two construction phases (e.g., paving and building construction would occur simultaneously);

- c) Simultaneous construction of more than one land use type (e.g., project would develop residential and commercial uses on the same site) (not applicable to high density infill development);
- d) Extensive site preparation (i.e., greater than default assumptions used by the Urban Land Use Emissions Model [URBEMIS] for grading, cut/fill, or earth movement); or
- e) Extensive material transport (e.g., greater than 10,000 cubic yards of soil import/export) requiring a considerable amount of haul truck activity

The proposed Project would be completed in a single phase, includes no asbestos demolition, or extensive site preparation. The Project is anticipated to require export hauling for approximately 496 cubic yards of materials, and import of approximately 1,317 cubic yards of materials. The Project meets all screening criteria except inclusion of the applicable Basic Construction Measures.

Following construction, the Project would not result in a new stationary source of emissions and the bridge widening would not increase the vehicle capacity or the speed of Grant Avenue (i.e., no additional travel lanes along either side of the rehabilitated bridge are proposed). Therefore, the Project would not result in any new ongoing mobile pollutant emissions. No permanent impact would occur.

### **Mitigation**

With implementation of Mitigation Measure AIR-1, potential impacts to air quality from construction-generated air pollutants would be reduced to less-than-significant levels by requiring basic air quality control measures during construction.

#### **Mitigation Measure AIR-1: Basic Air Quality Control Measures during Construction**

The City shall require its contractor(s) to include the following Bay Area Air Quality Management District recommended Basic Construction Measures in all construction contract specifications for the project:

- All haul trucks transporting soil, sand, or other loose material off-site will be covered.
- All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) will be watered two times per day.
- All roadways, driveways, and sidewalks to be paved will be completed as soon as possible. Building pads will be laid as soon as possible after grading unless seeding or soil binders are used.
- All visible mud or dirt track-out onto adjacent public roads will be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.
- Idling times will be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations [CCR]). Clear signage will be provided for construction workers at all access points.

- All construction equipment will be maintained and properly tuned in accordance with manufacturer's specifications. All equipment will be checked by a certified visible emissions evaluator.
- Post a publicly visible sign with the telephone number and person to contact at the lead agency regarding dust complaints. This person will respond and take corrective action within 48 hours. The Air District's phone number will also be visible to ensure compliance with applicable regulations.
- As a required commitment to Caltrans to utilize HBRR funding, the City and its contractor will employ all appropriate and adequate best management practices (BMPs) related to air quality provided in the Caltrans 2017 Construction Site Best Management Practices (BMPs) Manual, 2015 Caltrans Standard Specifications (Divisions II and III).

**c) Result in a cumulatively considerable net increase of any criteria pollutant – *Less than Significant***

The Project is located within the San Francisco Bay Area Air Basin (Air Basin). Under California standards, the Air Basin is designated as a nonattainment area for suspended particulate matter (PM<sub>2.5</sub> and PM<sub>10</sub>) and ozone (BAAQMD 2017). Under national standards, the Air Basin is designated as nonattainment for 8-hour ozone and for PM<sub>2.5</sub>. The Air Basin is in attainment (or unclassified) for all other air pollutants (BAAQMD 2017).

By its nature, air pollution is largely a cumulative impact, in that individual projects are rarely sufficient in size to result in nonattainment of ambient air quality standards. Instead, a project's individual emissions may contribute to cumulative adverse air quality impacts. In developing thresholds of significance for air pollutants, BAAQMD considered the emission levels for which a project's individual emissions would be cumulatively considerable. If a project exceeds the identified significance thresholds, its emissions would be cumulatively considerable, resulting in significant adverse air quality impacts to the region's existing air quality conditions (BAAQMD 2012).

Construction-related air pollutant emissions were estimated for the Project using the Sacramento Metropolitan Air Quality Management District's Roadway Construction Emissions Model (version 8.1.0). Inputs to the model include model defaults for a 0.1-mile roadway segment and 1 acre of disturbed land. As shown in Table 3.3-1 (Construction-generated Air Pollutant Emissions), the estimated construction-related emissions are less than the construction thresholds of significance adopted by the BAAQMD. Therefore, the impact from construction related emissions would be less than significant. The Project would not result in a cumulatively considerable net increase of any criteria pollutant.

Table 3.3-1 Construction-generated Air Pollutant Estimates

Parameter	Air Pollutant Emissions			
	ROG (lbs/day)	NOX (lbs/day)	PM <sub>10</sub> (lbs/day)	PM <sub>2.5</sub> (lbs/day)
Average Daily Emissions	0.003	0.028	0.01	0.01
BAAQMD Threshold (lbs/day)	54	54	82	54
Significant Impact?	No	No	No	No

Source: GHD 2017

Following construction, operation of the Project would not include new stationary sources of air emissions. The Project would not be a traditional trip-generating land use, but rather is a bridge improvement project designed to accommodate existing and future vehicle trips within the area. Project operation would not change traffic conditions such that there would be a measureable or modeled increase in air pollutants from Project operation. For this reason, the Project is listed as exempt from Transportation Air Quality Conformity requirements. Project-generated operational emissions would not violate or contribute substantially to an existing or projected air quality violation. The impact would be less than significant.

**d) Expose sensitive receptors to substantial pollutant concentrations – *Less than Significant***

Sensitive receptors are defined by the BAAQMD as facilities or land uses that include members of the population that are particularly sensitive to the effects of air pollutants, such as children, the elderly, and people with illnesses. Sensitive receptors located near the Project area are the residences located northeast of the Project boundary, and Our Lady of Loretto School located west of the Project boundary. The residences are approximately 80 feet from the construction site. Our Lady of Loretto School is located approximately 110 feet from the construction site.

As described above, Project construction would result in temporary emissions of air pollutants. There would also be temporary emissions of TACs in the form of construction equipment exhaust emissions of diesel particulate matter. The primary concern with exposure to diesel particulate matter is cancer risk. BAAQMD assesses cancer risk in terms of contracting cancer over a 70-year exposure period (i.e., lifetime exposure). Moreover, the current protocols required by the California Air Resources board (ARB) when studying the health risk posed by diesel particulate matter assume the following: (1) 24-hour constant exposure; (2) 350 days a year; (3) for a continuous period lasting 70 years. However, the magnitude and nature of the Project is such that only a few pieces of equipment would be required for construction, and the construction duration would be relatively short. Project construction activity involving the use of heavy-duty construction equipment occur during daytime hours and would last less than 6 months; therefore, the Project would not have an adverse long-term impact on nearby sensitive receptors. The construction-related impact would be less than significant.

In addition, as described in Impact 3.3.b, Mitigation Measure AIR-1 requires the Project to implement the BAAQMD recommended basic construction mitigation measures during construction. Such measures include minimizing idling times for trucks and equipment to five minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of

California Code of Regulations [CCR]), ensuring that construction equipment is maintained in accordance with manufacturer's specifications, watering exposed surfaces twice a day to minimize fugitive dust emissions, and other measures. Implementation of Mitigation Measure AIR-1 would further minimize the Project's emissions of diesel particulate matter.

Following construction, Project operation would not change traffic conditions such that there would be a measurable or modeled increase in air pollutant or TAC emissions. The operation-related impact would be less than significant.

**e) Create objectionable odors affecting a substantial number of people – *Less than Significant***

Construction activities could result in short-term odors, such as diesel exhaust from construction equipment. Such odors would be temporary, occurring only during the construction period, and would disperse rapidly. Therefore, construction would not create objectionable odors affecting a substantial number of people. The impact would be less than significant.

Facilities that typically are considered to potentially create objectionable odors include such uses as wastewater treatment plants, landfills, asphalt plants, coffee roasters, and food processing. Operation of the Project would not create a new source of objectionable odors nor would it create a new receptor. No operational impact would occur.

### 3.4 Biological Resources

	Potentially Significant Impact	Less-Than-Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
Would the Project:				
a. Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife (CDFW) or U.S. Fish and Wildlife Service?		✓		
b. Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the CDFW or US Fish and Wildlife Service?		✓		
c. Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?		✓		
d. Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?			✓	
e. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?			✓	
f. Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?				✓

Discussion:

To satisfy Federal Highway Administration and Caltrans project funding requirements, a Natural Environment Study (NES) (Caltrans 2015a) and Biological Assessment (BA) (Caltrans 2015b) were developed for the Project. The following analysis of the Project's potential impact to biological resources is based on this documentation. In addition, a Biological Opinion has been received from the NMFS, dated May 31, 2016, that describes the NMFS' analysis of potential project-related effects to threatened Central California coast Steelhead, as well as effects to essential fish habitat (NMFS 2016).

Grant Avenue bridge spans Novato Creek, a perennial stream which flows southeastward through Novato and drains to San Pablo Bay. The Project vicinity is comprised of the bridge, creek channel and associated riparian vegetation, paved streets, and turf.

One predominant vegetation type, *Quercus agrifolia* Woodland Alliance – Coast Live Oak Woodland, was observed within the Project vicinity. In general, the location of this alliance varies from upland savannas and woodlands to bottomland, riparian forests. Its habitat includes alluvial terraces, canyon bottoms, stream banks, slopes, and flats. Dominated or co-dominated by coast live oak in riparian areas, it forms a closed canopy, often with California bay (*Umbellularia californica*). The understory is commonly grassy. Within the Project vicinity, the riparian canopy is of a mixed tree layer including California bay, valley oak (*Quercus lobata*), red willow (*Salix laevigata*), and arroyo willow (*S. lasiolepis*), and the understory includes non-native grasses and Himalayan blackberry (*Rubus armeniacus*).

**a) Impacts to Candidate, Sensitive and Special-status Species – Less than Significant with Mitigation**

Special-status species are plant and wildlife species that are legally protected under the federal Endangered Species Act, California Endangered Species Act, or other State regulations, and species that are considered sufficiently rare by the scientific community to warrant conservation concern.

Table 3.4-1 presents a summary of the special-status plant and animal species found to have the potential to occur within a habitat present within the Project vicinity. There are three special-status plant species and four special-status animal species that have potential to be present in the Project vicinity. The potential for Project impacts to occur to special-status species is evaluated below.

**Special-status Plant Species**

Special-status plants that could potentially be present in the Project area include Baker's navarretia (*Navarretia leucocephala* ssp. *Bakeri*), fragrant fritillary (*Fritillaria liliacea*), and Napa false indigo (*Amorpha californica* var. *napensis*). The potential for these species to occur in the Project area is low; however, if they are present in the Project vicinity, construction of the Project could result in significant impacts to these species. Therefore, the impact of the Project on these three special-status plants is considered potentially significant.

**Mitigation**

With implementation of Mitigation Measure BIO-1, potential impacts to Baker's navarretia, fragrant fritillary, and Napa false indigo would be reduced to less-than-significant levels, because plants would be avoided, minimized, or relocated, if present.

**Mitigation Measure BIO-1: Preconstruction Surveys for Special-status Plants**

Prior to construction, the City shall retain a qualified biologist to conduct seasonally-appropriate rare plant surveys for Baker's navarretia, fragrant fritillary, and Napa false indigo within the project/survey limits. Any rare plants identified during the survey would be avoided and protected from disturbance during construction, if feasible. If avoidance is feasible, the City shall ensure that temporary fencing is installed to protect the plants during construction activities. The protected plants shall be monitored twice annually for two years following the completion of construction activities at the site. If the plants continue to be in good health after two years, no further action is required. If the

monitoring reveals that the health of the plants has been compromised due to the Project, then the actions described below (measures required if avoidance is not possible) shall be implemented.

If avoidance is not feasible (or the health of the plants is compromised after construction), a relocation plan shall be prepared. The plan shall prescribe detailed methods for transplanting the individual plants and the identification and preparation of the transplanting site. Mitigation will be deemed successful if the transplanted plants are healthy at the end of the two-year period, taking into account fluctuations in local reference populations. Monitoring shall continue until mitigation is deemed successful.

The City shall coordinate with USFWS and/or CDFW, as applicable, regarding the relocation plan and implement measures to protect the individual plants or relocate them in accordance with conditions identified by the applicable resource agency(ies).

Table 3.4-1 Special Status Species with Potential to Occur in the Project Vicinity

Common Name (Scientific Name)	Status (Federal, State, CRPR)	Habitat	Occurrence Potential
<b>Plants</b>			
Baker's Navarretia ( <i>Navarretia leucocephala</i> ssp. <i>Bakeri</i> )	CRPR 1B.1	Mesic. Cismontane woodland, lower montane coniferous forest, meadows and seeps, valley and foothill grassland, and vernal pools. Blooms April-July.	<b>Low.</b> There is limited suitable woodland habitat in the Project vicinity. The nearest CNDDDB occurrence is approximately 2 mi north of the Project vicinity, from 2010.
Fragrant Fritillary ( <i>Fritillaria liliacea</i> )	CRPR 1B.2	Often serpentinite. Cismontane woodland, coastal prairie, coastal scrub, and valley and foothill grassland. Blooms February-April.	<b>Low.</b> Limited suitable woodland habitat in the Project vicinity. The nearest CNDDDB occurrence is from 2006 and is approximately 1.5 mi north of the Project vicinity.
Napa False Indigo ( <i>Amorpha californica</i> var. <i>napensis</i> )	CRPR 1B.2	Broadleafed upland forest (openings), chaparral, and cismontane woodland. Blooms April-July.	<b>Low.</b> Limited suitable forest and woodland habitat in the Project vicinity. The nearest CNDDDB occurrence is approximately 1.5 mi north of the Project vicinity, date unknown.
<b>Fish</b>			
Chinook Salmon Central Valley Spring-run ESU ( <i>Oncorhynchus tshawytscha</i> )	FT, ST	Anadromous; migrates through San Francisco Bay and Delta; spawns in upper Sacramento River and tributaries. Adults need access to natal streams; eggs, fry need cool water with adequate dissolved oxygen, clean gravel; juveniles migrate out to the ocean after only a few months in the river.	<b>Low.</b> This run of Chinook salmon migrates through the Central and North Bay to reach spawning grounds in the Central Valley. Chinook entering Novato Creek are likely strays from the Sacramento River system, and they have been documented in some estuary. The Marin County Watershed Program's fish distribution map shows Chinook in lower Novato Creek below the confluence with Vineyard Creek, more than a mile downstream. There are no CNDDDB records within 2 mi of the Project vicinity; it is located outside of the designated critical habitat.

Table 3.4-1 Special Status Species with Potential to Occur in the Project Vicinity

Common Name (Scientific Name)	Status (Federal, State, CRPR)	Habitat	Occurrence Potential
Chinook Salmon Sacramento River Winter-run ESU ( <i>Oncorhynchus tshawytscha</i> )	FE, SE	Anadromous; migrates through SF Bay and Delta; spawns in upper Sacramento River and its tributaries. Adults need access to natal streams; eggs and fry need cool water with adequate dissolved oxygen; clean gravel; juveniles migrate out to the ocean after only a few months in the river.	<b>Low.</b> This run of Chinook salmon migrates through the Central and North Bay to reach spawning grounds in the Central Valley. Chinook entering Novato Creek are likely strays from the Sacramento River system, and they have been documented in some estuary streams. The Marin County Watershed Program’s fish distribution map shows Chinook in lower Novato Creek below the confluence with Vineyard Creek, more than a mile downstream. There are no CNDDDB records within 2 mi of the Project vicinity; it is located outside of the designated critical habitat.
Steelhead Central California Coast DPS ( <i>Oncorhynchus mykiss</i> )	FT	Anadromous; all naturally spawned anadromous populations are known from below natural and manmade impassable barriers in California streams from the Russian River to Aptos Creek ; and the drainages of San Francisco, San Pablo, and Suisun bays eastward to Chipps Island at the confluence of the Sacramento and San Joaquin rivers and tributary streams to Suisun Marsh.	<b>High.</b> This DPS is known to occur in Novato Creek. Monitoring Reports from work conducted in 2007 at the Grant Ave Bridge note the presence of steelhead (WRA 2007). Novato Creek is not designated critical habitat for this species. There are no CNDDDB records within 2 mi of the Project vicinity.
<b>Reptiles</b>			
Western Pond Turtle ( <i>Emys marmorata</i> )	SSC	Permanent and intermittent freshwater aquatic habitats including rivers, streams, lakes, ponds, marshes, and vernal pools; preferably with abundant basking sites, underwater refugia, and standing or slow moving water.	<b>High.</b> Pond turtles are known to occur within 1 mile of the Project vicinity, however, specific location information is suppressed in the CNDDDB.

Table 3.4-1 Special Status Species with Potential to Occur in the Project Vicinity

Common Name (Scientific Name)	Status (Federal, State, CRPR)	Habitat	Occurrence Potential
<b>Birds</b>			
White-tailed Kite ( <i>Elanus leucurus</i> )	SFP	Open grasslands, meadow, or marshes for foraging close to isolated, dense topped trees for nesting and perching.	<b>Moderate.</b> Suitable nesting habitat occurs within and adjacent to the Project vicinity. Potential foraging habitat is within 0.2 mi; nearest CNDDDB record is 0.2 mi distant in 1973.

**Common Name Acronyms**

- DPS: Distinct Population Segment
- ESU: Evolutionary Significant Unit

**Status Codes**

FE: Federal Endangered	CRPR: California Rare Plant Rank
FT: Federal Threatened	CRPR 1B. 1: Plants Rare, Threatened, or Endangered in California and Elsewhere and Seriously Threatened in California
SFP: State Fully Protected	
SE: State Endangered	CRPR 1 B.2: CRPR 1B.2: Plants Rare, Threatened, or Endangered in California and Elsewhere and Fairly Threatened in California
ST: State Threatened	
SSC: State Species of Special Concern	

## Special-status Wildlife Species

### ***Fish***

Special-status fish species with the potential to be present in the Project area include Chinook salmon and steelhead (as noted in Table 3.4-1). The Project's construction-generated and design-based impacts to fish are discussed separately below.

### **Project Construction**

The Project's construction schedule was identified to avoid impacts to special-status fish species. In-channel construction activities would be limited to summer months when Novato Creek has little to no flow (i.e., June 15 through October 15). As summarized in the Project Description, if water is present in the channel, the flow would be diverted by placing coffer dams upstream and downstream of the active construction areas using sand bags, and directing flow through a pipe to discharge below the Project area. The final engineering specifications will include a section dealing with the requirements of the Contractor-furnished creek bypass and dewatering system. The specifications will address restrictions and provisions regarding the general the system, such as the need to prevent accidental intake of fish or small invertebrates through the bypass piping. The specifications will provide details on the size of screening material at the bypass pipe end as well as the need for primary screening/fencing immediately upstream of the bypass system intake zone. These requirements are already established by NMFS and no concept or design will be part of the project design. (The screen mesh openings will be approximately 3/32 inch (2.38 mm) and will consist of woven wire screen (or a perforated plate screen) with a minimum of 27 percent open area. See NMFS *Anadromous Salmonid Passage Facility Design* (NMFS 2011).

Fish collection and relocation, and Project site dewatering (if required) will be in conformance with the Project's Biological Opinion dated May 31, 2016. Any water intake structure would be installed, operated, and maintained in accordance with current NMFS, USFWS, and CDFW criteria or as developed in cooperation with NMFS, USFWS, and CDFW to accommodate site-specific conditions.

### **Project Design**

Placement of RSP/CSM consistent with the CDFW California Salmonid Stream Restoration Manual and the National Marine Fisheries Service (NMFS) Anadromous Salmonid Passage Facility Design would not create permanent impacts to these species because the placement of RSP/SCM would not impede or diminish stream flow, as discussed in Section 1.5 of this IS/MND.

### **Conclusion**

No special-status fish species were found at the Project site during the site survey and are not expected to be present in the Project vicinity. However, according to the information presented in Table 3.4-1, there is a high potential for steelhead and low potential Chinook salmon to be present in Novato Creek. Any impacts to these species due to Project construction activities would be significant.

## Mitigation

With implementation of Mitigation Measure BIO-2 and BIO-3, potential impacts to Chinook salmon and steelhead would be reduced to less-than-significant levels by ensuring that any individuals present during construction would be relocated downstream to appropriate habitat, and that appropriate planning, implementation, and reporting of the measure implementation would occur.

### **Mitigation Measure BIO-2: Avoid Impacts to Chinook Salmon and Steelhead During Construction**

The City shall avoid disturbance to Chinook salmon and steelhead, to the extent feasible. The City shall retain a qualified biologist with expertise in the areas of anadromous salmonid biology, including handling, collecting, and relocating salmonids to conduct protocol-level surveys for Chinook salmon and steelhead. The City will ensure that all biologists working on the Project are qualified to conduct fish collections in a manner which minimizes risks to steelhead. The protocol-level surveys shall occur in pooled or moving water within 100 feet of the bridge within 15 days prior the beginning of construction (including any creek diversion or de-watering activities). If either fish species is discovered, the City shall coordinate with NMFS and/or CDFW to develop additional measures as needed to avoid impacts. These measures shall include high visibility fencing to keep construction activities separate from ponded water, daily construction monitoring, and fish relocation efforts (as defined further below), if necessary. All fish protection activities shall be coordinated with these resource agencies to ensure protection of the species.

In addition to preconstruction surveys, to further avoid impacts to Chinook salmon and steelhead, the following measures shall be implemented during construction:

- Prior to any stream dewatering, a Water Diversion Plan shall be prepared that identifies the water diversion structure specifications, and installation, operation, maintenance, and removal activities that will occur for stream dewatering and water diversion. Measures and activities in the Water Diversion Plan shall be in conformity with the Project's Biological Opinion, dated May 31, 2016. The design and use of water diversion structures shall conform with NMFS Anadromous Salmonid Passage Facility Design and CDFW California Salmonid Stream Restoration Manual. The Water Diversion Plan shall be reviewed by a qualified biologist prior to implementation, and a copy of the plan shall be kept on the construction site and available for review during the construction.
- If either species is discovered in the Project vicinity, the City shall coordinate with NMFS and/or CDFW to develop a fish rescue plan and undertake additional efforts as required by the agency(ies). A fish rescue plan shall be developed by a qualified biologist on behalf of the City. Individual organisms shall be relocated the shortest distance possible to habitat unaffected by construction activities. Within occupied habitat, capture, handling, exclusion, and relocation activities shall be completed no earlier than 48 hours before construction begins to minimize the probability that listed species recolonize the affected areas.

- Steelhead will be handled with extreme care and kept in water to the maximum extent possible during rescue activities. All captured fish will be kept in cool, shaded, aerated water protected from excessive noise, jostling, or overcrowding any time they are not in the stream, and fish will not be removed from this water except when released. To avoid predation, the biologist will have at least two containers and segregate young-of-year fish from larger age classes and other potential aquatic predators. Captured steelhead will be relocated, as soon as possible, to a suitable instream location in which suitable habitat conditions are present to allow for adequate survival of transported fish and fish already present.
- The biologist shall be present at the work site until all listed species have been removed and relocated.
- During in-water activities, the biologist shall continuously monitor installation and removal of the cofferdams, channel diversion, and pipes for dewatering for the purpose of removing and relocating any listed species that were not detected or could not be removed and relocated prior to construction. Caltrans, the City, or biologist will notify NMFS natural resource specialist one week prior to capture activities in order to provide opportunity for NMFS staff to observe the activities.
- If steelhead are found dead or injured, the biologist will contact NMFS natural resource specialist Brian Meux by phone immediately at (707) 575-1253 or the NMFS North Central Coast Office (Santa Rosa, California) at (707) 575-6050. The purpose of the contact is to review the activities resulting in take and to determine if additional protective measures are required. All steelhead mortalities will be retained, placed in an appropriately sized sealable plastic bag, labeled with the date and location of collection, fork length, and be frozen as soon as possible. Frozen samples will be retained by the biologist until specific instructions are provided by NMFS. The biologist may not transfer biological samples to anyone other than the NMFS North Central Coast Office without obtaining prior written approval from the NMFS San Francisco Bay Branch Supervisor. Any such transfer will be subject to such conditions as NMFS deems appropriate.
- The City will allow any NMFS employee(s) or any other person(s) designated by NMFS, to accompany field personnel to visit the project site during activities described above.
- Fill material for cofferdams will be fully confined with the use of plastic sheeting, sandbags, or with other non-porous containment methods, such that sediment does not come in contact with stream flows or in direct contact with the natural streambed. All loose fill material for cofferdams or access ramps will be completely removed from the channel by October 15.
- Any pumps used to divert live stream flow, outside the dewatered work area, will be screened and maintained throughout the construction period to comply with NMFS' Fish Screening Criteria for Anadromous Salmonids.
- Treated wood may not be used in any temporary platforms or scaffolds in the creek channel. Lumber used for temporary construction operations must be unfinished and untreated wood. All materials used for temporary platforms or scaffolds must be completely removed from the channel no later than October 15.

- In areas where concrete is used, a dry work area must be maintained to prevent conveyance of runoff from curing concrete to the surface waters of the adjacent stream at all times. Water that inadvertently contacts uncured concrete must not be discharged into surface waters.
- Downed trees, stumps and other refuges within this aquatic habitat should remain undisturbed by Project activities to the extent feasible.
- The City, Caltrans, and contractor control personnel shall not have firearms or pets; nor shall they engage in hunting or fishing.
- On-site stockpiles will be isolated with silt fence, filter fabric, and/or straw bales/fiber rolls.
- Construction shall be restricted to daylight hours to avoid the need for artificial lighting at night as fish and other wildlife can be attracted to light sources.
- Once construction is completed, all project-introduced material (pipe, gravel, cofferdam, etc.) must be removed, leaving the creek as it was before construction. Excess materials will be disposed of at an appropriate disposal site.

### **Mitigation Measure BIO-3: Post-Construction Monitoring and Reporting**

The City provide written reports to NMFS by January 15 of the year following construction regarding the effects of construction, conservation, and relocation activities. The report will be submitted to NMFS North Central Coast Office, Attention: San Francisco Bay Branch Supervisor, 777 Sonoma Avenue, Room 325, Santa Rosa, California, 95404-652. The reports will contain, at a minimum, the following information.

- Construction-related activities – the report will include the dates construction began and was completed; a discussion of any unanticipated effects or unanticipated levels of effects on steelhead, a description of any and all measures taken to minimize those unanticipated effects, and statement as to whether or not the unanticipated effects had any effects on steelhead; the number of steelhead killed or injured during the project action; and photographs taken before, during, and after the activity from photo reference points.
- Fish Relocation – the report will include a description of the location from which fish were removed and the release site including photographs; the date and time of the relocation effort; a description of the equipment and methods used to collect, hold, and transport steelhead; a copy of the logbook must be included; the number of fish relocated by species; the number of fish injured or killed by species and a brief narrative of the circumstances surrounding steelhead injuries or mortalities; and a description of any problems which may have arisen during the relocation activities and a statement as to whether or not the activities had any unforeseen effects.
- Conservation measures – all interim and final reports during the five-year post-construction monitoring period describing the implementation of the revegetation activities shall be submitted to NMFS at the address above by January 15 of the year following the end of each monitoring period, including the final assessment.

## **Reptiles**

The Western pond turtle is the only special-status reptilian species with potential to be present in the Project vicinity. This species was not detected during the site survey performed for this Project. However, there is high potential for the species to be present in the Project vicinity because it contains suitable habitat, including a rocky stream, with areas of sunny banks and standing or slow-moving water. Because construction activities could result in “take” of individual Western pond turtle that move along Novato Creek, the impact is significant.

## **Mitigation**

With implementation of Mitigation Measure BIO-4, potential impacts to the Western pond turtle would be reduced to less-than-significant levels by requiring pre-construction surveys and avoiding or relocating any individuals found to be present.

### **Mitigation Measure BIO-4: Avoid Impact to the Western Pond Turtle**

The City shall avoid disturbance to the Western pond turtle, to the extent feasible.

- The City shall retain a qualified biologist to conduct a focused pre-construction survey a maximum of 48 hours prior to the start of construction activities. If a Western pond turtle is observed within the work area, the biologist shall relocate individual organisms the shortest distance possible to habitat unaffected by construction activities and increased project monitoring shall be conducted, per California Department of Fish and Wildlife (CDFW) protocol.
- During in-water activities, the biologist shall continuously monitor installation and removal of the cofferdam and pipes for dewatering for the purpose of removing and relocating any listed species that were not detected or could not be removed and relocated prior to construction. The project biologist shall be present at the work site until turtles have been removed and relocated, per CDFW protocol.
- Downed trees, stumps, and other turtle basking sites on-site shall remain undisturbed. If disturbance is unavoidable, the biologist shall survey the features to determine the presence or absence of the species. The project biologist shall be present at the work site until turtles have been removed and relocated per CDFW protocol. The disturbed habitat features shall be returned to their original location after construction is complete.

## **Birds**

Nesting birds, including raptors, passerines, and non-passerines, are afforded protections under the federal Migratory Bird Treaty Act (MBTA) and the California Fish and Game Code (CFGF). The nesting period for birds is typically February 1 through August 31, although hummingbirds and some raptors are known to begin nesting in late December.

The Project vicinity and surrounding area provides suitable nesting habitat for numerous bird species. Several common species observed during past field surveys that have potential to nest within the vicinity include the American crow (*Corvus brachyrhynchos*), oak titmouse (*Baeolophus inornatus*), western scrub jay (*Aphelocoma californica*), bushtit (*Psaltriparus minimus*), chestnut-

backed chickadee (*Poecile rufescens*), Anna's hummingbird (*Calypte anna*) and black phoebe (*Sayornis nigricans*).

The white-tailed kite has the potential to be present in the Project vicinity. No white-tailed kites were observed during site surveys, although suitable roosting habitat is present within and adjacent to the Project vicinity. Open space that the white-tailed kites could use for foraging habitat is located within 0.5 mile of the Project.

Because these special-status species could potentially nest in the Project vicinity, construction impacts (e.g., tree removal, tree trimming, and noise) would be significant.

### Mitigation

With implementation of Mitigation Measure BIO-5, potential impacts to protected bird species, including the white-tailed kite, would be reduced to less-than-significant levels by avoiding disturbance to nest sites and removal trees and trimming vegetation outside the breeding season.

#### **Mitigation Measure BIO-5: Conduct Preconstruction Nesting Surveys for Migratory Passerines and Raptors**

The City shall avoid disturbance to nesting of protected bird species.

- For construction activities that occur during the nesting season, the City shall engage a qualified biologist to conduct a nesting bird survey within one month prior to the start of construction and again five days prior to the start of construction activities. If there is a lapse in Project-related work of more than 6 days, additional surveys shall be conducted again to determine if any nests have been established during the lapse in activity.
- Nesting season shall be considered February 1 through August 31. This timeframe covers the nesting season of the birds expected in the Project vicinity, raptors and non-raptors. Tree removal and vegetation trimming shall occur outside of the nesting season to the extent possible.
- Tree removal and vegetation trimming shall occur between September 1 and January 31, outside of the white-tailed kite breeding season.
- If an active nest is found, the nest tree shall be flagged and a non-disturbance buffer zone shall be established and fenced. An initial 250-foot buffer shall be established for raptors and 50-foot buffer for non-raptors. The non-disturbance buffer zone shall be visibly marked to prevent encroachment of construction activities. A qualified biologist may reduce the buffer size based on construction activities and observations of nesting behavior.
- Active nests shall be monitored by the qualified biologist to determine when the nest is no longer active. Buffers shall remain in place until the nest is no longer active (i.e., when the young have fledged the nest or no longer persist).

#### **b) Riparian Habitat Impacts – Less than Significant with Mitigation**

One vegetation type was observed within the Project vicinity, Coast Live Oak Woodland. This classification of vegetation is based on *A Manual of California Vegetation, 2nd Edition* (Sawyer et

al. 2009), which describes all major vegetation types known in California. The natural vegetation types are called “alliances,” which are floristically defined vegetation types identified by their dominant and/or characteristic species. The Project vicinity also includes Novato Creek, which is discussed in Impact 3.4.c below.

Within the Project vicinity, the coast live oak woodland is found in the riparian area surrounding the existing Grant Avenue Bridge to the north and south of the bridge on both sides of Novato Creek. Other species identified during the site survey within this alliance include California bay, valley oak, red willow, and arroyo willow. Several trees, including coast live oak and California bay, on the north side of the existing bridge would require trimming. Understory riparian vegetation would be removed within the Project construction area, and one walnut tree may need to be removed from the southeast bank in order to widen the bridge deck.

## Mitigation

With implementation of Mitigation Measure BIO-6, potential impacts to riparian habitat and trees would be reduced to less-than-significant levels by avoiding or compensating for impacts.

### **Mitigation Measure BIO-6: Avoid or Replace Riparian Habitat**

The City shall avoid disturbance to riparian habitat and trees, to the extent feasible.

To protect riparian woodland, the City shall implement measures to control short-term erosion and to restore soils and vegetation in areas affected by construction activities within the riparian woodland.

Where riparian vegetation must be removed, the City shall compensate for such loss so that no net loss of acreage or habitat value occurs. Prior to removing any vegetation on the Project site, the City shall prepare a riparian vegetation planting/restoration plan. The plan shall include a map of the acreage and value of riparian vegetation to be removed. The City shall implement the plan using the following measures or other effective measures:

- Protect riparian woodland within the City through the use of conservation easements;
- Compensate for loss of riparian vegetation by planting or restoring riparian vegetation at the Project site or within the City at a 1:1 ratio (or as required by resource agency permits);

The plan shall include at a minimum:

- The location of protection/creation/restoration sites;
- A qualified biologist shall perform a functional assessment at the proposed mitigation site(s) to establish and record pre-mitigation conditions. The California Rapid Assessment Method (CRAM) for riverine wetlands, which is an accepted methodology by the USACE for evaluating the performance of compensatory mitigation and restoration projects, shall be used for this assessment. The City shall consult with the regulatory agencies for concurrence of the site(s) as suitable as compensatory mitigation.

- The quantity and species of plants to be planted;
- Planting procedures, including the use of soil preparation and irrigation when needed;
- Methods for the removal of non-native plants;
- A schedule and action plan to maintain and monitor the creation/enhancement areas. At a minimum, the following schedule shall be required: a 120-Day Plant Establishment Period, and a 5-Year Maintenance and Monitoring period. Full compliance shall be identified when all performance standards are attained, annual status reports submitted to USACE, and the transfer of site responsibilities to Parks, Recreation & Community Service has been defined.
- Performance standards by which to measure success of the creation/enhancement;
- Contingency measures in the event that creation/enhancement efforts are not initially successful.

**c) Impact to jurisdictional wetlands and waters of the U.S. / State – *Less than Significant with Mitigation***

A survey of Novato Creek was performed in the Project vicinity to delineate the ordinary high water mark (OHWM) and lateral extent of Novato Creek in accordance with U.S. Army Corps of Engineers guidelines (GANDA 2014).

In the Project vicinity, Novato Creek has a negligible gradient and takes the form of an upper perennial creek. Novato Creek was flowing during past site visits. There were no jurisdictional wetlands adjacent to Novato Creek within the Project vicinity. Vegetation in the Project vicinity consisted of riparian trees, such as coast live and valley oak, arroyo willow, red willow, and box elder, and an herbaceous understory.

Construction activities within the banks of Novato Creek would be performed between June 15 and October 15, which would correspond to times when there is little or no precipitation and when stream flow would be lowest. If water is not present in the channel during the construction period, then Project construction would not require dewatering or water diversion. If water is present in the channel, the flow would be diverted by placing coffer dams upstream and downstream of the active construction areas using sand bags, and directing flow through a screened pipe to the point of discharge below the Project area. If water diversion is required, then approximately 0.11 acre of jurisdictional waters would experience temporary impacts. Temporary impacts include access for construction equipment into the creek channel and the potential diversion of low creek flow. The creek banks would be permanently affected by the new abutment footings and placement of RSP/SCM (consistent with the California Salmonid Stream Restoration Manual and the NMFS Anadromous Salmonid Passage Facility Design) to provide stabilization of the banks and prevent scouring at the bridge location. These temporary impacts would not occur during the time of year when flowing water is expected to occur in Novato Creek.

The new abutments, wing walls, and concrete slabs, as identified in the Project Description, would be located above the ordinary high water and would not fill waters of the U.S. The widened bridge deck would increase shading over Novato Creek by widening the bridge by approximately 23 feet. The RSP/SCM would result in permanent impacts to approximately 1,870 square feet and 80 linear feet of streambank within waters of the U.S.

## Mitigation

With implementation of Mitigation Measures BIO-7, HYD-1, and HYD-2, potential impacts to Novato Creek would be reduced to less-than-significant levels through avoiding impacts to the extent feasible and compensating for fill in waters of the U.S.

### **Mitigation Measure BIO-7: Avoid or Restore Waters of the U.S./State**

The City shall avoid impacts to waters to the extent feasible. If fill cannot be avoided, the City shall compensate for impacts by creation, restoration, or preservation of wetlands and other waters so that there is no net loss (1:1 ratio or as required by resource agency permits). Required permits from the U.S. Army Corps of Engineers, the Regional Water Quality Control Board, and the California Department of Fish and Game shall be received prior to the start of any on-site construction activity. The City shall ensure any additional measures outlined in the permits are implemented. Measures may include (but are not limited to):

- Removal of sediments and foreign materials deposited by construction activities from jurisdictional waters.
- Restoration of disturbed waters or stream gradients to original contour and hydrologic condition, to the extent feasible.
- Bank stabilization prior to the onset of winter using erosion and sediment control best management practices.
- Reestablishment of riparian woodland and stands of sensitive status wetland plant cover using native seed stock, container plants, and/or cuttings collected from as close to the impact vicinity as possible.
- Protection and conservation of topsoil within riparian woodland and stands of sensitive status wetland plant cover.
- Creation of compensatory acreage to mitigate permanent impacts. Compensatory wetlands or other waters shall be in-kind, if practicable and, if feasible, compensatory wetlands or other waters shall be located within the same watershed as the impacted waters. Mitigation efforts may be consolidated in one or more compensatory waters/wetland mitigation projects. Out-of-kind compensatory wetlands or other waters, if constructed, shall provide equal or greater wetland function and value as impacted waters.

### **Mitigation Measure HYD-1: Minimize Impacts to Novato Creek during Construction**

See discussion of Impact 3.9.a,c,f for a description of this mitigation measure.

### **Mitigation Measure HYD-2 – Erosion Control**

See discussion of Impact 3.9.a,c,f below for a description of this mitigation measure.

**d) Impact to movement of native residents or migratory fish or wildlife species – *Less than Significant***

Please refer to Impact 3.4.a above regarding the potential impacts to special-status species.

The Project would not place any additional permanent bridge structures within the creek channel. Construction activities and disturbance within the creek channel would be limited to the summer months when Novato Creek has little to no flow through the Project vicinity; therefore, the Project would not substantially interfere with the movement of aquatic species here. If water is present in the creek channel, flow would be diverted by placing a temporary dam upstream of the Project and directing flow through a pipe to discharge below the Project area. The creek corridor and associated riparian vegetation would only be minimally impacted with RSP/SCM placement and channel contouring, as well as vegetation removal. The Project would not prevent the movement of special-status terrestrial and aerial species throughout the Project area, because it does not include any new permanent infrastructure or structures that would sever the Project from surrounding habitats. Construction would occur only during daylight hours, allowing for normal nocturnal wildlife patterns. Therefore, impacts to fish or wildlife movement corridors would be less than significant.

**e) Conflict with local policies or ordinances protecting biological resources - *Less than Significant***

The City regulates trees in Chapter 17 of its Municipal Code. While the Project is anticipated to require tree trimming and removal of one walnut tree, pursuant to Municipal Code Chapter 17-1.4.f, a tree permit would not be required. Tree Permits are required to remove, prune, or alter a heritage tree, or to remove a tree 6 inches or more in diameter when located on vacant land. The walnut tree is not a heritage tree, nor is it located on vacant land.

There are currently plantings of native tree and understory species within the Project vicinity which appear to be part of a restoration project. These plantings are not anticipated to be affected by construction activities. Therefore, the Project would have a less-than-significant impact with regard to local policies or ordinances protecting biological resources.

**f) Conflict with provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan – *No Impact***

No adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or State habitat conservation plan exists for the Project vicinity. No impact would occur.

### 3.5 Cultural and Tribal Cultural Resources

	Potentially Significant Impact	Less-Than-Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
Would the Project:				
a. Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5?				✓
b. Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?		✓		
c. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?			✓	
d. Disturb any human remains, including those interred outside of formal cemeteries?		✓		
e. Cause a substantial adverse change in the significance of a tribal cultural resource?		✓		

Discussion:

Garcia and Associates (GANDA) and Interactive Resources prepared archaeological and historical resource studies for the Project, including an Archaeological Survey Report (ASR) (GANDA 2015a); a Historic Property Survey Report (HPSR) (Interactive Resources 2015a); an Extended Phase I Study (GANDA 2015b); and an Historic Resources Evaluation Report (HRER) (Interactive Resources 2015b). The reports were used as a basis for the discussion and impact analysis below.

**Areas of Potential Effects**

Two Areas of Potential Effects (APE) were established for the Project; an archaeological APE that includes areas of direct impact (e.g., ground disturbance and excavation) and an architectural APE that includes areas of direct and indirect impact (e.g., visual and historical context). Both APEs extend out from the Grant Avenue Bridge near the intersection of Grant and Virginia Avenues and include the limits of construction. The archeological APE includes both sides of Novato Creek extending approximately 60 feet north of the bridge and 200 feet to the south; the vertical APE extends to a maximum 16 feet below ground in select locations. The architectural APE includes the entirety of the archaeological APE and two additional parcels, directly north of, and adjacent to, the existing bridge. Both parcels contain residential buildings over 50 years old.

**Archival Records Search and Results**

To obtain information on recorded cultural resources sites in and near the two APEs, the following archival records searches were performed:

- Background and archival research at the Novato History Museum, the California Room at the Marin County Library, the Marin County Assessor's Office, the San Francisco Public Library online database, and the City of Novato Building Department.
- A California Historical Resources Information System (CHRIS) record search at the Northwest Information Center (NWIC) at Sonoma State University on March 6, 2014. GANDA also reviewed the following sources of information:
  - NWIC base map: USGS 7.5-minute series topographic quadrangles of Novato (1980).
  - Survey reports from previous cultural resources investigations and cultural resources site records to identify recorded archaeological sites and historic period built environmental resources (i.e., buildings, structures, and objects) located within a 0.5-mile radius of the archaeological APE.
  - California Office of Historic Preservation (OHP) sources, including the California Inventory of Historic Resources (1976), California Archaeological Determinations of Eligibility, and the Historic Properties Directory, which combines cultural resources listed as California Points of Historical Interest and California Historical Landmarks and those that are listed in or determined eligible for listing in the National Register of Historic Places (NRHP) or the California Register of Historical Resources (CRHR).
- Letters requesting comments on the Project historic review were submitted to the City of Novato Planning Commission members and Planning Manager, the Novato History Guild and the Marin History Museum Board of Directors. An email acknowledging receipt of the letter was received from Elizabeth Dunn of the City of Novato Planning Department, but no comments have been received to date.

No cultural resource sites or built historical resources have been recorded within the Project APEs. No properties listed in the NRHP or properties previously determined eligible for the NRHP are located in the architectural APE. The Caltrans historic bridge inventory Local Agency Bridge List includes the Project bridge, No. 27C0021. It is listed as Category 5, not eligible for the NRHP. (Interactive Resources 2015b).

Within 0.5 mile of the archaeological APE, seven cultural resources sites have been recorded – three within 0.25 mile and four within 0.5 mile. These sites are general summarized in Table 3.5-1 below.

Table 3.5-1 Previously Recorded Archaeological Resources Located within a 0.5-mile Radius of the APE

Trinomial/ Primary No.	Resource Name	Resource: Type/Age	Proximity to the APE
CA-MRN-340/ P-21-000318	None	Prehistoric occupation site	Outside the APE, approx. 0.25 mile
CA-MRN-352/ P-21-000327	None	Prehistoric occupation site	Outside the APE, approx. 150 feet
CA-MRN-353/ P-21-000328	None	Prehistoric occupation site	Outside the APE, approx. 0.4 mile
CA-MRN-652/ P-21-000729	ARS 01-016-01	Prehistoric midden and historic period well house Foundation	Outside the APE, approx. 0.3 mile
CA-MRN-678/ P-21-002625	ARS 05-018	Prehistoric artifacts and burial	Outside the APE, approx. 300 feet
CA-MRN-680/ P-21-002632	ASC 83/07-01	Prehistoric midden	Outside the APE, approx. 0.45 mile
P-21-001293	Pioneer Memorial Cemetery	Mid 19 <sup>th</sup> cemetery	Outside the APE, approx. 0.4 mile

Source: GANDA 2015a

Two archeological sites, CA-MRN-352 and CA-MRN-678, are within 300 feet of the archaeological APE. The proximity of these two known sites, as well as previous excavation and monitoring efforts that have uncovered extensive and deeply buried prehistoric archaeological deposits, highlight the sensitivity of the archaeological APE for such deposits. Additionally, previous work in the local area noted that many sites are not visible from the surface but rather are buried under up to 60 centimeters (approximately two feet) of recent alluvial deposition or artificial fill. Therefore, based on a records search (as well as desktop geoarchaeological analysis), the archaeological APE was determined to have a high sensitivity for buried archeological resources.

### Field Survey Methods and Results

The architectural APE includes the Grant Avenue Bridge and two adjacent parcels to the north: APNs 141-141-22 and 141-211-21. The adjacent parcels, also identified as 1802 Virginia Avenue and 1796 Grant Avenue, both feature single family homes that were constructed in the 1950s during the postwar residential development of formerly agricultural lands west of downtown Novato. Field surveys focused on the bridge itself and the two adjacent parcels included within the architectural APE. The two evaluated parcels were recorded on California Department of Parks and Recreation Form 523 (DPR 523). The properties were evaluated within the historic context of agricultural and residential development in the City of Novato during the 1930s and postwar. None of the properties formally evaluated for the Project appear to be eligible for the National Register of

Historic Places (NRHP) or California Register of Historical Resources (CRHR), and none are considered historical resources under CEQA (Interactive Resources 2015a, 2015b).

A pedestrian survey of the archaeological APE intensively surveyed all areas within the archaeological APE. Ground visibility was fairly poor within the archaeological APE, with most areas showing less than 25 percent of the exposed ground surface. The majority of the archaeological APE was covered with asphalt roads or concrete sidewalks. The portions of the archaeological APE with natural ground surface visible included portions of the bank of Novato Creek. These areas were closely examined, sometimes in profile (in the case of cut banks), in an effort to identify any cultural materials that may have been buried by alluvial deposition. These portions of the archaeological APE were also generally heavily vegetated, and portions of grass and duff were periodically removed to expose soil to examine it for the presence of midden, shell, or other cultural materials. (GANDA 2015a)

No prehistoric or historic cultural materials were observed within the archaeological APE during the field survey. However, as noted previously, due to the high potential for buried and near surface prehistoric archaeological deposits within the archaeological APE, GANDA determined that additional subsurface archaeological testing would be necessary to complete the identification of historic properties as defined under Section 106 of the NHPA and 36 CFR Part 800.4.

Hand auger testing within the archaeological APE was performed consistent with an Extended Phase I investigation. The work was monitored by Annie Swoveland, the Tribal representative for Federated Indians of Graton Rancheria (FIGR). Field testing consisted of the excavation of 11 hand augers which varied in final depth from 40 cm to 480 cm (1.3 ft to 15.7 ft). The augers were placed in order to appropriately sample the horizontal and vertical archaeological APE. The auger locations were focused along the banks of Novato Creek in three areas of the archaeological APE (since most of the archaeological APE is paved).

The excavation of 11 hand augers within the archaeological APE did not result in the identification of prehistoric deposits. Two prehistoric isolates were found, which are summarized in Table 3.5-2 below. Neither of these artifacts was identified in the context of prehistoric archaeological deposits or midden soils, and appeared to be in disturbed context or not in original context. Isolate 1 was located within artificial fill and in an area subject to previous utility disturbances. Isolate 2 was found on the surface at auger 7 amongst gravel that appears to have been imported as part of the road base for the construction of Grant Avenue. (GANDA 2015b)

Table 3.5-2 Isolated Prehistoric Finds from Auguring

Designation	Auger No./ Depth	Type	Material	Description	Measurements
Isolate 1	Auger 4, 40 to 60 cm (1.3 to 1.96 ft)	Debitage	Obsidian	A very small complete obsidian pressure flake.	0.2 x 0.2 x 0.1 cm (0.7 x 0.7 x .04 in)
Isolate 2	Auger 7, Surface	Modified flake	Green Chert	A complete interior flake with irregular unidirectional modifications around most of its margin may be the result of modern disturbance (found with similar sized road base gravels).	5.2 x 4.8 x 2.7 cm (2.1 x 1.9 x 1.1 in)

Source: GANDA 2015b

GANDA did not identify midden soil, shell, or any other evidence for prehistoric deposits within any of the auger bores. Given that the auger locations lacked artifacts or midden, it is unlikely that buried archaeological deposits are located within the archaeological APE. Therefore, the results of the Extended Phase I investigation indicate that there are no prehistoric deposits within the archaeological APE associated with MRN-352 and MRN-678. (GANDA 2015b)

### Native American Coordination

GANDA contacted the Native American Heritage Commission (NAHC) with a request for information about sacred lands that may be located within the archaeological APE and a list of interested Native American groups and individuals who might have information regarding resources within or near the APE. The NAHC responded and reported that a search of the sacred land file did not indicate any sites recorded within the APE. The NAHC also provided a list of individuals and organizations that may have information or interest regarding cultural resources in the Project area.

GANDA coordinated with FIGR and provided copies of the previously prepared DPR 523 forms and report regarding prior investigations at CA-MRN-352 and -678, which are located adjacent to the APE. They discussed the currently understood vertical and horizontal extents of Project construction, the level of identification conducted within the APE prior to this investigation, and the approach for completing 36 CFR Part 800.4, the identification of historic properties within the APE. (GANDA 2015a)

#### a) Historical Resources – *No Impact*

The three historic-era resources (Grant Avenue Bridge and two residential properties) within the architectural APE were evaluated to determine their eligibility for the NRHP in compliance with Section 106 and its implementing regulations (36 CFR 800.4). The properties were also evaluated

in accordance with Section 15064.5 (a)(2)-(3) of the CEQA Guidelines, using criteria outlined in Section 5024.1 of the California Public Resources Code. None of the properties formally evaluated meet the criteria for listing in the NRHP, the CRHR or Section 15064.5 of the CEQA Guidelines (Interactive Resources 2015a). Therefore, even though the Project would physically alter the Grant Avenue Bridge, there would be no impact to listed or potentially eligible historical resources under the NRHP, the CRHR or Section 15064.5 of the CEQA Guidelines. No impact would occur.

**b, d, e) Archaeological Resources, Human Remains, or Tribal Cultural Resources –  
*Less than Significant with Mitigation***

The results of the Extended Phase I investigation, which included hand auguring, did not result in the identification of prehistoric deposits within the horizontal or vertical archaeological APE. As such, there is a low potential for the presence of archaeological resources within the archaeological APE and it is unlikely that buried prehistoric deposits are present within the APE. (GANDA 2015b)

Because no archaeological testing program is definitive, there remains a small possibility of encountering unknown buried archaeological resources or human remains during construction. If archaeological resources or human remains were encountered during construction, the impact would be significant.

CEQA requires lead agencies to also determine if a proposed project would have a significant effect on tribal cultural resources. The CEQA Guidelines define tribal cultural resources as: (1) a site, feature, place, cultural landscape, sacred place, or object with cultural value to a California Native American Tribe that is listed or eligible for listing on the California Register of Historical Resources, or on a local register of historical resources as defined in Public Resources Code Section 5020.1(k); or (2) a resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant according to the historical register criteria in Public Resources Code Section 5024.1(c), and considering the significance of the resource to a California Native American tribe.

As documented above, the records and literature search, Native American coordination, and archaeological testing program found no previously recorded tribal cultural resources within or near the Project site. However, there remains a small possibility of encountering unknown buried archaeological resources during construction. If as-of-yet unknown tribal cultural resources are encountered during construction activities, a significant impact could occur.

**Mitigation**

Mitigation Measure CR-1 would reduce the potential impact to archaeological or tribal cultural resources that may be encountered during construction by protecting or preserving any significant resources. Mitigation Measure CR-2 would reduce the impact from discovery of human remains by providing standard procedures in the event that human remains are encountered and requiring adherence to Public Resources Code Section 5097.98 requiring Native American tribal notification. The impact to archaeological resources and human remains following mitigation would be less than significant.

## **Mitigation Measure CR-1: Protect Archaeological and Tribal Cultural Resources Encountered during Construction**

Prior to the start of ground-disturbing construction activities, the City and/or its Contractor(s) shall inform all field personnel of the possibility of encountering unknown archaeological resources, human remains, and tribal cultural resources, and the laws protecting such materials. If archaeological materials are encountered during construction activities, the piece of equipment that encounters the materials must be stopped, and excavation within 10 meters (approximately 33 feet) of the potential find must be halted until the find is inspected by a qualified archaeologist. Project personnel shall not collect cultural materials. If the find potentially qualifies as a historical resource, or unique archaeological resource, under CEQA, then all work must remain stopped in the immediate vicinity to allow the archaeologist to evaluate any materials. The City shall determine if the materials qualify as a historical resource or a unique archaeological resource under CEQA. Avoidance of qualified resources is preferable. However, if avoidance is infeasible, other measures such as data recovery shall be instituted. Work may proceed on other parts of the project while mitigation is being carried out.

If potential tribal cultural resources are uncovered, the City shall halt work, and workers shall avoid altering the materials and their context. The City shall notify the Federated Indians of the Graton Rancheria and any other California Native American tribes culturally affiliated with the project area. The City, in coordination with interested Native American tribes, shall determine if the resource qualifies as a tribal cultural resource under CEQA. If it does, the City shall ensure that qualified resources are avoided or protected in place, in accordance with the requests of Native American tribes. Work may proceed on other parts of the project while mitigation for tribal cultural resources is being carried out.

## **Mitigation Measure CR-2: Protect Human Remains if Encountered**

Given the reported presence of prehistoric sites in the area, there is a potential for human remains to be encountered during construction. California Health and Safety Code Section 7050.5 states that it is a misdemeanor to knowingly disturb a human grave. If human graves are encountered, the City of Novato will ensure that work will halt in the vicinity and the County Coroner will be notified. At the same time, a qualified archaeologist will be contacted to evaluate the situation. If human remains are of Native American origin, the Coroner will notify the Native American Heritage Commission within 24 hours of identification, pursuant to Public Resources Code 5097.98. If consultation has been requested, the City shall also consult with the appropriate Native American tribe for treatment of human remains.

### **c) Paleontological Resources or Unique Geological Features – *Less than Significant***

Paleontological resources are the remains or traces of prehistoric animals and plants. The fossil yielding potential of a particular area is dependent on the geologic age and origin of the underlying rocks. The City of Novato General Plan Existing Conditions Report (Novato 2014) reports that there are no records of invertebrate, vertebrate, microfossil, and paleobotanical fossils located within Novato. The nearest identified fossils were found in the Petaluma Formation, which is outside the

City limits. However, the report also noted that the tuffaceous sandstone unit beneath the volcanic rocks of Mt. Burdell contains fossils and that this unit may occur within the northernmost portion of the Novato city limits.

Because the Project is not located within the northern portion of the City, paleontological resources are not likely to be present, and the impact to a unique paleontological resource would be less than significant.

### 3.6 Geology and Soils

	Potentially Significant Impact	Less-Than-Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
Would the Project:				
a. Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.				✓
ii. Strong seismic ground shaking?			✓	
iii. Seismic related ground failure, including liquefaction?			✓	
iv. Landslides?			✓	
b. Result in substantial soil erosion or the loss of topsoil?			✓	
c. Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the Project, and potentially result in on, or off, site landslide, lateral spreading, subsidence, liquefaction or collapse?			✓	
d. Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?			✓	
e. Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?				✓

Discussion:

**a.i) Fault Rupture – No Impact**

The Project site is not underlain by a known active or potentially active earthquake fault and is not located within or adjacent to an Alquist-Priolo Earthquake Fault Zone (Novato 2014). Therefore, no impact from rupture of a known fault would occur.

**a.ii) Ground Shaking and Landslides– Less than Significant**

Based on the known active faults and on the large number of potentially active faults in the region, all parts of Novato are potentially subject to strong ground shaking. The intensity of ground shaking at any specific location within the City depends on the characteristics of the earthquake, the

distance from the earthquake and on the local geologic and soil conditions. Conservatively, ground motion as strong as 6.9 to 7.9 on the Richter Magnitude scale could occur (Novato 2014).

The Project's foundation design is based on the Preliminary Foundation Report, which included geotechnical analysis of the Project site. A site specific acceleration response spectral (ARS) curve, included in the Preliminary Foundation Report, was developed and will be used for the seismic design of the bridge and foundations. The recommendations made in the Preliminary Foundation Report have been incorporated into the Project design, and will be incorporated into the final plans and specifications and implemented during construction. Professional inspection of foundations and excavations, earthwork and other geotechnical aspects of site development will be required to be performed during construction in accordance with the current version of the California Building Code.

While proper engineering design and construction in conformance with building codes and seismic standards does not constitute any kind of guarantee that significant structural damage would not occur in the event of a maximum magnitude earthquake, it is reasonable to expect that a well-designed and well-constructed structure would not collapse or cause loss of life in a major earthquake. Therefore, geologic impacts on people or structures related to seismic groundshaking would be less than significant.

**a.iii, a.iv, c) Liquefaction, Landslides, or Unstable Soils – *Less than Significant***

**Liquefaction**

Liquefaction generally occurs as a result of strong groundshaking in areas where granular sediment or fill material either contains, or is located immediately above, high moisture content. The groundshaking transforms the material from a solid state to a temporarily liquid state. Areas in Novato with soils susceptible to liquefaction are primarily located in low-lying areas of fill fronting San Pablo Bay. Upland areas within the City have a low to very low potential for liquefaction. However, it is possible that zones of liquefiable soils could extend along the banks of Novato Creek in the Project area.

The Project's foundation design is based on the Preliminary Foundation Report, which included geotechnical analysis of the Project site. Potential for liquefaction at the Project site is anticipated to be moderate to high based on the pocket/lens of medium sand encountered in one of two soil borings. Reductions in soil shear strength and potential downdrag forces from the potentially liquefiable soil pocket/lens have been considered in the pile foundation design. Lateral spreading is considered unlikely to occur because it appears that there is no continuous layer of liquefiable soil at the Project site. The Project would use CIDH piles to support the bridge structure, with anticipation of three pile shafts at each of the abutments. Therefore, this impact is considered less than significant.

**Landslides**

The majority of the Project area is not located in areas prone to landslides (Novato 2013). However, because of the relatively steep creek banks and the potential for liquefiable soils along the banks of Novato Creek, there is a potential impact from seismic related landslides or slope instability.

The Project's design is based on the Preliminary Foundation Report, which included geotechnical analysis of the Project site. The recommendations made in the Preliminary Foundation Report have been incorporated into the Project design, and shall be incorporated into the final plans and specifications and implemented during construction. Professional inspection of foundations and excavations, earthwork and other geotechnical aspects of site development would be required to be performed during construction in accordance with the current version of the California Building Code.

While proper engineering design and construction in conformance with building codes and seismic standards does not constitute any kind of guarantee that significant structural damage would not occur in the event of a seismic-related landslide or slope instability, it is reasonable to expect that a well-designed and well-constructed structure would not collapse or cause loss of life in a major earthquake. Therefore, geologic impacts on people or structures related to landslides would be less than significant.

### **Unstable Soils**

Lateral spreading is the lateral movement of gently to steeply sloping, saturated soil deposits caused by earthquake-induced liquefaction. Subsidence is defined as the sinking of a large area of ground surface where the material is displaced vertically downward, with little or no horizontal movement (Novato 2014). Because of the relatively steep creek banks slope and the potential for liquefiable soils along the banks of Novato Creek in the Project area, there is potential for seismic settlement, slope instability, and liquefaction associated with unstable soils at the Project site. As provided above, the Project's design is based on the Preliminary Foundation Report, which included geotechnical analysis of the Project site.

Project design and construction would be in conformance with specific recommendations contained in Preliminary Foundation Report. Therefore, geologic impacts on people or structures related to unstable soils would be less than significant.

#### **b) Soil Erosion and Loss of Topsoil – *Less than Significant***

The Project would stockpile topsoil during the initial grading within the Project area for use during revegetation activities, as identified in the Project Description. Therefore, construction activities would result in a very small localized loss of topsoil. Consequently, no substantial loss of topsoil due to erosion or grading is anticipated, and the impact would be less than significant.

Construction impacts to water quality associated with soil erosion are further addressed in Section 3.9, Hydrology and Water Quality.

#### **d) Expansive Soils – *Less than Significant***

Expansive soil occurs when clay particles interact with water causing volume changes in the clay soil. The clay soil swells when saturated and contracts when dried. These volume changes may damage lightly loaded foundations, retaining walls and shallow improvements. According to the City of Novato Existing Conditions Report, Figure 10-4 (Expansive Soils), the Project site has low potential for soil expansion (Novato 2014). Therefore, the impact is less than significant.

**e) Septic Tanks – *No Impact***

The Project would not involve the construction or use of septic tanks or an alternative wastewater disposal system. Therefore, the criterion related to capability of soils to support septic tanks or alternative wastewater disposal systems is not applicable to the Project, and no impact would occur.

### 3.7 Greenhouse Gas Emissions

	Potentially Significant Impact	Less-Than-Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
Would the Project:				
a. Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?			✓	
b. Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?				✓

Discussion:

**a) Generate Greenhouse Gas Emissions – Less than Significant**

The BAAQMD’s 2010 thresholds contain the following thresholds for operational greenhouse gas (GHG) emissions:

For land use development projects (including residential, commercial, industrial, and public land uses and facilities), the threshold is:

- Compliance with a qualified GHG Reduction Strategy; or
- 1,100 metric tons per year of carbon dioxide equivalent (CO<sub>2</sub>e); or
- 4.6 metric tons CO<sub>2</sub>e/service population/year (residents + employees).

Neither the BAAQMD nor the City of Novato has established significance thresholds for construction period GHG emissions. However, the BAAQMD does recommend that lead agencies quantify and disclose construction-related greenhouse gas emissions. Therefore, the Project’s construction emissions were quantified, annualized over an assumed operational lifespan, and added to operational greenhouse gas emissions in order to determine the Project’s potential impact.

The Project would not change traffic conditions during operation such that there would be a measurable increase in GHG emissions. Project operation would not result in a new source of GHG emissions, and would not increase the vehicle capacity or speed of Grant Avenue. Therefore, the Project operations would not generate new or additional greenhouse gas emissions above that currently produced by the existing bridge facilities.

The Project would generate greenhouse gas emissions during construction from use of off-road equipment, worker vehicles, and any hauling that may occur. The Road Construction Emission Model, Version 8.1.0 (SMAQMD 2016) was used to model temporary GHG emissions from construction. The model indicates that Project construction would generate approximately 426 metric tons of CO<sub>2</sub>e. In comparison, BAAQMD’s adopted threshold of significance for operational greenhouse gas emissions is 1,100 metric tons of CO<sub>2</sub>e per year. Therefore, the construction emissions are below those thresholds identified by BAAQMD for evaluating operational impacts of

land use projects. Project construction and operation would generate a less than significant impact.

**b) Conflict with Applicable Plan, Policy or Regulation – *No Impact***

Neither the City nor BAAQMD has plans, policies or regulations that affect greenhouse gas emissions from temporary construction projects. Although the State is implementing regulations that would reduce emissions from light- and heavy-duty vehicles (which could be used during construction), the Project would not conflict with these regulations. In addition, the Project would enhance the ability of pedestrians and bicyclists to safely use Grant Avenue, thus supporting alternative modes of transportation that could reduce overall vehicular greenhouse gas emissions. As a result, the Project would not conflict with any State or local policies that regulate greenhouse gas emissions.

### 3.8 Hazards and Hazardous Materials

	Potentially Significant Impact	Less-Than-Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
Would the Project:				
a. Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?		✓		
b. Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?		✓		
c. Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?		✓		
d. Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?				✓
e. For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the Project result in a safety hazard for people residing or working in the Project area?				✓
f. For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?				✓
g. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?			✓	
h. Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?				✓

Discussion:

**a, b) Hazardous Materials and Accident Conditions – *Less than Significant with Mitigation***

Construction and operational activities would involve the periodic use of hazardous materials, such as fuels, lubricants, and solvents associated with construction equipment and haul trucks. These materials are commonly used during construction, are not acutely hazardous, and would be used in small quantities. Although construction activities could result in the inadvertent release of small quantities of hazardous construction chemicals, a spill or release in a construction area is not

expected to endanger individuals given the nature of the materials and the small quantities that would be used. The impact of exposure of the public to hazardous materials would be less than significant.

Routine transport of such materials to and from the Project sites during construction could result in an incremental increase in the potential for accidents. However, numerous laws and regulations ensure the safe transportation, use, storage and disposal of hazardous materials. For example, Caltrans and the California Highway Patrol regulate the transportation of hazardous materials and wastes, including container types and packaging requirements, as well as licensing and training for truck operators, chemical handlers, and hazardous waste haulers. Worker safety regulations cover hazards related to the prevention of exposure to hazardous materials and a release to the environment from hazardous materials use. The California Division of Occupational Safety and Health (Cal-OSHA) also enforces hazard communication program regulations, which contain worker safety training and hazard information requirements, such as procedures for identifying and labeling hazardous substances, communicating hazard information related to hazardous substances and their handling, and preparation of health and safety plans to protect workers and employees.

The Project is not located in an area mapped as likely to contain naturally occurring asbestos (CDC 2000). Furthermore, there are no known potential sources of asbestos-containing materials on the existing bridge. Therefore, naturally occurring asbestos and asbestos-containing materials are not anticipated to be encountered during construction activities. In addition, compliance with Caltrans 2015 Standard Specifications (SS) 14-11.02 (Discovery of Unanticipated Asbestos and Hazardous Substances) is required. The Project would result in a less-than-significant impact.

Project construction would require partial removal of the existing bridge structure along the southern edge of deck and a portion of the top of wingwalls at each end of the existing bridge. The existing curbs and guardrails on the bridge would be removed, as would the pedestrian bridge located adjacent to the north side of the bridge. The wingwalls, guardrails, and pedestrian bridge consist mainly of exposed, unpainted concrete. There is a very small amount of highly weathered paint on the end of the guardrails. Therefore, the project has low potential to encounter lead-based paints during construction. However, if lead-based paints are present, if not handled and disposed of properly, the disturbance of these components during demolition activities may result in a hazard to the public or environment. The impact is considered potentially significant. Compliance with the following Caltrans Standard Specifications (SS) is required: SS 14-11.03 (Hazardous Waste Management), SS 14-11.06 (Contractor-generated Hazardous Waste), SS 14-11.13 (Disturbance of Existing Paint systems on Bridges).

Because contractors would be required to comply with existing and future hazardous materials laws and regulations covering the transport, use and disposal of hazardous materials, the Project's construction-related impact for exposing the public to hazardous materials would be less than significant. However, the Project could expose workers to hazardous materials and the Project's location and construction activities near Novato Creek pose a particular sensitivity to the release of hazardous materials and potential risk to the environment. This impact is potentially significant. Impact 3.9.a,c,f analyzed the Project's potential to degrade water quality during construction, including by release of hazardous materials. Mitigation Measure HYD-1 (Minimize Impacts to Novato Creek during Construction) reduces the Project's potential to degrade water quality in Novato Creek during construction to less than significant with mitigation.

After construction, the use and transport of hazardous materials over the bridge would be the same as under existing conditions; therefore, no operational impact would occur.

## **Mitigation**

Mitigation Measures HAZ-1, HAZ-2, and HYD-1 would reduce the potential impact associated with disturbance of lead-containing paints or other hazardous materials during demolition activities by requiring preparation of a site health and safety plan to protect construction worker health and safety, a hazardous materials management plan to ensure that hazardous wastes encountered during Project construction are transported and disposed of in a safe and lawful manner, and a spill prevention and response plan to minimize the impacts of fluid leaks or spills. Therefore, the potential hazardous materials impact on the public or environment following mitigation would be less than significant.

### **Mitigation Measure HAZ-1: Health and Safety Plan**

The City shall ensure that, prior to construction, a site-specific health and safety plan is prepared in accordance with Cal-OSHA regulations (8 CCR Title 8, Section 5192) to address worker health and safety issues during construction. The health and safety plan shall mandate compliance with Cal-OSHA regulations governing occupational exposure to lead (Title 8, CCR, Section 1532.1). The health and safety plan shall identify the potentially present chemicals, health and safety hazards associated with those chemicals, all required measures to protect construction workers and the general public from exposure to harmful levels of any chemicals identified at the site (including engineering controls, monitoring, and security measures to prevent unauthorized entry to the work area), appropriate personal protective equipment, and emergency response procedures.

### **Mitigation Measure HAZ-2: Hazardous Materials Management Plan**

The City shall ensure that a hazardous materials management plan is prepared that specifies the method for handling and disposal of hazardous materials during construction, including disposal of lead-containing paint waste. The plan must incorporate the most current Caltrans Standard Specifications (SS), Standard Special Provision (SSP), and Construction Best Management Practices (BMPs) for hazardous waste and materials requiring special management or safety precautions. Contract specifications shall mandate full compliance with all applicable local, State, and federal regulations related to identifying, removing, transporting, and disposing of hazardous materials, consistent with the Caltrans 2017 Construction Site BMP Manual, Waste Management and Materials Pollution Control Measure WM-6 (Hazardous Waste Management) and Caltrans 2015 Standard Specifications 14-11.13 (Disturbance of Existing Paint Systems on Bridges). The contractor shall provide the City with copies of hazardous waste manifests documenting that disposal of any hazardous materials has been performed in accordance with the law.

### **Mitigation Measure HYD-1: Minimize Impacts to Novato Creek during Construction**

See discussion of Impact 3.9 a,c,f for a description of this mitigation measure.

#### **c) Emit Hazardous Emissions within 0.25 Mile of a School – *Less than Significant with Mitigation***

Our Lady of Loretto School, located at 1811 Virginia Avenue, is located within 0.25 mile of the construction area. A former day care center, located at 1787 Grant Avenue, is also located within 0.25 mile of the construction area. As shown in Impact 3.8.a,b above, the project may encounter lead-based paint during demolition. Therefore, the Project would result in a potentially significant impact for emitting hazardous materials (lead) within 0.25 mile of a school.

Construction activities would include the use of hazardous materials such as fuels, lubricants, and solvents associated with operation of construction vehicles and equipment. These materials are commonly used during construction, are not acutely hazardous, and would be used in small quantities. Numerous laws and regulations ensure the safe transportation, use, storage, and disposal of hazardous materials (see Impact 3.8.a,b above). Although construction activities could result in the inadvertent release of small quantities of hazardous construction chemicals, a spill or release at a construction area is not expected to endanger individuals at nearby schools given the nature of the materials and the small quantities that would be used. The impact would be less than significant. Following construction, the Project would not require the ongoing use or storage of hazardous materials, and occasional maintenance activities would be similar to those undertaken under existing conditions. No impact would occur during operation.

#### **Mitigation**

Mitigation Measures HAZ-1 and HAZ-2 would reduce the potential impact associated with disturbance of lead-containing materials during demolition activities by requiring preparation of a site health and safety plan to protect construction worker health and safety and a hazardous materials management plan to ensure that hazardous wastes encountered during Project construction are transported and disposed of in a safe and lawful manner. Therefore, the potential hazardous materials emission within 0.25 mile of a school would be less than significant with mitigation.

#### **Mitigation Measure HAZ-1: Health and Safety Plan**

See discussion of Impact 3.8.a,b for a description of this mitigation measure.

#### **Mitigation Measure HAZ-2: Hazardous Materials Management Plan**

See discussion of Impact 3.8.a,b for a description of this mitigation measure.

#### **d) Included on a List of Hazardous Materials Sites – *No Impact***

Pursuant to Government Code Section 65962.5, the following lists were reviewed to determine if the Project would be constructed on a hazardous materials site: Department of Toxic Substances Control EnviroStor database; List of Leaking Underground Storage Tank Sites from the San Francisco Bay Regional Water Quality Control Board (Water Board) GeoTracker database; List of

solid waste disposal sites identified by Water Board with waste constituents above hazardous waste levels; List of "active" Cease and Desist Orders and Cleanup and Abatement Orders from the Water Board; and List of hazardous waste facilities subject to corrective action pursuant to Section 25187.5 of the Health and Safety Code (Cal EPA 2018). Review of the above-mentioned lists did not indicate that proposed construction areas would be located on a listed hazardous materials site. In addition, no adjacent hazardous materials sites were identified where known contamination has extended off-site into proposed construction areas. No impact would occur.

**e, f) Safety Hazard for People Residing or Working within Two Miles of an Airport – No Impact**

The nearest public or private airport, Gness Field, is located approximately 2.5 miles northeast of the Project site. Gness Field is a general aviation public-use airport staffed and maintained by the Marin County Department of Public Works. The Project site is not located within a 2-mile radius of the airfield or within the Gness Field Airport Land Use Plan (Marin County ALUC 1991, Figure 3-1). No impact would occur.

**g) Impair or Interfere with an Adopted Emergency Response/Evacuation Plan – Less than Significant**

The City of Novato Emergency Operations Plan (EOP) establishes policies and procedures and assigns responsibilities to ensure the effective management of emergency operations within the City. The City and the Novato Fire Protection District operate a joint emergency operations center (EOC) in the Novato Fire Administration Building. The EOP does not designate specific evacuation routes within the City. (Novato 2009).

The Project would not interfere with the City's EOP during construction as there would be a detour around the Grant Avenue Bridge (see Impact 3.16.a), which would allow emergency response vehicles similar accessibility as under current conditions. As noted in the Project Description, emergency responders would be notified in advance of the bridge closure dates. Grant Avenue to the east and west of the bridge would remain open during construction and could be accessed by emergency responders using alternate routes. The proposed detour equates to an additional 4,000 feet (0.75 mile) of travel distance to get from one side of the bridge to the other.

As shown in Impact 3.16.a, it is anticipated that three of the Project-affected intersections would have a reduction in delay during construction because entering traffic volumes would be reduced, particularly during the PM peak hour. A fourth Project-affected intersection would have an increase in peak-hour volume; however, the change in turning movements associated with the detour is anticipated to result in a reduction in the intersection's delay during the construction period. It is anticipated that only one of the Project-affected intersections, the Novato Boulevard and Tamalpais Ave./ Seventh St. intersection would experience a minor increase in delay of 22 seconds during the AM peak hour, and 7.1 seconds during the PM peak hour. This temporary impact would be less than significant. See Impact 3.16.e in the Transportation/Traffic Section for additional discussion.

**h) Exposure to Wildland Fires – No Impact**

The Project site is located in a Non-Very High Fire Hazard Severity Zone, as classified by the California Department of Forestry and Fire Protection (CAL FIRE 2008). Therefore, no construction or operational impact related to wildfires would occur.

### 3.9 Hydrology

	Potential Significant Impact	Less-Than-Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
Would the Project:				
a. Violate any water quality standards or waste discharge requirements?		✓		
b. Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?			✓	
c. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off- site?		✓		
d. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off- site?			✓	
e. Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?			✓	
f. Otherwise substantially degrade water quality?		✓		
g. Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?				✓
h. Place within a 100-year flood hazard area structures which would impede or redirect flood flows?			✓	
i. Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?			✓	
j. Inundation by seiche, tsunami, or mudflow?				✓

### Discussion:

The Water Quality Control Plan for the San Francisco Bay Basin designates several beneficial uses for Novato Creek, including cold and warm freshwater habitat, fish spawning, wildlife habitat, municipal and domestic supply, commercial and sport fishing, and contact and non-contact water recreation (SFBRWQCB 2017). Novato Creek is listed as an impaired water body for diazinon on the most recent Clean Water Act Section 303(d) list (SFBRWQCB 2016). San Pablo Bay, which Novato Creek drains to, is listed as impaired for chlordane, dichlorodiphenyltrichloroethane (DDT), and dieldrin, dioxin compounds, furan compounds, invasive species, and polychlorinated biphenyls (PCBs) (SFBRWQCB 2016).

Laws and regulations applicable to the Project that would prevent and minimize storm water pollution during construction include the National Pollutant Discharge Elimination System (NPDES) Waste Discharge Requirements from Small Municipal Separate Storm Sewer Systems, Order No. 2013-0001-DWQ (Phase II MS4 permit) and Section 401 of the Clean Water Act.

### **Phase II MS4 Permit**

The federal Clean Water Act prohibits discharges of storm water from construction projects unless the discharge is in compliance with an NPDES permit. The State Water Resources Control Board, which is the permitting authority in California, has adopted an NPDES Phase II MS4 permit (referenced above) that applies to construction sites that include less than 1.0 acre of soil disturbance and requires preparation and implementation of an Erosion and Sediment Control Plan (ESCP).

### **Federal Clean Water Act Section 404/ Clean Water Act Section 401**

Proposed discharges of dredged or fill material into waters of the U.S. require U.S. Army Corps of Engineers (USACE) authorization under Section 404 of the Clean Water Act (33 U.S.C. 1344). Waters of the U.S. generally include tidal waters, lakes, ponds, rivers, streams (including intermittent streams), and wetlands (with the exception of isolated wetlands).

Section 401 of the Clean Water Act provides the State Water Resources Control Board and Regional Water Quality Control Boards with the regulatory authority to waive, certify, or deny any proposed activity that could result in a discharge to surface waters of the State. To waive or certify an activity, these agencies must find that the proposed discharge would comply with State water quality standards, including those protecting beneficial uses and water quality. A water quality certification is generally required for projects involving the discharge of dredged or fill material to wetlands or other water bodies. Because the Project includes the discharge of dredged or fill material within Novato Creek, the Project would require a water quality certification from the San Francisco Bay Regional Water Quality Control Board.

**a, c, f) Violate Water Quality Standards, Degrade Water Quality, Result in Erosion or Siltation – Less than Significant with Mitigation**

### ***Construction***

Construction activities, including clearing, grading, excavation, stockpiling, and other land disturbance activities, would temporarily disturb soils at the Project site, thereby increasing the

potential for soil erosion to occur during storm events. As described in the Project Description, construction activities within Novato Creek are planned to occur between June 15 and October 15, which generally coincides with the season when rainfall is unlikely and base flows are lowest. Performing the work within Novato Creek during the dry season would minimize the potential for erosion to occur during construction. However, earthmoving activities would temporarily alter existing drainage patterns in the Project area, including along the banks of Novato Creek. Exposed soil where ground cover would be removed could be transported elsewhere by wind or water. If not properly managed, construction activities could result in erosion and sediment loads being carried downstream in storm water runoff. Such potential sediment-laden runoff could affect water quality and violate water quality standards, and the impact would be significant.

Construction activities could also be a source of chemical contamination from use of alkaline construction materials (e.g., concrete, mortar, hydrated lime) and other chemicals if used improperly. Construction of the Project would also require the use of gasoline and diesel-powered equipment, such as trucks, excavators, graders, bulldozers, backhoes, compactors, and generators. Chemicals such as diesel, gasoline, lubricants, hydraulic fluid, transmission fluid, paints, solvents, glues, and other substances would be utilized during construction, and an accidental release of any of these substances could degrade surface or ground water and cause a significant impact.

Temporary dewatering of certain construction work areas outside of the creek channel (in addition to the potential installation of a coffer dam for flows within the creek channel, as described in the Project Description) may be required if water accumulates within an excavation or trench. If not properly controlled, the discharge of pumped groundwater from temporary dewatering could result in sediment-laden water being discharged to waterways. Therefore, the potential impact of construction activities on water quality is considered significant.

### ***Operation***

Following construction, the areas of disturbed soil vulnerable to erosion or siltation would not be present because of revegetation throughout the work area (as described in the Project Description) and storm water flows would not be increased in a manner that would result in downstream erosion. However, the City's Phase II MS4 permit, Section E.12, requires the implementation of permanent storm water management practices for projects creating and/or replacing 5,000 square feet or more of impervious surface. The Project would be exempt from these requirements pursuant to NDPES storm water regulations in 40 CFR 122.26(d)(2)(iv)(B)(1). 40 CFR 122.26(d) pertains to application requirements for large and medium municipal separate storm sewer discharges, and allows that municipalities may submit a jurisdiction-wide or system-wide permit application. 40 CFR 122.26(d)(2)(iv)(B)(1) outlines the types of discharges covered by a proposed management program. Operation of the Project is covered by the jurisdiction-wide permit. The potential impact to water quality associated with operation of the Project is considered to be less than significant.

### **Mitigation**

Mitigation Measures HYD-1 and HYD-2 would reduce potential water quality impacts during Project construction to a less-than-significant level by requiring measures to manage construction dewatering, to control erosion and sedimentation of receiving water bodies, and to minimize the risk of hazardous material release.

## **Mitigation Measure HYD-1: Minimize Impacts to Novato Creek during Construction**

The City shall avoid disturbance to Novato Creek to the extent feasible. Work within Novato Creek channel shall be restricted to the period from June 15 to October 15, when stream flow would be the lowest. Control measures shall include:

- Monitoring of the stream diversion shall occur periodically each day to ensure all stream diversion devices are in operation and to ensure proper function.
- Soil compaction shall be minimized by using low ground pressure construction equipment in the Novato Creek channel.
- Disturbance and removal of aquatic vegetation shall be minimized to the extent feasible.
- Debris containment shall be provided to keep bridge debris during demolition and construction activities from falling into Novato Creek.
- The use of non-mechanized equipment will be maximized. Construction equipment shall be cleaned and inspected prior to use. Mechanized construction equipment that will be used on the banks and in the stream will be cleaned and inspected daily prior to use. Servicing and refueling of vehicles and equipment shall be conducted a minimum of 50 feet from the Ordinary High Water Mark (OHWM) of Novato Creek at designated staging areas to avoid contamination through accidental drips and spills. If refueling or servicing of equipment within 50 feet of Novato Creek is necessary, secondary containment and absorbent pads shall be used and spill response kits will be available to rapidly respond to accidental spills.
- Vegetable-based lubricants and battery-powered hand tools will be used to the extent possible to minimize the impacts of fluid leaks or spills. The contractor will be required to develop a detailed spill prevention and response plan prior to commencement of work compliant with Caltrans 2015 Standard Specifications 13.4.03B (Spill Prevention and Control) and Caltrans 2017 Construction Site BMP Manual, Waste Management and Materials Pollution Control Measure WM-4 (Spill Prevention and Control).
- To minimize the spread of invasive species, the contractor will be required to thoroughly clean all equipment designated for creek work prior to mobilization at the project site. In addition, boots, waders, coffer dam materials, and hand tools will be decontaminated prior to use, using the drying method, if it was previously used in a different watershed. Stationary equipment located within or adjacent to Novato Creek shall be positioned over secondary containment.
- Hazardous materials shall not be stored within 200 feet of Novato Creek.
- Construction shall comply with the Caltrans Construction Site Best Management Practices (BMP) Manual, including but not limited to, implementation of the following BMPs: NS-13: Material and Equipment Use Over Water, NS-15: Demolition Over Water, and WM-8: Concrete Waste Management.

- Dewatering activities and dust, erosion, and sedimentation control shall comply with the 2017 Caltrans Construction Site BMP Manual (CTSW-RT-17-314.18.1) and the 2015 Caltrans Standard Specifications.
- On-site stockpiles shall be isolated with silt fence, filter fabric, and/or straw bales/fiber rolls. Erosion, sediment, and material stockpile BMPs shall be employed between work areas and the adjacent waterway. No fill or runoff from stockpiles shall be allowed to enter the waterway at any time.
- To protect against future scouring of bridge foundations, rock slope protection/scour counter measures (RSP/SCM) shall be installed within the channel of Novato Creek beneath and upstream of the bridge. RSP/SCM installation shall follow fish passage guidelines consistent with the California Salmonid Stream Restoration Manual (CDFW 2010) and the National Marine Fisheries Service (NMFS) Anadromous Salmonid Passage Facility Design (NMFS 2011).
- Immediately upon completion of in-channel work, diversion cofferdams, and other in-channel structures shall be removed in a manner that minimizes disturbance to downstream flows and water quality.
- Modified or disturbed portions of streams, banks, and riparian areas shall be restored as nearly as possible to pre-existing and stable contours (elevations, profile, and gradient).
- The amount of construction-related disturbance shall be limited to the extent feasible. The Project footprint shall be minimized to the extent feasible.
- Once the project is completed, water shall be released slowly back into the work area so as to prevent erosion and increased turbidity.

### **Mitigation Measure HYD-2: Erosion Control**

The City shall prevent soil erosion and sedimentation during construction by developing and implementing an Erosion and Sediment Control Plan for the Project. The Plan will address how the Contractor will manage erosion and sediment control measures, general site and materials management, and inspection and maintenance. The following minimum measures shall be included in the Plan and incorporated into Project construction to reduce soil erosion and protect water quality.

- Erosion and sediment control measures will be in effect and maintained by the Contractor on a year-round basis until all disturbed areas are stabilized.
- Stockpiled material will be covered or watered daily sufficient to eliminate dust.
- Fiber rolls or similar products will be utilized to reduce sediment runoff from disturbed soils.
- A stabilized construction entrance will be maintained to minimize tracking of mud and dirt from construction vehicles onto public roads.
- Storm drain inlets receiving storm water runoff will be equipped with inlet protection.
- A concrete washout area will be designated to clean concrete trucks and tools.
- As a required commitment to Caltrans to utilize HBRR funding, the City and its contractor will employ all appropriate and adequate best management practices

(BMPs) related to water quality provided in the Caltrans 2017 *Construction Site Best Management Practices (BMPs) Manual* and 2015 *Caltrans Standard Specifications* (Divisions II and III).

**b) Substantially Deplete Groundwater Supplies or Interfere with Groundwater Recharge – *Less than Significant***

During construction, temporary dewatering of certain construction work areas may be required if water accumulates within an excavation or trench for brief periods. Dewatering involves pumping of groundwater to lower water levels to the minimal depth needed, just below the bottom of the excavation. This type of dewatering would result in only localized decreases in the water table, in the immediate vicinity of the excavation, representing a very small percentage of the overall surrounding aquifer. Therefore, Project construction would not substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or lowering of the local groundwater table level. The impact would be less than significant.

Following construction, the Project would not include any ongoing pumping of groundwater, and would not result in substantial amounts of new impervious surfaces that would interfere with groundwater recharge. Therefore, operation of the Project would have no impact on groundwater supplies or groundwater recharge.

**d) Substantially Alter Drainage Patterns Resulting in Flooding – *Less than Significant***

Construction activities within Novato Creek and adjacent drainage swales and channels would be performed in the summer, when rainfall is typically absent or nearly absent. Therefore, Project construction would not interfere with flood flows or result in flooding on- or off-site. No impact would occur.

Following construction, drainage patterns would essentially be the same as existing conditions. The RSP/SCM to be placed on the channel banks would not interfere with normal channel flows, as the placement would conform to the existing bank contour. The Project would not result in new storm drain facilities and only small increases of approximately 1,400 square feet and 1,700 square feet of impervious surfaces would occur from the widened roadway approaches and new bridge surface, respectively. There are no stormwater drains or facilities in or near the project site; therefore, the proposed improvement would not add substantial additional runoff into the existing storm drain system. Therefore, the Project would not result in localized increases in the rate or amount of surface runoff that would result in flooding on- or off-site. The impact would be less than significant.

**e) Exceed Stormwater Drainage Systems or Contribute Polluted Runoff – *Less than Significant***

See Impact 3.9.a,c,f above for an evaluation of the Project's construction-related impacts from polluted runoff, including erosion and siltation, construction chemicals, and dewatering activities and operational-related impacts relative to increased impervious surfaces.

Construction activities within Novato Creek would be performed between June 15 and October 15, which generally coincides with the season when rainfall is unlikely and base flows are lowest.

Therefore, construction-related impacts on the capacity of the stormwater drainage system would be less than significant.

As described in Impact 3.9.d, above, following construction, drainage patterns would essentially be the same as existing conditions. The RSP/SCM would not interfere with normal channel flows and would help protect the bridge wall's foundation. Following construction, there would be no features included in the Project that would, by their nature or design, provide substantial sources of polluted runoff. RSP/SCM would be placed to armor and protect the channel banks from potential erosion, and exposed and disturbed areas of the creek bank and construction area would be revegetated with fast-growing native plants. The impact would be less than significant.

**g) Place Housing within a 100-Year Flood Zone – *No Impact***

The Project does not include housing. Therefore, this checklist question is not applicable to the Project. No impact would occur.

**h) Place Structures within a 100-Year Flood Zone Which Would Impede Flood Flows – *Less than Significant***

According to local Flood Insurance Rate Maps prepared by the Federal Emergency Management Agency (FEMA), the Project site is located within a 100-year floodplain with average flood depths of less than one foot (FEMA 2009). Construction activities within Novato Creek would be performed in the summer, when conditions are typically dry and rainfall is unlikely. Performing the work within Novato Creek during the dry season would minimize the potential for impeding or redirecting flood flows during construction to a less than significant level.

Based on a HEC-RAS model developed for the Project, the existing bridge is outside the 100-year base flood elevation, and the improvements to the Project, including the deck extension and the improvements within Novato Creek, are not expected to have an impact on the 100-year base flood elevation (GHD 2014). The improvements to Grant Avenue Bridge and Novato Creek would be designed to minimize impacts to the hydraulic capacity of the channel at and upstream of the bridge. Modified or disturbed portions of the stream, banks, and riparian areas would be restored as nearly as possible to natural and stable contours (as described in the Project Description), and the design would take into consideration the hydraulic capacity of the channel so as not to affect the ability to convey the 100-year flow. Therefore, the operational impact related to impeding or redirecting flood flows would be less than significant.

**i) Flooding from a Levee or Dam – *Less than Significant***

The Project site is located within the dam failure inundation zone of Stafford Lake (Novato 2014 and ABAG 1995). However, the potential for flooding as a result of dam failure is minimal, because such dams are constructed under the jurisdiction of the Division of Safety of Dams (DSOD), which imposes strict standards for the design, maintenance, and ongoing monitoring. The dam at Stafford Lake is designed to withstand an earthquake of a Richter-scale magnitude up to 8.25 on the San Andreas Fault (Novato 2014). All dams are annually inspected by the DSOD engineers to ensure they are performing and being maintained in a safe manner. If determined to be structurally inadequate to withstand anticipated ground shaking, dams under the jurisdiction of DSOD are required to undergo seismic retrofitting. Therefore, with annual DSOD inspection and oversight, the potential for catastrophic failure is considered to be very low. In addition, the Project would not lower the height of the bridge, or result in a constriction of the streamflow in Novato Creek. The

Project's creek bank stabilization and rock slope protection/scour counter measures would improve protections to bridge in the event of flooding. Therefore, the impact from flooding as a result of a levee or dam failure is considered less than significant.

**j) Inundation by Seiche, Tsunami, or Mudflow – *No Impact***

The Project is not located near large bodies of water, such as a bay or reservoir, which would be at risk from a seiche. In addition, regional mapping shows that the Project area would not be inundated in the event of a tsunami (CalEMA 2009), and is not located within or adjacent to areas likely to produce debris flows or mudslides (USGS 1997). No impacts would occur.

### 3.10 Land use and Planning

	Potentially Significant Impact	Less-Than-Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
Would the Project:				
a. Physically divide an established community?			✓	
b. Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the Project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?				✓
c. Conflict with any applicable habitat conservation plan or natural community conservation plan?				✓

Discussion:

**a) Physically divide an established community – *Less than Significant***

During construction, the existing bridge crossing would be closed to vehicles for approximately five months. Vehicular traffic accustomed to using the Grant Avenue bridge would be detoured to use Novato Boulevard and Seventh Street. Construction activities would be temporary and would not cause a long-term impact on roadways. In addition, pedestrian and bicycle access across the bridge would be maintained during Project construction. This impact would be temporary in nature, would only affect vehicular traffic, and would not physically divide the community. Therefore, the impact would be less than significant.

Following construction, the Project would not physically divide an established community and would provide improved access, especially for pedestrians and bicyclists. No impact would occur.

**b) Conflict with any applicable land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect – *No Impact***

Applicable land use plans and regulations include the City of Novato General Plan and the City’s Zoning Code. The area surrounding the Project site has various land use and zoning designations including Residential, Mixed Use, Business and Professional Office, Neighborhood Commercial, and Planned District. Because the Project is a bridge widening project within the City right-of-way, the Project site does not have a zoning designation or a specific General Plan land use designation. As the Project is the rehabilitation of an existing bridge, it would not create a conflict with a general plan land use designation or zoning. No impact would occur.

Consistent with General Plan TR Policy 8 (Impacts of Transportation Improvements), the Project has been designed to reduce potential impacts. Examples include mitigation measures found throughout this report. The Project would not conflict with General Plan land use policies adopted for the purpose of avoiding or mitigating an environmental effect. No impact would occur.

**c) Conflicts with any Applicable Habitat Conservation Plan or Natural Community Conservation Plan – *No Impact***

No adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or State habitat conservation plan exists for the City or Marin County. No impact would occur.

### 3.11 Mineral Resources

	Potentially Significant Impact	Less-Than-Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
Would the Project:				
a. Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?				✓
b. Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?				✓

Discussion:

**a,b) Loss of Availability of a Known Mineral Resource of Value to the Region or Delineated by a General Plan – No Impact**

No known mineral resources or locally-important mineral resources occur at the Project site or in the immediate Project area (Novato 1996). No impact would occur.

### 3.12 Noise

	Potentially Significant Impact	Less-Than-Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
Would the Project result in:				
a. Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?			✓	
b. Exposure of persons to or generation of excessive ground borne vibration or ground borne noise levels?			✓	
c. A substantial permanent increase in ambient noise levels in the Project vicinity above levels existing without the Project?			✓	
d. A substantial temporary or periodic increase in ambient noise levels in the Project vicinity above levels existing without the Project?		✓		
e. For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the Project expose people residing or working in the Project area to excessive noise levels?				✓
f. For a project within the vicinity of a private airstrip, would the Project expose people residing or working in the project area to excessive noise levels?				✓

Discussion:

A noise and vibration assessment was prepared for the Project by Illingworth & Rodkin and was used in the preparation of this noise and vibration analysis (Illingworth & Rodkin 2014).

Two models to evaluate exterior noise levels resulting from the Project and to calculate the maximum and average noise levels anticipated during construction. Exterior noise levels resulting from the roadway realignment were calculated using the Federal Highway Administration (FHWA) Traffic Noise Model (TNM v.2.5). Roadway and receptor locations were digitized and input into the traffic noise model in a three-dimensional reference coordinate system. The FHWA Roadway Construction Noise Model (RCNM) was used to calculate the maximum and average noise levels anticipated during each phase of construction. This construction noise model includes representative sound levels for the most common types of construction equipment and the approximate usage factors of such equipment. The usage factors represent the percentage of time that the equipment would be operating at full power. Vehicles and equipment anticipated during each phase of construction were input into the RCNM to calculate noise levels at a distance of 80 feet, the approximate distance from the construction site to the nearest sensitive receptors (i.e., residences) to the northeast of the existing bridge.

## Existing Noise Environment

The major noise source affecting the Project site is vehicle traffic on Grant Avenue. A noise monitoring survey was completed that included three attended short-term (10-minute) noise measurements.

Short-term noise measurement ST-1 was approximately 100 feet from the center of Grant Avenue, adjacent to the outdoor play area of the Bridge Point Academy. The 10-minute average noise level was 56 dBA  $L_{eq}$ . Short-term measurement ST-2 was located approximately 73 feet from the center of Grant Avenue, adjacent to a former day care center playground. The 10-minute average noise level was 55 dBA  $L_{eq}$ . Short-term measurement ST-3 was located approximately 30 feet from the center of Grant Avenue, next to the apartment complex north and east of the existing bridge. The 10-minute average noise level was 66 dBA  $L_{eq}$ . Table 3.12-1 summarizes the results of these measurements.

Table 3.12-1 Summary of Short-Term Noise Measurement Data

Noise Measurement Location	$L_{max}$	$L_{(1)}$	$L_{(10)}$	$L_{(50)}$	$L_{(90)}$	$L_{eq}$
ST-1: ~100 feet from the center of Grant Avenue (3/18/2014, 2:30 p.m.-2:40 p.m.)	71	64	58	54	47	56
ST-2: ~73 feet from the center of Grant Avenue (3/18/2014, 2:50 p.m.-3:00 p.m.)	67	46	58	54	50	55
ST-3: ~30 feet from the center of Grant Avenue (3/18/2014, 2:50 p.m.-3:00 p.m.)	77	74	70	64	54	66

Source: Illingworth & Rodkin 2014

Sensitive receptors in the vicinity of the Project include residences 80 feet to the northeast of the existing bridge. Other sensitive receptors include a day care center adjacent to the east and south and a church/school campus to the west located approximately 130 to 160 feet from the Project site.

## Regulatory Criteria

The City of Novato exempts construction noise occurring between the hours of 7:00 a.m. and 6:00 p.m. on weekdays and between 10:00 a.m. and 5:00 p.m. on Saturdays from quantitative noise and vibration limits contained in the City's Municipal Code Section 19.22.070. Authorized construction activity and uses established through the discretionary land use permit process may be subject to specific noise conditions of approval and/or mitigation measures that are more restrictive.

The following City of Novato General Plan policies are applicable to the Project:

- SF Policy 38: Mitigate noise exceeding standards and significant noise impacts to the maximum feasible extent.
- SF Program 38.1: Require acoustical studies and mitigation measures for new developments and transportation improvements which affect noise sensitive uses such as schools, hospitals, libraries, group care facilities, and convalescent homes.
- SF Program 38.3: Continue to restrict truck traffic to designated routes.

**a, c) Exposure to Noise Levels in Excess of Standards or a Substantial Permanent Increase in Ambient Noise Levels – *Less than Significant***

**Compliance with Noise Standards**

***Construction***

Noise generated by Project-related construction activities would be a function of the noise levels generated by individual pieces of construction equipment, the type and amount of equipment operating at any given time, the timing and duration of construction activities, the proximity of nearby sensitive land uses, and the presence or lack of shielding at these sensitive land uses. Construction noise levels would vary on a day-to-day basis during each phase of construction depending on the specific task being completed. Each construction phase would require a different combination of construction equipment necessary to complete the task and differing usage factors for such equipment. Construction noise would primarily result from the operation of heavy construction equipment and the arrival and departure of heavy-duty trucks.

As stated in the Project Description, construction would occur between the hours of 7:00 a.m. and 6:00 p.m. on weekdays and between 10:00 a.m. and 5:00 p.m. on Saturdays. This would comply with the City’s noise requirements for construction activities and, therefore, the impact related to compliance with the City’s noise regulations would be less than significant during construction.

***Operation***

The completed Project would realign the eastbound lane of Grant Avenue approximately 6 feet to the south. The future noise environment at receptors in the Project vicinity would continue to result primarily from vehicular traffic along Grant Avenue.

The modeled exterior noise levels resulting from the roadway realignment are summarized below in Table 3.12-2. Noise levels were calculated at two monitoring locations adjacent to noise sensitive receptors in the area; see “Discussion” above for more detailed description. Calculated noise levels at noise measurement sites along the Project perimeter would be representative of the noise environment expected at receptors that would have direct line-of-sight to the roadway.

Table 3.12-2 Traffic Noise Modeling Results (dBA,  $L_{eq}(hr)$ )

Measurement of Receptor Location	Existing Noise Level (Ground Level)	Project Noise Level (Ground Level)
ST-2	58	58
ST-3	64	64

As can be seen when comparing existing and Project noise levels in Table 3.12-2, future noise levels with the Project at noise sensitive land uses near the Project site would not change significantly with the realigned roadway. The increase in the noise level is calculated to be less than 1 dBA  $L_{eq}$  and would be inaudible at noise sensitive land uses in the Project vicinity. This evaluation complies with General Plan SF Program 38.1 requiring acoustical studies for transportation improvements potentially affecting noise sensitive uses. Therefore, because the operational change in noise levels at sensitive receptors would be so small, operation of the Project would not alter the traffic noise levels such that a conflict with the noise ordinance would occur.

### **Substantial Permanent Increase in Ambient Noise Levels**

As stated above, and summarized in Table 3.12-2, future noise levels at noise sensitive land uses are calculated to be less than 1 dBA  $L_{eq}$  above existing noise levels and would be inaudible at noise sensitive land uses in the Project vicinity. This evaluation complies with General Plan SF Program 38.1 requiring acoustical studies for transportation improvements potentially affecting noise sensitive uses. Therefore, because the operational change in noise levels with the Project is so small, operation of the Project would not result in a significant permanent increase in ambient noise levels, and the impact would be less than significant.

#### **b) Exposure to Excessive Groundborne Vibration or Noise – *Less than Significant***

##### ***Construction***

Novato Municipal Code Section 19.22.090 (Vibration) exempts temporary construction activities from vibration limits. For the purpose of this analysis, Caltrans-recommended vibration thresholds are used. For structural damage, Caltrans uses a vibration limit of 0.5 inches/second peak particle velocity (in/sec PPV) for buildings structurally sound and designed to modern engineering standards, 0.3 in/sec PPV for older residential buildings, 0.25 for historic and some old buildings, and a conservative limit of 0.08 in/sec PPV for ancient buildings or buildings that are documented to be structurally weakened. All buildings in the Project vicinity are assumed to be structurally sound, but these buildings may or may not have been designed to modern engineering standards. No ancient buildings or buildings that are documented to be structurally weakened are known to exist in the area.

The only significant source of ground vibration associated with the Project would result from bulldozers and loaded trucks traveling to/from the site. A review of source data indicates that vibration levels expected from Project construction would typically range from 0.003 in/sec PPV to 0.089 in/sec PPV at a distance of 25 feet for the vast majority of proposed construction activities.

Vibration levels are highest close to the source, and then attenuate with increasing distance. Bulldozers and loaded trucks would be expected to generate vibration levels ranging from 0.02 to 0.03 in/sec PPV at the nearest residences approximately 80 feet from the construction site. As identified by Caltrans, the human response to vibration levels of 0.035 in/sec PPV is that the vibration is barely perceptible (Caltrans 2013). Therefore, construction-generated vibration would be less than the 'barely perceptible' level identified by Caltrans, and would not expose nearby residents to excessive groundborne vibration. In addition, vibration levels would not exceed the 0.3

in/sec PPV threshold and would not be expected to cause cosmetic damage at the nearest residences. The impact is less than significant.

### ***Operation***

Following construction, groundborne vibration in the Project area would result primarily from vehicular traffic along Grant Avenue. The Project would not include new development that would result in an increase in traffic levels in the area, and the improvements to the bridge and roadway would not result in additional travel lanes that would increase the corridor capacity of Grant Avenue. Therefore, the Project would not result in an increase in traffic levels that would have an effect on future vibration levels in the Project area. The operational impact would be less than significant.

### **d) Substantial Temporary Increase in Ambient Noise – *Less than Significant with Mitigation***

The FHWA RCNM was used to calculate the maximum and average noise levels anticipated during each phase of construction. Vehicles and equipment anticipated during each phase of construction were input into RCNM to calculate noise levels at a distance of 80 feet, the approximate distance from the construction site to the nearest residences to the northeast of the existing bridge. Other sensitive receptors in the Project vicinity include a day care center adjacent to the east and south and a church and school to the west located approximately 130 to 160 feet from the Project site.

Construction-related vehicles traveling to and from the Project site would generate worst-hour noise levels of approximately 57 dBA  $L_{eq}$  at a distance of 50 feet from the center of Grant Avenue assuming that the peak number of trucks expected on any one day would be approximately 8 one-way truck trips per hour and that up to 10 one-way vehicle trips would occur per hour for the construction crew. This would not substantially increase the ambient noise levels of 55 to 66 dBA  $L_{eq}$ , and the impact from construction-related vehicular traffic related to ambient noise levels would be less than significant.

Clearing and grubbing, demolition, formwork/concrete, and striping work would generate hourly average noise levels of 78 dBA  $L_{eq}$  at a distance of 80 feet. Maximum instantaneous noise levels would reach 78 dBA  $L_{max}$  at 80 feet. Construction-generated noise levels drop off at a rate of about 6 dBA per doubling of distance between the source and receptor; therefore the noise levels calculated at 80 feet would be about 4 dBA less at 130 feet (74 dBA) and 6 dBA less at 160 feet (72 dBA). Shielding provided by buildings or terrain would result in even lower construction noise levels at distant receptors. As shown previously in Table 3.12-1, the ambient noise level at the three noise measurement data locations ranges from 55 to 66  $L_{eq}$  and 67 to 77 dBA  $L_{max}$ . Therefore, Project construction would result in a significant temporary increase in ambient noise levels for nearby residences during construction.

### **Mitigation**

Mitigation Measure NO-1 includes actions such as designating an on-site complaint and enforcement manager who would be responsible for responding to any local complaints about construction noise; hours limiting noise-generating construction activities; prohibiting unnecessary idling; locating stationary noise generating equipment as far as possible from sensitive receptors; utilizing “quiet” air compressors; and preparing a detailed construction plan identifying the schedule

for major noise-generating construction activities to achieve compliance with the City noise ordinance and applicable general plan policies, which would reduce the temporary increase in ambient noise levels during construction. Implementation of Mitigation Measure NO-1 would reduce noise from construction activities to a less-than-significant level.

### **Mitigation Measure NO-1: Reduce Construction Noise**

During Project construction, the following measures shall be incorporated into the Project to reduce daytime noise impacts to the maximum feasible extent:

- A preconstruction meeting shall be held between the City and the general contractor/on-site project manager to confirm that noise mitigation and practices are completed prior to commencement of construction (including construction hours, neighborhood notification, posted signs, etc.).
- A notice regarding an on-site complaint and enforcement manager shall be posted. The manager will respond to and track complaints. The manager shall be responsible for responding to any complaints regarding construction noise and for coordinating with the adjacent land uses. The manager shall determine the cause of any complaints and coordinate with the construction team to implement effective measures (considered technically and economically feasible) warranted to correct the problem. The telephone number of the on-site complaint and enforcement manager shall be posted at the construction site and provided to neighbors in a notification letter.
- The contractor shall prepare a detailed construction plan identifying the schedule for major noise-generating construction activities, and distribute this plan to adjacent noise-sensitive receptors. The construction plan shall list the construction noise reduction measures identified in this mitigation measure, as well as the contact information for the designated on-site enforcement compliant and enforcement manager.
- Hours of construction shall be limited to between 7:00 a.m. and 6:00 p.m. on weekdays, and between 10:00 a.m. and 5:00 p.m. on Saturdays. No construction shall occur Sundays or official national holidays, except as otherwise authorized by the Community Development Director
- Semi-stationary equipment (e.g., generators, compressors, etc.) shall be located as far from nearby sensitive receptors as possible.
- The quietest available equipment and electrically-powered equipment shall be used, rather than internal combustion engines, where feasible.
- Equipment and on-site trucks used for Project construction shall utilize the best available noise control techniques (e.g., improved mufflers, equipment redesign, use of intake silencers, ducts, engine enclosures, and acoustically attenuating shields or shrouds, wherever feasible). All construction equipment shall be inspected at periodic intervals to ensure proper maintenance and resulting lower noise levels.
- Impact tools (e.g., jack hammers, pavement breakers, rock drills) used for Project construction shall be hydraulically or electrically powered wherever possible to avoid noise associated with compressed-air exhaust from pneumatically powered tools. An

exhaust muffler on the compressed-air exhaust shall be used; this muffler can lower noise levels from the exhaust by up to about 10 dBA. External jackets on the tools themselves shall be used where feasible, which could achieve a reduction of 5 dBA.

- As a required commitment to Caltrans to utilize HBRR funding, the City and its contractor shall employ all appropriate and adequate best management practices (BMPs) related to noise provided in the *2015 Caltrans Standard Specifications* (Section 14-8, Noise and Vibration).

**e, f) Exposure of People Residing or Working near an Airport or Private Airstrip to Excessive Noise Levels – *No Impact***

The Project area is not located within an adopted airport land use plan or within two miles of a public or private airport (Marin County ALUC 1991, Figure 3-1). Therefore, construction and operation of the Project would not expose workers to airport-related noise. No impact would occur.

### 3.13 Population and Housing

	Potentially Significant Impact	Less-Than-Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
Would the Project:				
a. Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?				✓
b. Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?				✓
c. Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?				✓

Discussion:

**a) Induce Substantial Population Growth – No Impact**

The Project would rehabilitate an existing bridge and stabilize creek banks beneath the bridge. The bridge rehabilitation would not result in additional roadway lanes and would not increase the vehicle capacity of Grant Avenue. Implementation of the Project would not result in new development, nor would it include new housing or businesses. Therefore, the Project would not induce population growth in the area. No impact would occur.

**b. & c) Displace Substantial Numbers of Existing Housing or People – No Impact**

The Project would not displace existing housing or people and would not require construction of replacement housing elsewhere. No impact would occur.

### 3.14 Public Services

	Potentially Significant Impact	Less-Than-Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
Would the Project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:				
a. Fire protection?				✓
b. Police protection?				✓
c. Schools?				✓
d. Parks?				✓
e. Other public facilities?				✓

Discussion:

**a, b, c, d, e) Impacts Associated with New or Altered Fire or Police Protection, Schools, Parks, or Other Facilities – No Impact**

Implementation of the Project would not induce population growth, and therefore would not require expanded fire or police protection facilities to maintain acceptable service ratios, response times, or other performance objectives (see Section 3.13, Population and Housing). The Project would not result in an increase in the City’s student population and, therefore, no new or expanded schools would be required. The Project would not result in the increased use of existing parks and other public facilities or require the expansion of recreational facilities to maintain acceptable service ratios in parks. No impact would occur.

Potential impacts to emergency access during construction are addressed in Section 3.16, Transportation/Traffic.

### 3.15 Recreation

	Potentially Significant Impact	Less-Than-Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
Would the Project:				
a. Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?				✓
b. Include recreational facilities or require the construction or expansion of recreational facilities, which might have an adverse physical effect on the environment?				✓

Discussion:

**a) Increase in the Use of Existing Facilities Resulting in Substantial Physical Deterioration – No Impact**

By its nature, the Project would not directly or indirectly induce substantial population growth (see Section 3.13, Population and Housing). Therefore, the Project would not increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated. No impact would occur.

**b) Include Recreational Facilities or Require the Construction or Expansion of Recreational Facilities and have an Adverse Physical Effect on the Environment – No Impact**

There are no parks or park facilities planned for development as part of the Project. Therefore, no impact would occur from construction or expansion of new recreational facilities.

### 3.16 Transportation and Traffic

	Potentially Significant Impact	Less-Than-Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
Would the Project:				
a. Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?			✓	
b. Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?				✓
c. Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?				✓
d. Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?				✓
e. Result in inadequate emergency access?			✓	
f. Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?				✓

Discussion:

**a) Conflict with an Applicable Plan, Ordinance, Policy, or Program Establishing Measures of Effectiveness for the Performance of the Circulation System – *Less than Significant***

As described in Section 1.5.5, Project Construction, there would be periods when Grant Avenue would be closed to vehicular traffic at each end of the bridge. During such periods, vehicular traffic accustomed to using the Grant Avenue Bridge would be detoured to use Novato Boulevard and Seventh Street. From the Grant Avenue / Virginia Avenue intersection, eastbound vehicular traffic would be detoured to use Grant Avenue to Novato Boulevard to Seventh Street. From the Grant Avenue / Eighth Street intersection, westbound vehicular traffic would be detoured to use Grant Avenue to Seventh Street to Novato Boulevard. This equates to an additional 4,000 feet (0.75 mile) of travel distance to get from one side of the bridge to the other. The proposed detour route is shown on Figure 5.

The following analysis examines the potential impact of closure of the Grant Avenue Bridge during construction. As noted in Section 1.2, Project Objectives, the Project would improve streetscape conditions and safety of motorists, bicyclists, and pedestrians within the public right-of-way on the bridge.

**Construction-Phase Level of Service Comparative Analysis**

Novato General Plan TR Program 4.1 establishes a level of service (LOS) D standard at intersections with signals or four-way stop signs and a LOS E standard at intersections with stop signs on side streets only. This standard for operational impacts is applied here to analyze the potential for temporary traffic impacts related to Project construction. Therefore, a Highway Capacity Manual LOS analysis was conducted to estimate the LOS and associated delay during the temporary construction time period. This analysis was conducted for weekday AM and PM peak hours using Synchro 8 software. LOS criteria are defined in Table 3-16-1.

Table 3-16-1 Level of Service Criteria for Signalized and Unsignalized Intersections

Level of Service	Average Control Delay (sec/veh)	
	Signalized Intersections	Unsignalized Intersections
A	≤ 10	≤ 10
B	> 10 – 20	> 10 – 15
C	> 20 – 35	> 15 – 25
D	> 35 – 55	> 25 – 35
E	> 55 – 80	> 35 – 50
F	> 80	> 50

Notes: TRB, 2000.

The intersections evaluated in the LOS analysis for this Project are:

- Virginia Avenue / Grant Avenue intersection
- Grant Avenue / Eighth Street intersection
- Grant Avenue / Seventh Street intersection
- Grant Avenue / Novato Boulevard intersection
- Novato Boulevard / Seventh Street intersection

Table 3.16-2 summarizes the baseline LOS for these intersections. Each intersection currently operates at an LOS that is in compliance with local standards (i.e., TR Program 4.1).

Table 3.16-2 Existing LOS

No.	Intersection	AM		PM		Local LOS Standard
		Delay (sec)	LOS	Delay (sec)	LOS	
<b>1</b>	<b>Virginia Ave. and Grant Ave.<sup>1</sup></b>	<b>13.9</b>	<b>B</b>	<b>15.9</b>	<b>C</b>	<b>E</b>
	<i>Northbound Approach</i>	8.4	A	8.3	A	E
	<i>Eastbound Approach</i>	13.9	B	15.9	C	E
<b>2</b>	<b>Grant Ave. and Eighth St.<sup>1</sup></b>	<b>16.1</b>	<b>C</b>	<b>32.9</b>	<b>D</b>	<b>E</b>
	<i>Eastbound Approach</i>	0.8	A	0.6	A	E
	<i>Westbound Approach</i>	0.6	A	0.2	A	E
	<i>Northbound Approach</i>	12.2	B	11.4	B	E
	<i>Southbound Approach</i>	16.1	C	32.9	D	E
<b>3</b>	<b>Grant Ave. and Seventh St.<sup>2</sup></b>	<b>16.7</b>	<b>B</b>	<b>22.6</b>	<b>C</b>	<b>D</b>
<b>4</b>	<b>Grant Ave. and Novato Blvd.<sup>2</sup></b>	<b>24.3</b>	<b>C</b>	<b>28.2</b>	<b>C</b>	<b>D</b>
<b>5</b>	<b>Novato Blvd. and Tamalpais Ave./ Seventh St.<sup>2</sup></b>	<b>31.4</b>	<b>C</b>	<b>28.0</b>	<b>C</b>	<b>D</b>

Notes: <sup>1</sup>LOS based on HCM 2000 method for Unsignalized Intersections

<sup>2</sup>LOS based on HCM 2000 method for Signalized Intersections

Table 3.16-3 summarizes the LOS results that would occur during construction and re-routing of traffic. For this analysis, existing adjacent street traffic was routed from the bridge and through the proposed detour along Novato Boulevard, Seventh Street, and Grant Avenue, as described above. The analysis shows that the re-routing of traffic would not substantially affect the peak-hour conditions and that intersections would continue to operate satisfactorily during construction in accordance with local LOS standards.

It is anticipated that Intersections No. 1, 2, and 3 would temporarily improve during construction because entering traffic volumes would be reduced, particularly during the PM peak hour.

During construction, vehicles that would normally turn left from eastbound Novato Boulevard onto Grant Avenue (Intersection 4) would instead be diverted to Intersection 5. Therefore, Intersection No. 4, Grant Avenue and Novato Boulevard, would experience a temporary reduction in eastbound left-turns onto Grant Avenue and a corresponding reduction in overall intersection delay. Therefore, although Intersection 4 is expected to see a temporary increase between 250 and 400 vehicles per hour during the peak hour, the changes in turning movements due to detour and the reduction in east-bound left-turns would not reduce the LOS of the intersection. Intersection 4 has capacity for this added volume and the corresponding overall delay and LOS would not drop below LOS C.

Table 3.16-3 Temporary Construction Period LOS

No.	Intersection	AM		PM		LOS Standard
		Delay (sec)	LOS	Delay (sec)	LOS	
<b>1</b>	<b>Virginia Ave. and Grant Ave.<sup>1</sup></b>	<b>12.2</b>	<b>B</b>	<b>10.8</b>	<b>B</b>	<b>E</b>
	<i>Northbound Approach</i>	8.0	A	7.6	A	E
	<i>Eastbound Approach</i>	12.2	B	10.8	B	E
<b>2</b>	<b>Grant Ave. and Eighth St.<sup>1</sup></b>	<b>13.1</b>	<b>B</b>	<b>13.3</b>	<b>B</b>	<b>E</b>
	<i>Eastbound Approach</i>	0.0	A	0.0	A	E
	<i>Westbound Approach</i>	3.2	A	1.6	A	E
	<i>Northbound Approach</i>	8.4	A	8.6	A	E
	<i>Southbound Approach</i>	13.1	B	13.3	B	E
<b>3</b>	<b>Grant Ave. and Seventh St.<sup>2</sup></b>	<b>15.8</b>	<b>B</b>	<b>20.9</b>	<b>C</b>	<b>D</b>
<b>4</b>	<b>Grant Ave. and Novato Blvd.<sup>2</sup></b>	<b>21.2</b>	<b>C</b>	<b>16.6</b>	<b>B</b>	<b>D</b>
<b>5</b>	<b>Novato Blvd. and Tamalpais Ave./Seventh St.<sup>2</sup></b>	<b>53.4</b>	<b>D</b>	<b>35.1</b>	<b>D</b>	<b>D</b>

Notes: <sup>1</sup>LOS based on HCM 2000 method for Unsignalized Intersections

<sup>2</sup>LOS based on HCM 2000 method for Signalized Intersections

Intersection No. 5, Novato Boulevard and Tamalpais Avenue / Seventh Street, is expected to have a temporary increase in overall intersection delay and corresponding reduction in LOS. The intersection is expected to see a temporary increase in total entering volume between 400 and 500 vehicles per hour during the peak hour. The primary affected movements would be the eastbound left and southbound right turn lanes. With the temporary added eastbound left turn volume, the individual movement approaches capacity; however, the associated overall delay and corresponding LOS are not expected to drop below the City's standard of LOS D.

During the AM peak hour, the anticipated temporary delay through the Project area would be less than 10 seconds, based on additional travel time and delay at the associated intersections. During the PM peak hour, this temporary delay would be less than 5 seconds. These conditions would fall within the City's LOS standards; therefore, the Project would have a less-than-significant impact on traffic circulation.

The amount of delay would likely be reduced during construction as motorists become aware of the bridge closure and find alternative routes of travel. In addition, with public notification through resident letter notification and changeable message signs (CMS) or equivalents at strategic locations for public notification purposes, it is expected that the temporary impact on adjacent street traffic during construction would be further reduced.

### ***Operational Analysis***

As described in Section 1.5.2, Intersection Modifications, the existing 3-legged intersection of Grant Avenue and Virginia Avenue currently operates as a non-standard two-way stop controlled intersection. The northbound approach on Grant Avenue consists of two lanes, one for left turns westbound onto Virginia Avenue and one for right turns to continue eastbound on Grant Avenue. Both movements from Grant Avenue at the intersection are uncontrolled. The eastbound approach on Virginia Avenue is a single stop controlled lane. The westbound approach on Grant Avenue across the bridge is divided into two lanes by a median island, with the left turn to southbound Grant Avenue movement uncontrolled and a stop controlled right turn to Virginia Avenue.

The project would modify the Grant Avenue/Virginia Avenue intersection to an all-way stop control intersection. This would include removal of medians, and each approach would consist of a single stop controlled lane. The rehabilitation of the bridge and proposed intersection improvements would improve operational traffic conditions and flow across the bridge and at the intersection of Grant and Virginia avenues by providing travel lanes meeting current design controls, eliminating unusual geometrics and controls at the intersection, and installing new bicycle and pedestrian facilities. With the proposed improvements, the Grant Avenue/Virginia Avenue intersection would operate acceptably at LOS A during the morning peak period and LOS B during the evening peak period (W-Trans 2018). No operational impact would occur.

#### **b) Conflict with an Applicable Congestion Management Program – *No Impact***

The Project would comply with the City's General Plan Transportation Policy 1, Regional Transportation Efforts, which requires development projects to be consistent with the Marin County Congestion Management Program (CMP). The General Plan requires that the City work with the Marin Countywide Planning Agency (i.e., Marin Congestion Management Agency) to execute the CMP, which includes such growth management techniques as including traffic LOS requirements, standards for public transit, trip reduction programs and capital improvement programming for the purpose of controlling and reducing the cumulative regional traffic impacts of development.

As indicated in the response to Impact 3.16.a, the Project would not degrade the LOS at any of the study area intersections. Also, as noted in the response to Impact 3.16.f below, the Project's objective is to improve pedestrian and bicycle facilities on the bridge and its approaches. The Project would not degrade alternative transportation opportunities. Therefore, the Project would have no impact to the Marin County CMP.

#### **c) Result in a Change in Air Traffic Patterns – *No Impact***

The Project site is approximately 2.65 miles from Gness Field, owned and operated by Marin County. Construction and operation of the Project would not affect air traffic patterns because the Project is not located within an airport land use plan and is not growth inducing. No impact would occur.

#### **d) Substantially Increase Hazards due to a Design Feature or Incompatible Use – *No Impact***

The Project would improve streetscape conditions and safety of motorists, bicyclists, and pedestrians within the public right-of-way on the bridge. The rehabilitation of the bridge would improve operational traffic conditions and flow across the bridge and at the intersection of Grant

and Virginia avenues by providing travel lanes meeting current design controls, as well as bicycle and pedestrian facilities as described above. The Project would have no impact resulting from hazardous design features and/or incompatible uses.

**e) Result in Inadequate Emergency Access – Less than Significant**

As described in Section 1.5.5, Project Construction, there would be periods when Grant Avenue would be closed to vehicular traffic at each end of the bridge. As described in the Project Description, emergency responders would be notified in advance of closure dates. Grant Avenue on either side of the bridge would remain open during construction and could be accessed by emergency responders using alternative routes. As shown in Table 3.16-4, it is anticipated that Intersections No. 1, 2, and 3 would have a reduction in delay during construction because entering traffic volumes would be reduced, particularly during the PM peak hour. Although Intersection 4 would have an increase in peak-hour volume, the change in turning movements associated with the detour is anticipated to result in a reduction in delay during the construction period. It is anticipated that Intersection 5 would experience a minor increase in delay of 22 seconds during the AM peak hour, and 7.1 seconds during the PM peak hour. As identified in Impact 3.16.a, the associated overall delay and corresponding LOS are not expected to reduce Intersection LOS to below the City's standard of LOS D. Therefore, the temporary closure of the bridge during construction would have a less-than-significant impact on emergency access.

Following construction, the widened bridge would re-open, again providing emergency access across the bridge. No long-term impact would occur.

Table 3.16-4 Temporary Construction Period Change in Intersection Delay

No.	Intersection	Change in Delay (sec)	
		AM Peak Hour	PM Peak Hour
1	<b>Virginia Ave. and Grant Ave.<sup>1</sup></b>	<b>-1.7</b>	<b>-5.1</b>
	<i>Northbound Approach</i>	-0.4	-0.7
	<i>Eastbound Approach</i>	-1.7	-5.1
2	<b>Grant Ave. and Eighth St.</b>	<b>-3</b>	<b>-19.6</b>
	<i>Eastbound Approach</i>	-0.8	-0.6
	<i>Westbound Approach</i>	2.6	1.4
	<i>Northbound Approach</i>	-3.8	-2.8
	<i>Southbound Approach</i>	-3	-19.6
3	<b>Grant Ave. and Seventh St.</b>	<b>-0.9</b>	<b>-1.7</b>
4	<b>Grant Ave. and Novato Blvd.</b>	<b>-3.1</b>	<b>-11.6</b>
5	<b>Novato Blvd. and Tamalpais Ave./Seventh St.<sup>2</sup></b>	<b>22.0</b>	<b>7.1</b>

Notes: Change in delay is calculated as the difference between the Existing delay (Table 3.16-2) and Temporary Construction Period delay (Table 3.16-3). A negative number means delay is reduced

during the construction period, a positive number means that delay is increased during the construction period.

**f) Conflict with Adopted Policies, Plans, or Programs Regarding Public Transit, Bicycle, or Pedestrian Facilities, or Otherwise Decrease the Performance or Safety of Such Facilities – *No Impact***

No public transit routes in the City utilize the portion of Grant Avenue where the bridge is located. Grant Avenue in the Project area is not currently a designated Class I, II, or III bicycle lane. Therefore, the temporary closure of the bridge would not impact an existing public transit route or bikeway. Pedestrian traffic is currently limited to the north side of the bridge via a separate bridge adjacent to the vehicle bridge. The pedestrian bridge would be removed during construction. Pedestrian and bicycle access across the bridge would be maintained during construction by keeping one side of the bridge open, with signage to guide pedestrians through the construction zone.

The Project is included in the City's CIP and funding sources have been identified for its implementation. A review of applicable local and regional transportation/circulation plans (e.g., Novato Bicycle Plan, Novato General Plan, Marin County Regional Transportation Plan, Marin County Congestion Management Plan, and Marin County Transportation Vision) did not identify and potential conflicts with implementation of the Project.

The City adopted its 2015 Bicycle/Pedestrian Plan on March 24, 2015. In its review of collision history, the Plan noted one bicycle collision at Grant Avenue and Seventh Street. It provides a number of guidelines in its Design Considerations, which include suggested pedestrian sidewalk width, slope, obstructions/gaps, and signaling. The plan also addresses safe bicycle routes near schools, which would be considered in this Project with its proximity to Our Lady of Loretto School.

The rehabilitation of the bridge would improve operational traffic conditions and flow across the bridge and at the intersection of Grant and Virginia avenues by providing travel lanes meeting current design controls, as well as bicycle and pedestrian facilities as summarized in the Project Description. Therefore, the Project would have no impact resulting from hazardous design features and/or incompatible uses, and would not conflict with applicable adopted policies, plans, or programs.

### 3.17 Utilites and Service Systems

	Potentially Significant Impact	Less-Than-Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
Would the Project:				
a. Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?				✓
b. Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?				✓
c. Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?				✓
d. Have sufficient water supplies available to serve the Project from existing entitlements and resources, or are new or expanded entitlements needed?				✓
e. Result in a determination by the wastewater treatment provider which serves or may serve the Project that it has adequate capacity to serve the Project's projected demand in addition to the provider's existing commitments?				✓
f. Be served by a landfill with sufficient permitted capacity to accommodate the Project's solid waste disposal needs?			✓	
g. Comply with federal, state, and local statutes and regulations related to solid waste?			✓	

Discussion:

**a, b, d, e) Exceed Applicable Wastewater Treatment Requirements or Capacity – No Impact**

The Project would not result in the short-term or long-term generation of wastewater requiring treatment. Additionally, no new or expanded water or wastewater treatment facilities would be required as a result of the Project, as the Project would not require water or wastewater services. The Project would, therefore, not affect wastewater treatment requirements, require new water or wastewater facilities, or require expanded water supply entitlements. No impact would occur.

**c) Require Construction or Expansion of New Storm Drainage Facilities – No Impact**

Storm water runoff in the Project area currently sheet flows off the side of the roadway approaches and the bridge platform and would continue to do so under the Project. The Project would not alter or add new storm drain facilities. The Project does not require new storm drain facilities or expansion of existing storm drain facilities (see Impact 3.9.a,c,f). No impact would occur.

**f, g) Have Sufficient Landfill Capacity and Comply with Statutes Related to Solid Waste  
– Less than Significant**

Solid waste collection services in the City are conducted under the Marin County Solid and Hazardous Waste Joint Powers Authority (JPA) comprised of all Marin County's cities and unincorporated areas. The JPA contracts collection, hauling, and solid waste disposal throughout the County. Solid waste is hauled by the Novato Disposal Service and taken to the Redwood Landfill, which is located three miles north of the City. The permitted capacity at the Redwood Landfill is 2,300 tons per day. The remaining estimated capacity is 26,000,000 cubic yards (CY) (CalRecycle 2016).

Federal, State, and local statutes and guidance were reviewed for any recycling requirements for construction debris. Chapter 4.12 of the Novato municipal code requires that "covered projects" (i.e., every construction, demolition, and renovation project covering more than 500 square feet) develop a waste management plan (WMP) form documenting the nature of the waste-generating activity and how the Project would comply with the code. Generally, this would require diversion of approximately 50 percent of the waste to be diverted (recycled/reused). The City does not exempt itself from the requirement; therefore, the Project would need to comply.

Construction of the Project would include site demolition, excavation, grading, pavement cutting, and vegetation clearing. Therefore, there would be a temporary need for solid waste disposal during construction. Excavated soils would be used for backfill or hauled off-site for recycling or disposal as required by the City and County regulations. Non-hazardous materials would be taken to an approved local disposal area, such as the Redwood Landfill. Although not anticipated, any excavated materials and construction debris found to contain unacceptable levels of hazardous materials would be hauled to a licensed disposal site. As noted in Table 1-1, the amount of solid waste disposal needs for construction is approximately 496 CY of construction waste. Therefore, in comparison to the capacity remaining at the Redwood Landfill facility, the Project's construction-related solid waste disposal needs would be sufficiently accommodated, and the impact would be less than significant.

The Project is required to comply with the City's recycling and reuse requirements, which would further reduce construction-related solid waste disposal needs. Compliance with the requirements includes completion of a WMP, identifying the actual final total volume or weight of Construction and Demolition (C&D) debris, amount of materials that can feasibly be diverted via reuse, the facility receiving the materials, and receipts from the receiving facilities. The Redwood Landfill is a mixed C&D waste processing facility, certified by Zero Waste Marin's Board of Directors as achieving greater than 50 percent diversion of C&D waste. Therefore, the Project will achieve the diversion requirements through use of the City's WMP and sending C&D debris to the Redwood Landfill facility. Therefore, compliance with applicable statutes and regulations regarding construction waste would be conditionally required as part of the Project, and the Project would not conflict with or impede implementation of such programs. The impact would be less than significant.

Following construction, the Project would not require solid waste disposal and is not expected to have any effect on solid waste generation. No operational impact would occur.

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## 4. Mandatory Findings of Significance

	Potentially Significant Impact	Less-Than-Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
Would the Project:				
a. Does the Project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?		✓		
b. Does the Project have impacts that are individually limited, but cumulatively considerable? (“Cumulatively considerable” means that the incremental effects of a Project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?			✓	
c. Does the Project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?		✓		

### Discussion

**a, c) Degrade the Quality of the Environment or Have Environmental Effects which will Cause Substantial Adverse Effects on Human Beings- *Less than Significant with Mitigation***

With implementation of the recommended mitigation measures identified in this IS/MND, the Project would not have the potential to degrade the quality of the environment, including fish or wildlife species or their habitat, plant or animal communities, or important examples of California history or prehistory.

As described in Section 3.4 of this Initial Study, any potential environmental impacts from the Project would be mitigated to less-than-significant levels. The City would be responsible for ensuring standard mitigation measures and additional recommended mitigation measures for impacts in the areas of air quality, biological resources, cultural resources, hazardous materials, water quality, and noise are properly implemented. With these measures in place, the potential for Project-related activities to degrade the quality of the environment, including fish or wildlife species or their habitat, plant or animal communities, important examples of the major periods of California history or prehistory, or cause substantial adverse effects on human beings would be reduced to less-than-significant levels.

**b) Cumulatively Considerable Environmental Impacts - *Less than Significant***

Cumulative impacts are defined as “two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts” (CEQA Guidelines Section 15355). Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

A search was undertaken to identify projects in the vicinity of the Project area that may have overlapping or cumulative impacts with the proposed Project. Projects identified and considered for cumulative impacts include:

- Planned improvements to Novato Boulevard from Diablo Avenue to Grant Avenue, including travel lane additions, intersection improvements, raised and landscaped medians, and pedestrian and bicycle improvements.
- Planned redevelopment of commercial space into a mixed use development at 2001 Novato Boulevard, which is located approximately 0.5 mile west of the Project site.
- Planned redevelopment of retail space into a mixed use development at 1107 Grant Avenue, which is located approximately 0.6 mile to the west of the Project site.
- Planned redevelopment of a site into a hotel and commercial building at 7546 Redwood Boulevard, which is located approximately 0.8 mile to the northeast of the Project site.
- Planned mixed used development of townhomes and retail space on a vacant site at 7533/7537 Redwood Boulevard, which is located approximately 0.9 mile to the northeast of the Project site.

As summarized in Section 3 of this IS/MND, the Project would not result in impacts on scenic highways, agriculture and forest resources, mineral resources, population and housing, public services, recreational facilities, water supplies, wastewater utilities, storm drainage facilities, or long-term performance of the local roadway system. Therefore, implementation of the Project would not contribute to any related cumulative impact on those resources.

As described in Section 3.8, Hazards and Hazardous Materials, the Project would have less-than-significant impacts relative to the routine transport, use, or disposal of hazardous materials during construction with implementation of Mitigation measures HAZ-1 (Health and Safety Plan), HAZ-2 (Hazardous Materials Management Plan), and HYD-1 (Minimize Impacts to Novato Creek during Construction). Construction of the planned redevelopments on Novato Boulevard, Grant Avenue, and Redwood Boulevard may also requiring handling and disposal of hazardous materials, and compliance with established regulatory measures would be required for the cumulative projects. With implementation of the mitigation measures identified above, the Project's contribution to cumulative impacts related to hazardous substances would not be cumulatively considerable, and therefore would be less than significant.

As described in Section 3.16, Transportation and Traffic, the Project would have less-than-significant impacts on adjacent street traffic, delays, and emergency access during construction. Construction of the Novato Boulevard Improvement Project is not anticipated to occur during the same timeframe as the Project. Therefore, implementation schedules of these projects would be offset and would not overlap. Construction of redevelopment projects on Novato Boulevard, Grant Avenue, and Redwood Boulevard may utilize similar regional roadways, including Highway 101 and

Redwood Boulevard. However, given the locations of the cumulative projects in relation to each other, local haul truck routes could utilize different roadways, such as DeLong Avenue and San Marin Drive. Additionally, overlapping construction would not be expected to cause a significant cumulative impact relative to congestion, because intersections and roadways in the Project area operate acceptably in general and overlapping construction would be temporary.

The distance between the Project site and the identified cumulative projects would prevent the potential for cumulative impacts in the Project area related to health risks from construction-related air emissions, as well as from construction-related noise and vibration. None of the cumulative projects are located adjacent to Novato Creek or other nearby waterways in the local watershed. The distance and dissimilarity between the Project site and identified cumulative projects would prevent the potential for cumulative impacts to aesthetics, biological resources, cultural resources, geology and soils, hydrology and water quality, and utilities.

Based on the analysis above, the Project impacts summarized in Section 3 of this IS/MND would not add appreciably to any existing or foreseeable future significant cumulative impact. Incremental impacts, if any, would be very small, and the cumulative impact would be less than significant.

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## 5. Preparers

The following GHD team members prepared this Initial Study/Proposed MND.

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Air Quality and Noise Analyses

**Interactive Resources**

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## 6. References

- Alta Planning and Design. 2007. City of Novato *Bicycle Plan*. September.
- Association of Bay Area Governments (ABAG). 1995. *ABAG Resilience Program*.
- Bay Area Air Quality Management District (BAAQMD). 2011. California Environmental Quality Act: Air Quality Guidelines.
- California Department of Resources Recycling and Recovery (CalRecycle). 2015. *Facility/Site Summary Details: Redwood Landfill (21-AA-0001)*.
- California Emergency Management Agency (CalEMA). 2009. *Tsunami Inundation Emergency Planning Map for the San Francisco Bay Region*.
- Cal EPA. 2018. *Cortese List Data Resources*. Website accessed October 8, 2018, at: <https://calepa.ca.gov/SiteCleanup/CorteseList/>
- California Department of Conservation (CDC), Division of Land Resource Protection. 2013. *Marin County Williamson Act FY 2012/2013*.
- CDC, Division of Land Resource Protection. 2011. *Marin County Important Farmland 2010*.
- CDC, Division of Mines and Geology. 2000. *A General Location Guide for Ultramafic Rocks in California – Areas More Likely to Contain Naturally Occurring Asbestos*. August.
- Caltrans. 2011. *Exhibit 6-A – Preliminary Environmental Study (PES) Form*.
- Caltrans. 2013. *Transportation and Construction Vibration Guidance Manual*. September.
- Caltrans. 2015a. *Natural Environment Study – Grant Avenue Bridge Rehabilitation Project*, Marin County. March.
- Caltrans. 2015b. *Biological Assessment – Grant Avenue Bridge Rehabilitation Project*, Marin County. April.
- Caltrans. 2018. *Marin County Scenic Highways Map*. Website accessed October 8, 2018, at: [http://www.dot.ca.gov/hq/LandArch/16\\_livability/scenic\\_highways/index.htm](http://www.dot.ca.gov/hq/LandArch/16_livability/scenic_highways/index.htm)
- California Department of Fish and Wildlife. 2010. *California Salmonid Stream Habitat Restoration Manual*. July.
- California Department of Fish and Wildlife (CDFW). 2013. *California Regional Conservation Plans*.
- California Department of Forestry and Fire Protection (CAL FIRE). 2008. *Very High Fire Hazard Severity Zones in LRA*. September.
- Cortright and Seibold. 1991. Airport Land Use Plan: Marin County Airport Gness Field. June 10.
- County of Marin, Department of Public Works. *Novato Creek Watershed: Anadromous Fish*. Website accessed March 20, 2014, at: [www.marinwatershed.org](http://www.marinwatershed.org)
- Environmental Library. 1987. Corps of Engineers Wetlands Delineation Manual. January.
- Federal Emergency Management Agency (FEMA). 2009. *Flood Insurance Rate Map*. Marin County, California. Panel 227 of 531, Map Number 06041C0277D. Effective May 4, 2009.

Garcia and Associates (GANDA). 2014. *Delineation of Waters of the United States*. July.

Garcia and Associates (GANDA). 2015a. *Archaeological Survey Report*. April.

GANDA. 2015b. *Extended Phase 1 Report*. April.

Interactive Resources. 2015a. *Historic Property Survey Report*. April.

Interactive Resources. 2015b. *Historic Resource Evaluation Report*. April.

National Marine Fisheries Service. (NMFS) 2011. *Anadromous Salmonid Passage Facility Design*. July.

NMFS. 2016. Endangered Species Act Section 7(a)(2) Biological Opinion and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Response for the Grant Avenue Bridge Rehabilitation Project on Novato Creek in the City of Novato, California. May 31.

Novato, City of (Novato). 1996. *City of Novato General Plan*.

Novato. 2001. *Novato Zoning Map*. April 24.

Novato. 2009. *The City of Novato Emergency Operations Plan*. May.

Novato. 2010. *Capital Improvement Plan*. June.

Novato. 2014. *City of Novato Existing Conditions Report*. March 10.

Novato. 2015. *City of Novato Bicycle/Pedestrian Plan*. March 24.

Sawyer, et. al. 2009. *A Manual of California Vegetation, Second Edition*. June

San Francisco Bay Region Regional Water Quality Control Board (SFBRWQCB). 2016. *303(d) List of Impaired Water Bodies*.

SFBRWQCB. 2017. *San Francisco Bay Basin (Region 2) Water Quality Control Plan*. Updated to reflect amendments adopted through May 4, 2017.

SMAQMD. Roadway Construction Emissions Model, Version 8.1.0. May 2016.

U.S. Army Corps of Engineers. 2008. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0)*. September.

U.S. Department of the Interior, U.S. Geological Survey (USGS). 1997.

U.S. Fish and Wildlife Service (USFWS). 2014. *Habitat Conservation Plans*. Website Accessed at: [http://www.fws.gov/sacramento/es/Habitat-Conservation-Plans/es\\_hcp.htm](http://www.fws.gov/sacramento/es/Habitat-Conservation-Plans/es_hcp.htm)

USGS. 2015. *Land Subsidence*. Website Accessed at: <http://water.usgs.gov/edu/earthgwlandsubside.html>

USGS. 1997. Principal Debris-Flow Source Areas in the San Francisco Bay Region.

WRA. 2007. *Daily Monitoring Construction Log*.