

## **9 | Water Quality Assessment (August 2019)**



# Memorandum

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Environmental Coordinator  
Caltrans District 1 Eureka

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**Subject: WATER QUALITY ASSESSMENT MEMORANDUM FOR FORT BRAGG ADA PROJECT**

## **Project Description**

The purpose of this project is to address ADA deficiencies within the project limits. The project proposes to replace existing curb ramps with ADA compliant ramps at select intersections, place new sidewalk at gaps in the system where no sidewalks currently exist, install high visibility signing/stripping at crosswalks, construct one retaining wall, and install or upgrade existing drainage systems on Highway 1 in Fort Bragg between post miles 59.8 and 62.1. The retaining wall will be a standard detail Type 6A wall approximately 10 feet tall at its highest point near the intersection of Highway 20 and will reduce in height moving north. The wall will be approximately 1 foot wide and with a footing that is 7 feet wide and 1.25 feet in depth. The maximum depth of excavation is estimated to be 3 feet from finished grade. The new sidewalks, curb extensions and bulbouts at intersections will require new drainage inlets but these will tie into the existing drainage system; therefore, there will be no modification to the line, grade, or hydraulic capacity of the drainage systems.

## **Regulatory Setting**

The proposed project is subject to policies and regulations that are currently in place to protect surface water quality. These stormwater and non-stormwater discharge requirements require Caltrans to implement operational controls for proper runoff management and adequate water quality treatment. The project is required to comply with the following federal and state water quality regulations;

- Clean Water Act sections 303, 401, 402, and 404;
- Water Quality Control Plan for the North Coast Region (Basin Plan) (North Coast Regional Water Quality Control Board [NCRWQCB 2011]);

- California Department of Transportation (Caltrans) Statewide NPDES Storm Water Permit (Caltrans NPDES Permit) Order 2012-0011-DWQ (State Water Resources Control Board [SWRCB 2012]);
- General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (Construction General Permit (CGP)) Order 2009-0009-DWQ (as amended by Orders 2010-0014-DWQ and 2012-0006-DWQ) (SWRCB 2014).

Clean Water Act Section 401 regulations allow the Executive Officer of the Regional Boards wide discretion in implementing Basin Plan requirements and water quality objectives (WQOs), including Section 303(d) of the Clean Water Act. The proposed project is within State Water Board (SWB) Region 1. Water quality regulations within Region 1 are administered by the North Coast Regional Water Quality Control Board (NCRWQCB) which regulates stormwater and non-stormwater discharges through the 401 Certification program. The NCRWQCB requires that all projects subject to 401 Certification evaluate the implementation of post-construction stormwater treatment BMPs to treat stormwater discharged from the Caltrans right-of-way. Post-construction treatment BMPs are required for any increase in impervious surface area; or modification to the location, rate, or volume of existing stormwater discharges. Any required control measures will be addressed in the NCRWQCB 401 Certification Application (North Coast RWQCB 2012; Section 5, A and B).

Under CWA Section 404, a permit program administered by the United States Army Corps of Engineers (USACE) regulates the discharge of dredge and fill materials into waters of the U.S., including traditional navigable waters, interstate waters, and impoundments of jurisdictional waters which are jurisdictional by rule. There are two additional types, 'tributaries' and 'adjacent' waters that are also subject to this by jurisdictional rule. 'Adjacent' waters are defined as the following (USEPA 2015);

1. Waters located in whole or part within 100 feet of the OHWM of a traditional navigable water, interstate water, territorial sea, an impoundment of a jurisdictional water, or a tributary, as defined by rule.
2. Waters located in whole or in part in the 100-year floodplain and that are within 1,500 feet of the OHWM of a traditional navigable water.

Depending on the chosen alternative, the project may or may not be subject to CWA Section 404 regulations and permitting. The proposed project is within the USACE San Francisco District regulatory consultation boundary.

The Water Quality Control Plan for the North Coast Region (Basin Plan) sets forth water quality standards and water quality objectives (WQOs) for surface water and groundwater of the Klamath River and North Coastal basins (NCRWQCB 2011). The plan designates beneficial uses for water bodies and establishes WQOs, waste discharge prohibitions, and other implementation measures to protect those beneficial uses. State water quality standards also include an *Anti-degradation Policy* for the protection of beneficial uses. Water quality control measures include total maximum daily loads (TMDLs), which are often, but not always, adopted as Basin Plan amendments. Stormwater discharges from Caltrans Right-of-Way are required to meet to meet water quality criteria established in the North Coast RWQCB Basin Plan, in accordance with Caltrans NPDES Permit.

The SWRCB issued a statewide National Pollution Discharge Elimination System (NPDES) permit to Caltrans (Order 2012-0011-DWQ) to regulate stormwater and some non-stormwater discharges from the Caltrans right-of-way. The Caltrans NPDES Permit also requires post-construction treatment BMPs for increases in impervious surface area of one acre or more and any alterations to existing flow patterns (e.g., hydromodification). The permit also requires that Caltrans construction projects disturbing one or more acres of soil obtain coverage under the Statewide Construction General Permit (CGP).

Every applicant for a federal permit or license for any activity that may result in a discharge of dredge or fill material to waters of the U.S. must obtain a CWA Section 401 Water Quality Certification. However, if a proposed project does not require a federal permit but does involve dredge or fill activities that *may* result in a discharge to "Waters of the State", the Regional Board has the option to regulate the project under state authority (Porter-Cologne) in the form of *Waste Discharge Requirements* (WDRs) or *Waiver of Waste Discharge Requirements*. The proposed project is within North Coast RWQCB jurisdiction.

Since the project is located within and adjacent to "Waters of the State", it may impact those waters, and will be required to apply for a Water Quality Certification and/or Waste Discharge Requirements (Dredge/Fill Projects). The regulations apply to all "Waters of the State", including isolated wetlands and stream channels that may be dry during much of the year, or have been modified in the past, look like a depression or drainage ditch, or have no riparian corridor (NCRWQCB 2016). Other aspects of the project which may cause a requirement for a Water Quality Certification and/or Waste Discharge Requirements include adjustments to drainage inlets, various stormwater culvert extensions, and a stormwater culvert extension which connects to a preexisting drainage system into the Noyo River.

#### *NPDES Compliance Unit Credits*

Caltrans NPDES Permit (Order No. 2012-0011-DWQ) requires the annual accrual of 1650

stormwater treatment compliance units Statewide. One Compliance Unit (CU) is equivalent to one acre of the Departments right-of-way from which stormwater runoff is retained, treated, or otherwise controlled prior to discharge to a TMDL priority waterway. The proposed project is within a Caltrans TMDL prioritization area (Noyo River) between PM 59.8 and 60.7, and therefore eligible to obtain compliance unit credits for stormwater treatment in excess of any the post-construction treatment area (PCTA) requirements.

One Compliance Unit (CU) is credited for each acre of stormwater runoff that is retained or treated within the Caltrans right-of-way. Concentrated flow conveyance treatment BMPs (e.g., channel linings, velocity dissipation devices) or infiltration BMPs (e.g., biostrips, bioswales) that minimize the amount of sediment eroded and transported to TMDL listed waterways are eligible for CUs. The drainage area and number of potential CUs obtained by adding permanent stormwater treatment BMPs between PM 59.8 and 60.7 should be calculated and documented in the PA&ED and PS&E Long Form Stormwater Data Report (SWDR).

### **Hydrology**

The project location lies within the Mendocino Coast hydrologic unit and Noyo River hydrologic area (Table 1). The Mendocino Coast incorporates nine hydrologic areas (California Water Boards 2017). The unit can be described as an area of coastal streams in Mendocino and northern Sonoma Counties which drain into the Pacific Ocean. Drainage systems include the Usal Creek drainage in the north and the Russian Gulch drainage in the south (California Regional Water Quality Control Board 2001). Among the various watersheds located within the unit, TMDLs have been developed for the Ten Mile River, Noyo River, Navarro River, and Garcia River (California Water Boards 2017).

*Table 1: Hydrologic Information*

Route	Post Mile	Hydrologic Unit	Hydrologic Area	Hydrologic Sub-Area	Watershed	Average Annual Precipitation (Inches)
01	59.8-62.1	Mendocino Coast	Noyo River	113.20	Pudding Creek-Frontal Pacific Ocean	43.47-46.23
01	60.2-60.5	Mendocino Coast	Noyo River	113.20	Noyo River	51.37

The Noyo River watershed, a 106,256-acre coastal tributary which contains approximately 200 miles of habitat for fish and 300 miles of habitat for amphibians, drains into the Pacific Ocean at Fort Bragg, CA via the Noyo River (Gledhill and Gaffney 2007). Principal land use of the watershed consists of timber production, and the watershed also provides an environment for cold freshwater and estuarine habitats. Due to water quality impairments related to sedimentation which have impacted the cold-water fishery, the watershed is listed on the US EPA 303d List (US EPA 1999).

The Noyo river is approximately 34 miles in length and provides much of the drinking water for the city of Fort Bragg. Other than surface water used for drinking purposes, the river also provides recreation, timber resources, and an anadromous fish population which are threatened under the federal Endangered Species Act (California Water Boards n.d.). The Noyo River was declared a Critical Coastal Area by the California State Water Quality Control Board (CSWQB) in 1995 and a TMDL for sediment was developed in 1999 (Gledhill, Gaffney 2007).

The *Caltrans NPDES Permit No. CAS000003, Attachment IV* describes specific source controls for Sediment and Turbidity TMDLs. Specific control measures identified in the Caltrans NPDES Permit include;

- Protecting and stabilizing hillsides
- Intercepting and filtering stormwater runoff
- Avoiding concentrating flows in natural channels and constructed drainages
- Avoid and minimize the modification of natural runoff flow patterns (i.e., hydromodification)

**Geology/Soils**

According to a geological map created by Jayko et. al (1989), the geology within the project area is within the Coastal Franciscan Belt and is underlain with coastal terrane formed during the Eocene

to Upper Cretaceous periods. The Coastal Franciscan Belt is the westernmost part of the Franciscan Complex and covers an area of approximately 135,908 acres. Coastal terrane is a broken formation comprised of sandstone, argillite, conglomerate, chert, limestone, and greenstone. The terrane can be characterized as having zones of brittle shears, tight folding, faulting, and zones of moderately coherent bedded sections (Jayko et. al 1989). Comparatively, a map developed at a larger scale by Jennings and Strand (1960) describes the area as containing Pleistocene marine and marine terrace deposits.

The soil map unit between the beginning of the project (PM 59.8) and just before the Noyo River (PM 60.2) is designated as Heeser sandy loam, 2 to 15 percent slopes. This map unit consists of mainly Heeser soil and is within the Hydrologic Soil Group (HSG) type B (Caltrans 2012). This soil group generally has moderate infiltration rates when wet and generally consists of clay and sand (NRCS 2007). Furthermore, the soil has moderately rapid permeability and produces slow to medium surface runoff (NRCS 2006).

Just before the Noyo River (PM 60.2) to the end of the project (PM 62.1), apart from the Noyo River which crosses the project path, is largely comprised of urban land (Caltrans 2012). Urban land is considered as developed, populated areas with a mostly impervious surface. Impervious surfaces have high runoff potential and low infiltration rates.

The soil-erodibility factor (K), which defines the susceptibility to erosion, transportability of the sediment, and the amount/rate of runoff given a rainfall input, is given as 0.37. A K value of 0.37 implies a medium-textured soil which are moderately susceptible to particle detachment and produce moderate runoff rates. An annual erosivity value (R factor), a surrogate measurement of the impact of rainfall on erosion, is estimated at a value of 80. The LS factors, which represent the effect of slope length on erosion, are documented for each area within the project limits in Table 2 (Caltrans 2012).

*Table 2: LS Factors*

Approximate PM	LS Factor
59.8-60.38	2.9
60.38-62.10	2.25

**Disturbed Soil Area**

Two alternatives exist for this project. The amount of disturbed soil area (DSA) during construction is currently estimated at 1.55 acres for alternative 1 and 3.35 acres for alternative 2. Projects disturbing more than one acre of soil require coverage under the *California State Water Resources Control Board, Construction General Permit (CGP), Order No. 2010-0014-DWQ*. The CGP requires



that the construction contractor prepare a project specific Storm Water Pollution Prevention Plan (SWPPP) which identifies temporary construction site BMPs to prevent both stormwater and non-stormwater discharges during construction. Based on site specific conditions such as soil type, rainfall intensity and volume, and proximity to high risk receiving waters the project has been determined to be a CGP Risk Level 2 project (from Project Stormwater Data Report). Specific monitoring and reporting measures will need to be incorporated into the approved project SWPPP to comply with CGP Risk Level 2 requirements.

Caltrans construction staff must apply for coverage under the CGP through the Stormwater Multiple Application and Report Tracking System (SMARTS). The following project registration documents must be uploaded into SMARTS prior to the commencement of construction;

- Notice of Intent (NOI)
- Risk Level Assessment
- Post-construction Stormwater Run-off calculation
- Project Specific SWPPP

### **Impervious Surface Area and Hydromodification**

#### *Alternative 1*

The new impervious surface area, NIS (1.48 acres) is the addition of the net new impervious area, NNI (0.28 acres) and the replaced impervious surface, RIS (1.20 acres). The amount of existing impervious surface is 17.15 acres.

$$NIS = NNI + RIS, \quad NIS = 0.28 \text{ AC} + 1.20 \text{ AC} = 1.48 \text{ AC}$$

This alternative contains 1.14 acres of pedestrian sidewalk, , and separate bikeway construction which addresses issues related to ADA compliance. ADA construction is exempt from increases in impervious surface due to construction or reconstruction of pedestrian walkways. Therefore, the NIS post ADA exemptions (0.34 acres) is equal to the ADA exempt NIS subtracted from the original NIS calculated.

$$NIS_{PostExemption} = NIS - 1.14 \text{ AC} = 1.48 \text{ AC} - 1.14 \text{ AC} = 0.34 \text{ AC}$$

#### *Alternative 2*

The new impervious surface area, NIS (2.93 acres) is the addition of the net new impervious area, NNI (1.66 acres) and the replaced impervious surface, RIS (1.27 acres). The amount of existing impervious surface is 23.98 acres.

$$NIS = NNI + RIS, \quad NIS = 1.66 \text{ AC} + 1.27 \text{ AC} = 2.93 \text{ AC}$$

This alternative contains 2.57 acres of pedestrian sidewalk, and separate bikeway construction which addresses issues related to ADA compliance. Pursuant to *Attachment VIII, Redevelopment*, ADA construction is exempt from increases in impervious surface due to construction or reconstruction of pedestrian walkways. Therefore, the NIS post ADA exemptions (0.36 acres) is equal to the ADA exempt NIS subtracted from the original NIS calculated.

$$NIS_{PostExemption} = NIS - 2.57 AC = 2.93 AC - 2.57 AC = 0.36 AC$$

Post-construction stormwater treatment BMPs under *Caltrans NPDES Permit No. CAS000003* will not be required since the new impervious surface is less than one acre. The increase in rate and volume of stormwater flow associated with this increase NIS is not anticipated to result in any adverse modification.

To avoid any potential adverse hydromodification associated with this project, post construction treatment BMPs such as ditches, berms, dikes, swales, overside drains, flared end sections, and drainage system outlet protection devices will be evaluated in subsequent phases of the project and incorporated into the project as necessary. Drainage system design details for these features are anticipated in subsequent phases of the project (e.g., PS&E). Any impervious or pervious areas treated by the project in excess of post-construction treatment requirements (i.e., 3.71 acres) are non-mandatory treatment areas (NMTA). These NMTAs are eligible for Alternative Compliance or Compliance Unit credits.

### **Standard Water Quality Measures**

#### *Temporary Impacts to Water Quality*

Temporary impacts to water quality could occur during the construction phase of the project. Soil disturbing work within and adjacent to drainage systems could result in the transport of sediment and other pollutants to adjacent wetland and riparian areas.

The following BMPs from the *Caltrans Construction Site BMP Manual* (Caltrans 2017a) are anticipated to be incorporated into the approved project SWPPP:

1. Development of a schedule that includes sequencing of construction activities with implementation of construction site BMPs (SS-1)
2. Existing vegetation will be removed to the minimum extent necessary to facilitate the proposed work (SS-2).
3. Temporary access road entrances and exits will be stabilized and maintained to prevent sediment erosion and transport from the work area (TC-1).

4. Temporary drainage inlet protection methods such as gravel bags will be deployed to prevent sediment and other pollutants from entering drainage systems (SC-10).
5. Perimeter control devices such as fiber rolls, compost socks, gravel bags, and silt fences will be utilized to prevent sediment transport from the project site (SC-1, SC-5, SC-6, SC-11).
6. Concrete washout facilities, re-fueling areas, as well as equipment and storage areas should be covered and located away from drainage inlets and waterways to prevent both stormwater and non-stormwater discharges (WM-3, WM-8, NS-9).
7. Use of construction methods which uses water in a manner that avoids causing runoff, erosion, and/or discharge of pollutants to receiving waters (NS-1).
8. Paving, and sealing operations will be conducted to avoid and minimize the discharge of pollutants to receiving waters (NS-3).
9. Utilization of proper procedures to minimize any potential for runoff during concrete curing and finishing (NS-12, NS-14).
10. Proper procedures and practices for handling, storage, and use of construction materials that minimizes discharge to receiving waters or drainage system (WM-1, WM-2).
11. Spill prevention and control practices (WM-4).
12. Proper utilization of procedures to minimize or eliminate discharge of construction site sanitary and septic waste materials into receiving waters or drainage systems (WM-9).

Additional BMPs will also likely be incorporated in the approved project SWPPP during the construction phase of the project to address BMPs specific items of work.

*Permanent Impacts to Water Quality and Potential Treatment Areas*

Permanent impacts to water quality will be prevented by the incorporation of Design Pollution Prevention (DPP) BMP strategies found in Appendix A of the Stormwater Quality Handbooks: Project Planning and Design Guide (PPDG) (Caltrans 2017b). The following DPP BMP strategies are anticipated:


1. Prevention of downstream erosion
2. Stabilization of disturbed soil areas
3. Preservation of existing vegetation

It is anticipated that the inclusion of appropriate temporary and permanent BMPs mentioned above will avoid potential impacts to water quality and meet the requirements of the Caltrans NPDES Permit, CGP, and North Coast Basin Plan.

Water Quality Assessment Memorandum

August 8, 2019

Page 10 of 12



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