

Watershed Sciences (WS)

Watershed Sciences submitted a late comment letter on the Meadow Way Bridge Project Final Initial Study Mitigated Negative Declaration (Final IS/MND) May 29, 2020. Responses to those comments are provided below.

Comment WS-1

At your request, I have reviewed technical documents and reports prepared for the Final Initial Study/Mitigated Negative Declaration ("MND") for the Meadow Way Bridge Replacement Project ("Project"). In addition, I have reviewed published landslide maps of the US Geological Survey, viewed available official online Geographic Information System (GIS) maps in the MarinMap Map Viewer and the San Francisco Estuary Institute EcoAtlas, and reviewed 2013 Report from the Department of Fish and Wildlife East Marin County San Francisco Bay Watersheds Stream Habitat Assessment of San Anselmo Creek.

Response WS-1

The commenter provides introductory comments regarding their review of the Final IS/MND for the proposed Meadow Way Bridge Replacement Project. As the comment does not address the adequacy of the Final IS/MND, no further response is required.

Comment WS-2

Based on this review, my opinion is that this project has the potential for significant impacts that have not been adequately disclosed by the Project documents. This is because the potential for landslides on and off-site has not been sufficiently characterized.

Response WS-2

The site geologic and landslide hazards have been adequately evaluated and addressed. Detailed discussion is provided in Response to Comment WS-8.

Comment WS-3

The commenter states that the creek "channel has unstable hydraulic geometry that will be memorialized through hardening of the banks from project construction and involves grade control, rip-rap banks, and concrete walls that will cause continued upstream and downstream instability.". The commenter suggests repeatedly that the project is required to restore "stable" hydraulic geometry of Upper San Anselmo Creek.

Response WS-3

The hydraulic geometry of all of Upper San Anselmo Creek, not just within the site, is and has been "unstable" – by the academic definition – for more than 100 years. It has been well documented in the San Anselmo-Corte Madera Creek watershed and neighboring watersheds that creek channels became deeply incised and "abandoned" floodplains beginning around 1900 after decades of logging and grazing punctuated by several large floods.

The commenter suggests repeatedly that there potential for restoring "stable" hydraulic geometry of Upper San Anselmo Creek. However, she provides no substantial evidence to support her assertion. And, indeed, there is none that could be provided within the parameters of the Project's objective and without massive taking of private property. Restoring stable hydraulic geometry would require massive large-scale grading to set back the existing creek banks 50-75 feet. This would require removing swaths of riparian trees, demolishing creek bank retaining walls and residential accessory structures, relocating water supply and sanitary sewer pipes, etc. Residential dwellings occur on all of the former floodplain surfaces, typically within 15-25 feet from the top of creek bank. All of the lands are privately owned. Condemnation of private property

would be required. Further, the hydraulic geometry of Upper San Anselmo Creek is its existing condition. CEQA does not require a project to remediate existing conditions,

The Project Geomorphologist, Matt Smeltzer of Geomorph Design, has designed and permitted more than 100 projects in the incised creek channels of San Anselmo-Corte Madera Creek watershed over the past 20 years. It has never been a project objective or an environmental permitting requirement to build a bridge AND, to restore stable hydraulic geometry. Rather, in all cases, the design objectives have been: 1. to lay back the top of bank as far as the private property owner would allow, or would otherwise be safe considering adjacent properties and structures; and, 2. avoid and minimize building into or encroaching into the creek compared to the existing bank toe position. The proposed project meets those objectives.

The commenter suggests that the bridge replacement project will “memorialize” (i.e., make permanent) the unstable hydraulic geometry at the site. Rather, existing residential development has already memorialized unstable hydraulic geometry at the site and throughout the Upper San Anselmo Creek corridor. CEQA does not require a project to remediate existing conditions.

The commenter suggests that the unstable hydraulic geometry at the site will cause upstream and downstream instability. In addition, she also suggests that the upstream and downstream instability caused by the project may lead to overbank flooding. However, nowhere in the comments is any evidence provided to support these assertions, nor could there be, as they are not correct.

Close examination of the bridge replacement plans shows that all of the hard surfaces (rip-rap slope protection, concrete retaining walls, concrete bridge abutment walls, etc.) are located within the envelope of the existing creek bank contours. Therefore, the project would not change the shape of the channel or reduce the size of the channel. The proposed hard surfaces would not restrict or constrain the creek’s physical processes more than do existing conditions (existing un-engineered rip-rap slopes, timber bulkhead retaining walls, pier footing fortifications, un-engineered rubble slopes, etc.).

And, because the creek is wider at the site than is average for Upper San Anselmo Creek, the proposed hard surfaces would restrict the creek less than do multiple other structures upstream and downstream. The proposed hard surfaces are everywhere more than 30 feet apart. In 2006, the Project Geomorphologist measured the average bankfull width of Upper San Anselmo Creek to be 19 feet, and documented several locations upstream and downstream from the site where permanent obstructions limit the creek width to less than 30 feet.

There is no grade control proposed in this project. The commenter asserts multiple times that the IS/MND needs to evaluate potential impacts of grade control, but grade control has never been proposed. As such, there is such no potential impact to assess.

Comment WS-4

The increased extent of concrete wall and narrowed channel width created by the Project wingwalls will increase channel velocity that will result in increased sediment supply from post project channel adjustments involving streambed incision and/or bank erosion that will negatively impact fish habitat and potentially increase downstream flood frequency.

Response WS-4

As proposed, the replacement bridge abutments and wingwalls will be mainly perched above the creek bed, set back higher on the creek banks, and are needed for the following reasons:

- They transition each side of the two bridge abutments to the adjacent embankment (or the existing retaining wall, as is the case immediately downstream of the bridge on the right)
- They protect the abutments from the flows, trying to tunnel through the west embankment and scouring under both supports on the west and east banks
- They help stabilize the adjacent banks, allowing them to be rebuilt at the gentler slopes of 1.5 (vertical) to 1.0 (horizontal), where the bank on the west side has been eroded to nearly vertical face and reduced to a field of rubble and failed slope on the east side
- They help guide the flows through the S-bend
- They help contain the embankments during a potential soil liquefaction or landslide resulting from the Maximum Credible Earthquake (MCE) predicted for this site

The project's creek cross-sections show that not only has the waterway not been encroached upon, but it has been further opened up by pushing the toes of slope further back here and there, especially as one moves closer to the bridge crossing. The more opened up creek, combined with removal of debris, failed slopes and old structure supports from the flow, will actually reduce the overall flow velocities through here, as well as local velocities and eddying effects caused by obstacles in the creek that cause erosion and scour. The concrete surfaces mainly protrude above the river materials from the 50-year flow elevation up.

Despite the commenter's unsupported statements, there is no correlation between the project's configuration and any presumed flooding or its frequency downstream or elsewhere. The Bridge Hydraulic Report indicates both the 50- and 100-year flow elevations at the site would go down by a half inch, virtually remaining impact-free. The assertions by the commenter are simply incorrect, providing no evidence that either the channel flow velocities would increase or that there will be increased sediment migration as a result of the project.

Comment WS-5

The channel was mischaracterized as an intermittent channel while all official documents characterize it as a perennial channel.

Response WS-5

The Final IS/MND relies on the USFWS National Wetlands Inventory (NWI), a publicly available resource that provides detailed information on the abundance, characteristics, and distribution of US wetlands. This database which classifies wetlands and waters at a finer scale than USGS maps, classifies the reach of San Anselmo Creek within the vicinity of Meadow Way Bridge as R4SBC, which is (R) riverine, (4) intermittent, (SB) streambed, (C) seasonally flooded. The NWI describes an intermittent stream as a "Subsystem [that] includes channels that contain flowing water only part of the year. When the water is not flowing, it may remain in isolated pools or surface water may be absent."

Comment WS-6

The necessary hydraulic geometry analysis of the site – and specifics on pre and post project changes – has not been conducted and therefore it is not possible to establish that negative impacts will not exist or that they can be mitigated.

Response WS-6

Contrary to the comment the creek reach within which the project is located has been extensively modeled digitally by Stetson Engineers, a foremost authority in this watershed's hydrology and

structural hydraulics. The models have been created, calibrated with stream gage recordings from major recent high floods of 1982 and 2005, and fully analyzed. An extensive Bridge Design Hydraulic Study Report has been prepared for the project, as well as a Location Hydraulic Study (LHS) report for NEPA studies, previously posted on the project's web site. The Hydraulic Report has found that high water elevations (for 50- and 100-year flood flows) are practically unchanged or slightly lowered. Additionally, the site is a small canyon with multiple feet of available freeboard relative to the existing bridge, which will continue unchanged with the new bridge. The 100-year flow elevations have been shown in creek cross-sections developed and available to view. The cross-sections will be shown at tonight's Council meeting and posted online afterwards.

Comment WS-7

I have been a geomorphologist since 1981 specializing in fluvial, hillslope, and tidal wetland geomorphology and hydrology, sediment budgeting, landslide and stream mapping, and analysis of geomorphic change from natural and anthropogenic influences. My opinion on the issues raised by the Project is based on my previous analyses of streams throughout Marin County, including San Anselmo Creek, as well as other streams and geomorphology throughout Sonoma County, Alameda County, and many other parts of California. I have conducted these kinds of analyses for the Marin County Flood Control and Water Conservation District, Marin Parks and Open Space, US Environmental Protection Agency, Contra Costa Clean Water Program, US Geological Survey, US Forest Service, California Department of Forestry, US National Park Service at Point Reyes National Seashore, San Francisco Bay Regional Water Quality Control Board, University of California at Berkeley, San Francisco Estuary Institute, East Bay Regional Park District, and the US Department of Justice. I am the Owner and Principal Geomorphologist of Watershed Sciences consulting firm, which I established in 2001. Attached to this review is a copy of my current CV. A few examples of my experience follow.

Response WS-7

The commenter provides background information about the commenter's experience and suggests a copy of the commenter's current CV is attached to the commenter's letter. A copy of the commenter's current CV was not provided. As the comment does not address the adequacy of the Final IS/MND, no further response is required.

Comment WS-8

Based on my review of the MND, I do not believe the potential for landslides on and off-site has been sufficiently characterized. For example, the MND describes the project site as "flatland," which "would not be susceptible to earthquake induced landslides or rainfall-induced landslides." I would strongly disagree with this characterization.

The MND does not appear to take into account the Project's location near debris slide run-out pathways or the proximity of rotational and/or translational landslides along the adjacent hillsides that could put the Project site at risk from potential disruption from uphill slippage. There are off-site but very nearby landslides that could pose on-site impacts. The toes of the two landslides on the southern adjacent hillside have been mapped by Wentworth and Frizzell (USGS, Open File Map 75-281, sheet 11, 1975) (see Figures 1A and B). These slide features appear to be roughly 150 feet from the south side bridge abutment and extend over 400 feet in length from the edge of the alluvial valley to the ridgetop. The USGS map is online at the link below.

<https://pubs.er.usgs.gov/publication/ofr75281>

Further, a very large complex landslide, that extends over 3000 feet from ridge top to valley bottom is just downstream of the Project site (its western lateral scarp is about 300 linear feet downstream of the north bridge abutment on the north hillside and its movement at some time in the geologic

past was sufficient sometime in the past to block the entire creek and cause backwater alluvial deposition that created the existing landscape of the Project site where now, a much wider alluvial valley exists upstream of the landslide pinch point. The MND provides no discussion or analysis about the existence of these slides or prospect of their future impacts during a large seismic event or extreme rainfall. If a prior large landslide created the alluvial valley that the bridge is sitting on, the MND's characterization of this area as 'flatland' for purposes of landslide impact analysis is misleading and cannot be supported as free of potential geologic hazards.

Response WS-8

The referenced maps show landslides in the general project area and the more widespread Fairfax Town limits that were interpreted from aerial photos in the 1970's. On review these landslides, are very, very slow moving or dormant, and those to the south of the planned bridge are small and have sufficient runout area such that they are not judged a risk to the bridge. The "large complex landslide" downstream of the site could conceivably move again in the "geologic" future, and, if sufficient movement occurred, it could block the creek channel. The existing and/or new bridge will not improve nor degrade conditions as to that large slide. As noted above, CEQA does not require a project to remediate existing conditions nor does it require a project to evaluate potential impacts of the environment on the project. (See CBIA v. BAAQMD.).

If any evaluation of the large slide were to occur in the future, it would be a study to evaluate flood risks and subsequent risks to homes, not a study to evaluate the feasibility or suitability of a bridge at Meadow Way. Although past performance is not a guarantee of future performance, there are no known landslide impacts to the existing bridge or nearby homes so the many decades of acceptable performance are attributable to the bridge. If slow ground movement or "creep" were compressing the existing bridge structure or causing damage to abutments, these impacts would be visible and would have been factored into an evaluation of the new structure. As it stands, no further measures to address any landslides are necessary.

Comment WS-9

The 1975 USGS landslide map indicates that the northeast abutment is not necessarily on alluvial sediments, yet the MND provides no information whether the abutment is on or near bedrock or the condition of the bedrock that exists. The MND does not explain whether the abutment is concordant with bedrock at depth on the other side or if there is evidence of faulting between the bridge abutments as could be possible due the presence of the fault that is mapped nearby, nor does it provide any information about the actual subsurface condition here and what is the known depth and condition of bedrock at the site. In my opinion without this information, the MND's impact assessment is inadequate as it fails to address the potential for impacts that could occur from severe seismic shaking from the large San Andreas and Hayward Fault systems as well as offset and sheared rock conditions from local mapped faults as well as landslides. Local faults and landslides can mechanically weaken the bedrock by shearing it, cracking it, and thereby weaken the strength of the bedrock to support structures. If either side of the bridge abutment is in different types of soil or bedrock structural design must be developed to suit the different conditions. Proximity of faults and landslides is a red flag to needing subsurface and off-site investigations to build safe structures that require piers for support.

Response WS-9

The IS/MND is not an engineering design document, but the engineering facts are contained in the project description that follow the rigorous federal, state and local design codes. The commenter states elsewhere in her letter that the abutments and wingwalls are founded 24" drilled piles, confirming that appropriate support has been provided for the abutments and obviating the need she asserts for them to be supported on bedrock, alluvium, etc. The subsurface

investigations suggested by the commenter have already been accomplished through drilling three geotechnical borings at the site and studying the site's materials. The impacts of on- and off-site seismicity phenomena on these structures have also been investigated as part of the geotechnical studies conducted and measures have been provided for in design. The geotechnical memo has been put on the project's web site and may be archived now, but will be put back on the web site again. The deep foundations (the 24" diameter piles) chosen for the abutments and wingwalls penetrate well below the liquefiable soil zones below and are held by "skin friction" in viable soil layers, whether the piles reach rock or not. The measures for abutment foundation supports recommended by the commenter have already been employed and no further actions are necessary.

Further, contrary to the commenter's suggestion there are no earthquake faults mapped at the site or evidence of faulting. A single-span and simply-supported bridge, such as the replacement of Meadow Way Bridge is one the most seismically safe forms of transportation structures. The structure's end sit on 2.5-foot wide seats, a modern seismic design provision, and the abutments are allowed to sway this much without unseating of the superstructure. Piers for support, interpreted as additional bridge supports in the creek, are not necessary and, in fact, intermediate piers would introduce additional seismic vulnerabilities in this case.

Comment WS-10

Interpretation of landslide conditions by Wentworth and Frizell is supported by recent landslide hazard classification shown online at the MarinMap Viewer, as shown in Figure 2. The current online map (as shown 5/2020) characterizes much of the watershed to be landslide prone. The area of large northern slide, as indicated by the earlier USGS mapping, is shown as mostly landslide and the extent of the toe is much closer to the Project site than previously indicated (about 150 linear feet as opposed to 300 feet. This suggests that recent landslide interpretation finds the extent of landslide hazard to be bigger yet there is no discussion of the reason for the differences in interpretation which could relate to possible recent landslide activity or more thorough investigations nearby.

Response WS-10

Under CEQA the project is not required to address or remediate all geological and development issues that may exist near and far to the site. The project itself will not cause landslides nor will it be threatened by one. Indeed, in case of such assumed events, the bridge is expected to survive and continue being serviceable.

Comment WS-11

Compounding this, the MND fails to describe accurately the seismic issues in the Project area, only concluding instead that the project site is not located within a State-designated Alquist-Priolo Earthquake fault rupture zone. In addition to the landslide hazards, the MarinMap Map Viewer (herein referred to as MarinMap) also shows a distinct northwest trending fault about 2200 feet to the northwest of the site. The MND fails to describe the fault or its southeastern projection into the footprint of the Project. This fact that they do not reference this source of information is even more bewildering given that they reference MarinMap as a source of GIS and environmental information. The importance of the fault should be evaluated relative to potential effects on the weakness of sheared and mechanically weakened bedrock at the site and for the potential for vertical or lateral offset during a large magnitude earthquake from the San Andreas Fault system. How the proposed structural design elements of the proposed bridge and piers may or may not be appropriate at this site must be evaluated given the unresolved presence of sheared bedrock due to either the projection of this fault or from (u)nderlying [sic] landslide debris. In my opinion, the influence of the fault and its status must be established to avoid negative impacts to expected

longevity of the bridge and risk to human life during a large seismic event associated with severe shaking from the San Andreas Fault. The MarinMap is online at the link below.

<https://www.marinmap.org/Html5Viewer/Index.html?viewer=smmdataviewer>

Response WS-11

Contrary to the commenter's suggestions, there are numerous faults in Marin County that show no evidence of movement in the last 11,000 years and are therefore considered not active. There are no earthquake faults mapped at the site or evidence of faulting and thus the risks of fault rupture that could affect a new bridge are considered remote. MarinMap, which the commenter cites, is not a seismic design guide for bridges. Rather, an important part of any bridge design and construction is specific foundations investigation, including analysis of the site's seismicity and the effects of earthquakes near and far on the bridge, its foundations and the adjacent banks. Here, the site's soils have been bored at three support locations and the soil layers logged and classified. All earthquake faults close or distant, and seismic accelerations, have also been studied and presented in a preliminary Foundation Investigation Memo for the project.

Foundations, abutments and walls and other project features will be designed for the sheared and mechanically weakened soils and rock at the site, and sheared and weathered/weakened soil and rock are not unique to the immediate project area but is instead the norm for much of the San Francisco Bay Area.

The structure will be designed for seismic accelerations deemed possible at the site according to current industry practice, and the new bridge will be much more seismically stable, where the existing bridge is not because of soil liquefaction. The San Andreas fault has been identified to potentially cause a magnitude 6.7 earthquake at the site, causing ground acceleration between 0.35 g to 0.55 g at the site. New foundations will be much more robust and have much greater axial, tensile and lateral capacity to resist seismic loads.

Comment WS-12

As a result of the MND's failure to describe these previously identified geologic hazards, its conclusion that the potential for landslides or liquefaction from seismic activity is less than significant due to the Project area's "relatively flat topography" cannot be supported and in fact is contradicted by the existing geologic setting. In this case, the flat topography is simply a band of alluvium, variable in width, that is sandwiched between steep landslide-prone hillsides. Note that MarinMap depicts the same alluvium as surficial deposits. The alluvial valley at the Project site was mostly formed as a result of backwater sedimentation following blockage of the large north bank landslide. The mapping of the slide done in 1975 and more recent MarinMap hazard classification further demonstrates the need for a site specific on the ground investigation because the full extent of landsliding has not been adequately constrained. It slides might be larger than initially interpreted by remote mapping methodologies. Perhaps more importantly, the causes of the landslides have not been identified and are very likely associated with either rainfall-related instability, seismic triggering, or a combination of the two. The MND concludes by noting that the Project site is not located in an ABAG-designated earthquake-induced landslide area or within an existing rainfall-induced landslide or debris flow area. However, based on the mapping I have reviewed, this conclusion is likely incorrect. As a result, the MND's further conclusion that implementation of Mitigation Measure GEO-1, impacts associated with landslides, would be less than significant, cannot be established as this issue was not assessed appropriately. Assessment of on and off-site landslide impacts is sorely missing in the MND.

Response WS-12

The project, primarily a bridge replacement, has been considered for all kinds of ground

movements, including landslides and liquefaction. The project plans and specifications will reflect these provisions. The bridge will be supported not on soft, moving ground but on piles embedded in non-liquefiable ground layers. Because of liquefaction potential, resulting from the MCE, or as a result of any supposed landslides, the approach roadways on each side of the bridge may settle. The wingwalls on the four sides of the bridge will minimize the “lateral spreading,” or the settlements at the bridge approach roads resulting from liquefaction or supposed landslides. For this reason, the project includes a seismic approach slab connected to each end of the bridge so that they bridge the gap to the bridge during such settlements, making the bridge useable after such events.

The above actions are within the scope of bridge replacement project. The banks and lands elsewhere in the project vicinity, near and far, may experience lateral spreading or movements but not due to the Project. Again, CEQA does not require a project to remediate existing conditions, nor does it require review of the environment’s potential impacts on a project, only a project’s impacts on the environment.

Comment WS-13

The commenter states that the stream conditions have not been adequately evaluated to establish whether the channel is stable at the project site or beyond. Then the commenter refers to CDFW’s 2013 standard stream condition inventory report finding the channel would be typed “F4” – an “unstable” channel type – by the Rosgen classification system. Then the commenter implies multiple potential hypothetical scenarios based on the academic meaning of “unstable” hydraulic geometry and the Rosgen F4 channel type.

Response WS-13

The commenter, in effect, restates that Upper San Anselmo Creek has “unstable” hydraulic geometry. Per Response WS-3, this is a known fact, but it is an academic one that does not need to be explained by the IS/MND for the Meadow Way Bridge replacement project. The commenter never explains how “unstable” hydraulic geometry can feasibly be mitigated at the site. Again, CEQA does not require a project to remediate existing conditions, nor does it require review of the environment’s potential impacts on a project, only a project’s impacts on the environment.

The comment refers to CDFW’s 2013 report finding, among other things, that the channel could be designated as a Rosgen F4 channel type – an “unstable” channel type – because the estimated top width of flood flow waters is not more than 1.4 times wider than the top width of typical average annual peak winter high flows, or “bankfull” flows. This is only another way of saying what is already understood without a classification system – that the channel is deeply incised. FEMA recognized in 1977 that Upper San Anselmo Creek contains the 100-year flood without overflow. December 31, 2005 flood high water marks averaged 7.4 feet above the channel bed – the floodwaters rose less than half-way up the bank. All of this is common knowledge to Town officials, project design team members, neighborhood residents, etc.

Again, it is true that Upper San Anselmo Creek is deeply incised. However, per Response WS-3, there is nothing that any individual site-scale project on Upper San Anselmo Creek, including the proposed Meadow Way Bridge Replacement Project can do to restore “stable” hydraulic geometry of the creek due intractable effects of dense residential development and private property ownership of the creek bed and bank land surfaces. Again, CEQA does not require a project to remediate existing conditions, nor does it require review of the environment’s potential impacts on a project, only a project’s impacts on the environment.

The comment observes that there is bank erosion in incised channels. This is a fact. The comment observes that bank erosion creates a sediment supply that the creek transports downstream. This is also a fact. The comment implies that sediment moved downstream by the creek inevitably causes excessive sedimentation somewhere downstream which may have two negative effects: first, causing summer low flows to flow subsurface creating discontinuous flow between isolated pools; second, filling the channel so much to reduce its flood flow capacity and cause overbank flooding.

If these negative effects occur in the San Anselmo-Corte Madera Creek watershed, it is because of long-term land use impacts leading to channel incision more than 100 years ago, not because of suboptimal design of the proposed Meadow Way Bridge Replacement Project – nor indeed does the commenter present any evidence that the Project could cause such impacts. First, there is discontinuous surface flow between isolated pools at the Meadow Way Bridge site under existing conditions. August 2010 and December 2013 photos clearly demonstrate this is a normal seasonal condition. Second, the Project Geomorphologist is not aware of any excessive sedimentation having caused overbank flooding anywhere downstream from the site. In 2003, landowners near Nokomis Avenue Bridge commissioned a study to determine if removing gravel from the bar downstream of the bridge would reduce flooding. Detailed hydraulic modeling analysis concluded that it would not. The Town of Ross removed sediment from beneath the precursor Lagunitas Road Bridge almost every year until 2009 although forensic hydraulic modeling analysis showed that doing so did not measurably reduce potential of overbank flooding. Post 1982 flood analysis of the Army Corps of Engineers Flood Control Channel concluded that supposed concrete channel sedimentation was not a substantial contributing factor to the extent of overbank flows departing from the channel. 1990s era Army Corps plans to install a sediment basin in Ross for removing sediment before it entered the concrete channel were scrapped for lack of technical rationale. Hydraulic modeling analysis to determine the optimal frequency for dredging the earthen channel in Kentfield-Greenbrae-Larkspur have shown that more frequent dredging does not conclusively reduce flood risk.

The comment suggests that the IS/MND is flawed because it doesn't acknowledge that Upper San Anselmo Creek is incised (or, that it was classified as a F4 channel type by CDFW in 2013), and because it does not evaluate the potential for restoring "stable" hydraulic geometry at the site as a means to avoid potential impacts downstream from the site. Again, the hydraulic geometry of the site is an existing condition, CEQA does not require a project to remediate existing conditions, nor does it require review of the environment's potential impacts on a project, only a project's impacts on the environment.

Comment WS-14

In my opinion, considerable excavation and reconstruction of the stream channel within the Project area has the potential for significant hydrological impacts that have not been addressed in the MND. Based on my review, it appears that the stream channel has unstable hydraulic geometry (width, depth, gradient) that will be memorialized through hardening of the banks from project construction that involves grade control, rip rap banks, and concrete walls that will cause continued upstream and downstream channel instability.

The MND states that the bridge abutments and retaining walls attached to the abutments will need to be supported on piles and that 24-inch diameter cast-in-drilled-hole concrete piles will be used to support the walls. The MND states that the creek bed would be excavated approximately eight feet deep to reach the approximate elevation of the concrete pile heads, after which drilling rigs would be called upon to drill the 24-inch-diameter piles supporting the future structural elements. The MND describes another wet-drilling technique as creating 24-inch diameter concrete piles,

which would be capped with a concrete footing known as a pile cap. Once the concrete pile caps are constructed, their top surface would be five to six feet below the creek bed.

In my opinion, the potentially significant effects of this proposed excavation and drilling is not analyzed adequately in the MND. For example, the MND does not describe the size of the concrete pile caps or whether they extend beyond the diameter of the pier such that rip rap will be sitting on top of them. The MND also does not provide clear information about the depth of drilling that will be required below the 8-foot excavation. Without this information, impacts cannot be assessed and therefore certainly cannot be assumed to be nonexistent.

Response WS-14

The banks of the creek at the bridge will be “soft,” not hardened, down to a depth of three feet below the surface for growth of native greens to be planted. There will be absolutely no riprap visible at the surface anywhere on the project. The new bank surface slopes will be fortified with Geoweb, an open-celled fabric with some depth, staked to the slope to reinforce it, and planted for additional stability. As such, contrary to the commenter’s assertions these will not be hardscaped banks but fortified for stability. The creek canyon’s waterway opening will be not constricted or encroached upon but, in fact, further opened up by the project. There are detailed cross sections to show this. The detailed cross sections will be part of the Council presentation on June 3, 2020 and posted on the project’s web site.

The excavations are expected to be dry, but specification will be included to handle wet conditions, should they be encountered below the surface. Ultimately, all excavations will be backfilled to the original grades or the designed elevations. Naturally, the creek geometry changes within the 200-foot long project and the creek’s so-called aspect ratio would vary through this the bridge and the complex S-bend in the creek. Ahead of the S-bend, the project starts with natural bank slopes and transitions to newly sloped banks on the right. Moving downstream, it will encounter the beginning of the revetment, followed by the longest bridge wingwall on the left, then another wingwall on the right side of the creek for the opposing abutment. The walls and abutments are mainly perched above the creek bed elevation, maintaining a trapezoidal or rectangular channel section throughout. The channel bottom and its sides will be carpeted completely with natural river bottom materials down to a minimum depth of three feet above any underground riprap, all the way up to around the elevation of the 50-year flood, or higher. In certain stretches of the project, the banks will be restored in their natural form all the way to the top for. Through the project, the creek’s waterway opening at each given location will either remain unchanged or opened up somewhat by the project. The Hydraulic Report maintains the 50- and 100-year water surface elevations will be actually slightly lower than the existing conditions. As it stands, excavations will have no adverse impact on hydraulic flow and channel instability later on. On the contrary, the project stabilizes the channel and the creek banks.

For pile drilling, the contractor may choose to drill through the original ground first before excavating. With this approach, after the pile holes are filled with rebar and concrete and the latter hardens, the pile tops will be excavated out to install the pile caps. This method, as opposed to excavating first and then drilling for the piles, will minimize the length of time open excavations sit exposed. At any rate, all deeper edges of open excavations will be either sloped back, or temporarily supported with strutted steel plate walls, and dewatered in order not to collapse. The pumped out fluids collected will be treated in Baker Tanks and released downstream. The dimensions of the pile caps are engineering details that will be worked out for the final plans. After the pile caps and the underground portions of the walls are poured, the excavations will be backfilled to the planned elevations. This is done for bridges in waterways all the time and no

permanent channel instability or hydraulic change is expected. The depths to which piles are drilled will be irrelevant to any phenomenon or impacts at the creek bed level.

Comment WS-15

The commenter states “From what can be gathered from the MND, it appears the base elevation of grade control of the stream bed will be 2-3 feet lower than its initial level, with additional rip-rap on top, bring the bed back to its preexisting elevation...this means that the bed elevation will essentially become fixed by the is grade control structure....” Then the commenter goes on to describe hypothetical negative effects of the hypothetical grade control structure.

Response WS-15

The commenter incorrectly describes the Project. The proposed project would not install a grade control structure. All of the comments implying that the IS/MND is inadequate because it fails to analyze the effects of the “grade control structure” on upstream and downstream stream bed elevation profile and habitats are therefore incorrect.

Comment WS-16

The MND states the contractor will be required to install a bypass pipe to convey certain minimum low-flow volumes through the construction site and release downstream of the bridge. This will be accomplished through installation of a low dam across the creek bed upstream of the bridge to collect the summer flows and guide it to the pipe, whereby water will be collected in excavation pits or pools on the creek bed will be run through sediment control tanks before being released to the creek. In my opinion, this approach has a substantial likelihood of disrupting downstream conveyance such that the water will go subsurface and thus not provide viable habitat for downstream aquatic species requiring summer pool habitat such as steelhead or foothill yellow-legged frog. Further, in my opinion, it is likely the summer groundwater elevation within the Project area and downstream will be adversely influenced by the 8-foot and then possible 20-foot excavation and dewatering activities within the project site. Based on my review, the MND appears to provide no analysis of the sphere of influence of the dewatering activities. Without such it cannot be assumed that negative impacts to the distribution of surface and groundwater flow will not harm threatened species.

Response WS-16

The commenter mis-states the dewatering process in their summary, juxtaposing two separate processes (bypassing and pumping excavation pits) which are unrelated into what they imply is the dewatering process. The dewatering process is explained on page 17, stating that a bypass will be “accomplished through installation of a low dam across the creek bed upstream of the bridge to collect the summer flows and guide it to the pipe.” Once water is in the pipe it is routed past the worksite to avoid potential effects due to construction and any bypassed flows are allowed to reenter the stream just the same as they were when they entered the pipe. This maintains downstream connectivity as long as flows are present. Separately, (Page 17) “Any water collected in excavation pits or pools on the creek bed will be run through sediment control tanks, such as a Baker Tank, before being released to the creek.” Therefore water in pits or pools (not that which is bypassed) will be treated to minimize turbidity before being released back to the creek. Therefore these are two separate parts of the process, and as such cannot be combined as the reviewer has done. In treating any water from pits and pools, it is returned to natural turbidity levels prior to being returned to the channel whether that is as surface features (e.g. pools) or by seeping back into the groundwater, and any effect of collection is mitigated. Therefore if surface flows are present and bypassed there will be no change to surface flow conditions downstream and no effect to steelhead or FYLF habitat that may exist downstream with the use of a bypass. Any pumped water within the site will have turbidity minimized, then be placed back

in the creek bed to re-infiltrate, thereby avoiding any of the effects described by the commenter to groundwater.

Comment WS-17

The commenter states among other things, that "...the MND provides no information about the size of the rip-rap, nor what would be the appropriate size to prevent the 100-year flood from moving it beneath the bridge where the channel cross-section is confined, especially by the newly proposed wingwalls...". The commenter adds that "it is impossible to size the rip rap without a bedload transport analysis for the post construction cross-sectional area beneath the bridge."

Response WS-17

The commenter suggests that the IS/MND is inadequate because it does not provide evidence of design rationale for the size of rip-rap proposed, implying that it is very unlikely that large enough rock pieces could be installed to resist transport by the 100-year flood. While the preliminary design for the bridge replacement may have not progressed to the milestone of performing calculations to specify the size of rock materials, it is not correct to presume that it might somehow turn out to be infeasible to furnish and install rock large enough to resist transport by the 100-year flood. There are tens of thousands of cubic yards of ½-ton rock rip-rap pieces in Upper San Anselmo Creek that resisted transport by the 1982 and 2005 floods. Published Federal Highway Administration guidelines provide adequate proven technical basis for sizing rock slope protection for this project. These guidelines are similar to a "bedload transport analysis" recommended by the commenter. They must be followed for gaining Caltrans approval of a federally funded bridge replacement project. Certainly, larger rock – e.g., up to 1-2-ton – would be proven by these standard methods to be needed at outside bends for promoting deep scour for enhanced pool habitat. And per standard engineering practice (e.g., D'Aoust and Millar 2000) , 1-2-ton rock would also certainly be needed for anchoring large woody materials proposed for providing cover in outside bend scour pools and for "engineered log-jam" structures for enhancing habitat complexity at the site. Some detailing of the rock size and matrix fill materials would be needed for ensuring the rock may be successfully vegetated with woody trees and shrubs and understory vegetation.

Also, again, per Response WS-1, the proposed project would not build into or encroach into the channel compared to existing conditions, including on the lower 1/3 of the banks below the 100-year flood water surface elevation as the commenter suggests repeatedly the project would to constrict or confine the channel. All of the comments related to effects and implications of project-caused channel-confinement are based on an incorrect understanding of the scope of the Project..

Comment WS-18

The commenter suggests that the IS/MND describes the project – by virtue of installing large woody materials for roughness and edge habitat cover along the finished toe of bank – as being one that "will end up restoring the site to a deep and wide soil 'trough'". The commenter then suggests the IS/MND's related assertion that the project would provide natural unobstructed fish passage from the downstream end to the upstream end of the project site is unsupported.

Response WS-18

The choice of the word "trough" was meant to emphasize that the project would leave a wide band of the gravel creek bed unchanged – i.e., as if it were a trough of sand and gravel – thus able to change naturally during flood flows and continue to provide the same fish passage conditions as pre-project. The commenters concerns on this point derive from the misconception that the project would install a channel-spanning grade control structure near the bridge section. The

IS/MND's characterization of a deep and wide trough explains that the project would not alter the creek bed or conflict with natural creek bed formation processes, thereby preserving natural fish passage through the reach.

Per Response WS-1, the proposed rip-rap slope protection, retaining walls, abutment walls are all located within the envelope of the existing creek bank contours – none of the structures encroach into the creek so as to conflict with natural fish passage. And the proposed large woody materials for roughness and habitat enhancement would only improve not reduce fish passage suitability. Again, the commenter appears to rely on two incorrect points: first, that the project proposes some sort of grade control structure (that may conflict with fish passage suitability) – which per Response WS-3 is incorrect; and, second, that Upper San Anselmo Creek having “unstable” hydraulic geometry indicates potential for project-caused sedimentation or down-cutting that would reduce fish passage suitability which per Response WS-1, this is also incorrect.

The commenter goes on to reiterate her claims about “unstable” hydraulic geometry by suggesting that the details of the large woody material habitat enhancement structures are not detailed enough at the current level of design for a prediction to be made about how the structures might – being located in an “unstable” Rosgen F4 channel type prone to being converted to a Rosgen G5 channel type – cause the channel to down-cut drastically, such as if: one, the structures impinge too far into the channel to make it too narrow; or, two, flow velocities are made higher by the hardened surfaces. First, large wood material habitat enhancement structure may be designed to encourage focused scour at certain location for increasing the depth of pools and the volume of winter rearing habitat they provide for salmonids. Local scour is a benefit to habitat. It is not the same thing as catastrophic down-cutting that would have off-site impacts. And, simply by the “eyeball test”, the structures shown on the plans are not excessively confining so as to cause reach-scale down-cutting. Second, the finished surfaces are primarily being converted from unvegetated or lightly vegetated rip-rap and rubble slopes, to combined vegetated rip-rap slope and wall segments. By also adding large wood materials for toe roughness and habitat enhancement, and using live willow brush layering bank stabilization treatments, the project would induce hydraulic energy dissipation at outside bends that would more than offset any differences in reach-scale hydraulic roughness introduced by retaining walls. Most of the concrete wall surfaces the project would create are for slope stabilization of the upper bank – they are higher than the flood water surface elevations that occur at the site, and so have no potential to accelerate creek flow velocity.

Then the commenter goes on to reiterate the same point in yet another way by implying that the only correct way to create a stable channel and to avoid erosion and deposition downstream from the site is to restore the stable hydraulic geometry at the site. Per Response WS-1, this is infeasible without condemning multiple private properties and demolishing privately owned structures. Further, CEQA does not require a project to remediate existing conditions, nor does it require review of the environment's potential impacts on a project, only a project's impacts on the environment.

Comment WS-19

The commenter finds the IS/MND lacking in its evaluation of the potential effects of rip-rap slope protection on downstream channel stability.

Response WS-19

Per Response WS-5, the proposed project incorporates substantial square footages of anchored large wood material and live willow brush layering that will sufficiently mitigate for hydraulic roughness effects of replacing existing poorly vegetated rip-rap with new rip-rap slope protection.

Moreover, large percentages of the rip-rap slope protection will be soil-covered and vegetated. Per the project geotechnical memo, the net result of the project will be increased bank roughness, and *reduced not increased* near-bank velocities and shear stresses. The geotechnical memo has been put on the project's web site and may be archived now, but will be put back on the web site again.

Comment WS-20

Sedimentation is likely to be exacerbated by the Project's proposed construction of an earthen 'access' ramp to transport materials and heavy equipment, such as pile drilling rigs, dump trucks, cranes, loaders, excavators and large containers to the creek bed elevation and back. However, this access ramp is not labeled in Figure 5 of the MND, nor does the MND discuss what kind of erosion control would be applied during the winter. The MND contains no description in particular of how potential flood flows will not wash away the bare soils even if it has silt fences or hay bales applied to reduce uphill road runoff. The road tread will be within the active channel and floodprone area. In the event of a bankfull or greater flows the access road could become a specific project-related source of sediment that would negatively impact downstream aquatic habitat.

Response WS-20

The temporary access road on the west adjacent embankment will be through a private property whose owner has agreed to its use during construction, after which the area will be restored. The use of the access road is not mandatory and will not be forced by the contract. Rather, it is being considered as part of the Area of Potential Effect (APE) for the environmental studies, because the engineering staff feels it would be needed because of the needed machinery will not be able to cross the existing bridge to work on the other side of the creek and access from the top would be impossible. If the contractor decides a temporary access road will not be required, then it will not be used.

If the project ends up being a two-season construction job, the site will be winterized at the end of the first season. Measures may include temporary riprap and fortification of the embankment up to the 100-year flow elevation, tarping staked down and weighed down by rock, fiber rolls (waddles) to prevent erosion and migration of fine soil particles, etc. The contractor will be required to check on the site, especially during and after a heavy storm.

Comment WS-21

The commenter restates the same opinion about "unstable" hydraulic geometry by questioning, again, whether or not the IS/MND adequately evaluated the effects the proposed project would have on within-site and downstream channel stability. The commenter goes on to reiterate the same incorrect point yet another way, finding the IS/MND is inadequate because, implying that "trough" shapes are not "stable" hydraulic geometry.

Response WS-21

Again, per Response WS-1, it is not practical to restore "stable" hydraulic geometry without condemning multiple private properties and demolishing privately owned structures. Again, CEQA does not require a project to remediate existing conditions, nor does it require review of the environment's potential impacts on a project, only a project's impacts on the environment.

The commenter questions whether or not vegetated soil cover installed covering over rip-rap slope protection on the finished banks will remain permanently in place, or if some of it will be eroded by floods to expose parts of the rip-rap surfaces. The project proposes to install live willow brush layering to stabilize soil cover in higher velocity parts of the site (i.e., outside bends).

Fischenich (2001)¹ documents live willow brush layering withstanding very nearshore velocities (up to 12 feet per second). Anchored large wood material may be substituted for brush layering under the bridge where shading by the bridge deck would preclude vegetation establishment. The commenter does not appear to have professional experience with biotechnical engineering design for erosion protection and habitat enhancement.

Comment WS-22

The commenter expresses the opinion that there has not been adequate hydraulic analysis to determine if the proposed project would cause Upper San Anselmo Creek to either: 1. down-cut to expose the grade control structure and possibly cause a head cut or nick point at the structure or expose the pile caps; or, 2. deposit so much sediment at the site that overbank flooding would occur.

Response WS-22

First, per Response WS-3, again, the proposed project does not include a grade control structure, so there would not be a grade control structure to potentially be exposed to create a head cut or nick point. Second, because the 100-year flood water surface elevation is more than 10 feet below the top of bank, more than 10 vertical feet of sediment deposition would be required to cause overbank flooding. Again, per Response LC-G-1, because the proposed project would not substantially change the shape and size of the channel, it is unclear why the commenter predicts significant changes to the hydraulics and sediment transport dynamics.

The commenter implies, without support, that down-cutting somehow resulting from the negligible changes to reach-scale hydraulics and sediment transport could lower the channel bed several vertical feet to potentially undermine pile caps buried under buried rip-rap protection. But it is physically impossible for there to be several feet of incision at the site. Studies show that the channel bed incision rate slowed to near zero by the end of the 20th century. There are multiple natural and artificial grade control structures downstream from the site (concrete aprons, grouted rock aprons, large rubble dominated bedforms, water and sewer line concrete encasements, abandoned stock pond dams, concrete-floored bridges, large boulder lag deposits, shallow bedrock, and clay hardpan, etc.).

Finally, the commenter suggests that the IS/MND fails to evaluate effects of the project on the 100-year floodplain. The commenter apparently did not review the Bridge Type Selection Report and a Location Hydraulic Study (LHS) prepared by the project proponent. Per federal requirements, the LHS specifically uses hydraulic model analysis and/or hydraulic engineering analysis to determine the hydraulic effects of the project, with special emphasis on impacts to the 100-year floodplain. First, the commenter could have combined a cursory knowledge of the site or readily available online FEMA floodplain maps to learn that the 100-year water surface rises less than half-way up the banks at the site. Then commenter could have also reviewed the proposed bridge replacement plans to learn that the proposed new replacement bridge structure would have fewer flow obstructions and a larger hydraulic opening than the existing bridge. It would have logically followed that the proposed project has no potential to induce flooding. And finally, the commenter could have reviewed the LHS for additional confirmation of this fact.

¹ Fischenich, C. (2001). "Stability Thresholds for Stream Restoration Materials," EMRRP Technical Notes Collection (ERDC TNEMRRP- SR-29), U.S. Army Engineer Research and Development Center, Vicksburg, MS.

Comment WS-23

Further substantial questions arise with respect to the proposed two abutments and downstream wingwalls connecting with the abutment corners. The MND states that the slopes above the retaining walls and wingwalls would be contour-graded. However, no eddy flow protection is shown beyond the downstream wing walls. The MND map in Fig 5 shows about 170 feet length of stream bank rip rap on the west bank, which is in my opinion is a significant length of stream channelization that is likely to increase downstream flooding and erosion.

Response WS-23

The right downstream wingwall will conform in height and surface to an existing wall in private property there. On the left, the short wingwall departs from the bridge and dives into the existing creek bank there. There are no complications or unusual occurrences here. There will be underground riprap protecting both of these short wingwalls, the creek will continue with ample flow capacity through at the site.

Comment WS-24

The commenter states the existing rip-rap slopes at the site are covered by scant non-native vegetation that does not provide bank stability or shading for the stream to benefit aquatic habitat. Then, in the same paragraph, the commenter suggests that replacing the expressly underperforming rip-rap slopes with engineered, vegetated rock slope protection would fail to improve bank stability and shading to benefit aquatic habitat at the site.

Response WS-24

Substantial federal investment in vegetated rock slope protection provided by the proposed bridge replacement project will substantially improve bank stability and shading to benefit aquatic habitat at the site.

Comment WS-25

Another problem is the lack of sufficient access to the creek to remove potential woody debris or debris jams that could form at the entrance to the bridge or beneath it. Long- term maintenance needs must be considered to clean trapped sediment from beneath the bridge otherwise its design capacity to convey floods and move sediment are likely to be compromised. The MND does not appear to provide any analysis of the sediment supply and transport capacity of the stream in this area. As discussed above, the canyon and bridge location have a high number of different kinds of landslides that during intense or prolonged rainfall can generate very high suspended sediment and coarse bed load to the creek. In addition, the channel appears to be incised as well as entrenched, which means that especially during large floods it can generate abundant sediment from high shear forces contributing to local bank erosion and tree fall into the creek. If the cross sectional geometry of the stream is going to be permanently narrowed by construction of the wing walls at the bridge location, the potential for trapping large woody debris within the structure will be increased. As such, formations of woody debris jams will likely cause a loss of channel capacity from backwater sedimentation, which can result in increased potential for upstream flooding and unanticipated new sites of erosion.

Response WS-25

The commenter suggests that this nested hypothetical scenario is an actual plausible scenario by which the proposed project could cause upstream and downstream flooding. But first, per previous responses, the proposed project would not reduce the cross-sectional geometry of the channel at the bridge section. Second, the proposed project would eliminate multiple existing timber posts from the channel by installing a clear-span bridge with setback abutment walls.

Therefore, the proposed project would *decrease not increase* the potential for large woody debris jams to form at the bridge section.

Comment WS-26

Overall, in my opinion, there has been no discussion or evaluation of the design capacity that will be achieved or that must be maintained in the future. In addition maintenance needs and costs are not discussed.

Response WS-26

Concrete bridge and walls are among the most maintenance-free designs available. Like most concrete structures, such bridges are designed for 50-year lives, but modern concrete structures will provide good service double that amount of time easily. The revegetation envisioned for the site will be native and drought-resistant, requiring no irrigation or maintenance visits.

Comment WS-27

Without a stream gradient analysis it cannot be established what the impacts of the project will be to upstream channel stability, abundance and viability of pools, and distribution of surface flow during drought conditions. In my opinion, these changes to the stream system are likely to reduce the local groundwater level and thus negatively affect local habitat during the time of construction by eliminating or substantially altering the frequency and location of downstream pool habitat that is critical for wildlife such as local steelhead or foothill yellow-legged frogs.

Response WS-27

Again, per Responses WS-1 and WS-8, the proposed project would not change the shape and size of the creek channel at the site.

Comment WS-28

The commenter states that the review of the environmental setting is insufficient as it does not evaluate foothill yellow-legged frog, "as it is a state candidate species", claiming they are susceptible to changes in flow and have been found repeatedly in San Anselmo Creek over the last several decades.

Response WS-28

Foothill yellow-legged frog (FYLF) was reviewed in the Final IS/MND and found to be unlikely to occur (MND, Appendix A, Page 70). Additionally the FYLF in the area of Marin County is no longer being considered a state candidate for listing. The California Department of Fish and Wildlife Commission reviewed the petition for listing and FYLF in the North Coast Clade (the population area covering Marin County) was not listed. Therefore this population is not a state candidate any longer and receives no special protections¹. Further the California Natural Diversity Database was reviewed for occurrences of FYLF in the vicinity of the Project and no occurrences are noted in the near vicinity of the Project. A later update to the CNDDDB search showed occurrences newly entered in the preserved areas upstream, however no occurrences are located around the Project or downstream. The commenter gives no evidence including reports or observational data to support their claims that the species has been observed "over the last several decades." Due to the fact that the species is not a candidate for listing, does not have special protections as such, was found unlikely to occur, and no new occurrences were noted, no further reply can be offered.

Further discussion of the species unlikely presence is covered in responses to comments: SC-3,

and SC-9 in the WRA Memo dated May 1, 2020.

1- <https://cdfgnews.wordpress.com/tag/foothill-yellow-legged-frog/>

Comment WS-29

The commenter states that the MND falls short of numerous aspects in its analysis of the environment including: the presence of steelhead, discussing what habitat limitations exist for steelhead, discussion of barriers to anadromy outside of the project area, lacks discussion of steelhead passage suitability once the bridge is completed, does not address if flow velocities in the completed channel are suitable for passage, how summer fish rearing will be affected, how the ground water table will change and affect rearing, how loss of shading and increased concrete will affect stream temperatures, fails to analyze pools within the Project Area for rearing by steelhead.

Response WS-29

The presence of steelhead is acknowledged in the MND (page 39) and in the supporting biological reports (Appendix A, page 70). Beginning on page 79 (Appendix A) discussion of the type of habitat which is present, potential use by steelhead and potential effects were reviewed. Barriers to anadromy are discussed on Page 80 (Appendix A) including their effects, and noting that they are being assessed for removal. Following completion of the project the current pile supported bridge will be replaced by a free-span bridge, increasing passage ability by steelhead. The creek bed will remain a fish-friendly trough of soli meandering through the site, deemed as friendly to all salmonids (steelhead and Coho salmon) by NMFS. Shading and temperature affects were also review during consultation with NMFS, and the NMFS found that any effects of the project to critical habitat are "from proposed actions are expected to be temporary, insignificant, or discountable." Further, the Project will install root wads and woody debris to increase habitat suitability for rearing salmonids post-construction. See Comment SC-12 for further discussion of woody debris that will be installed further enhancing rearing habitat following construction.

See response to comment S-4 in the WRA Memo dated May 1, 2020 for detailed explanation to the lack of effects to groundwater.

Comment WS-30

The commenter claims that San Anselmo Creek is perennial, not intermittent. They conclude that the MND relies on drought conditions which is belied by pools within the Project Area. The commenter then states the project will create a grade control structure which will have deleterious effects. They then state their opinion that the presence of this structure will change the patterns of intermittent flows. They further state that removal of the creosote piles in the creek is insufficiently analyzed as this is likely to change the channel geometry and no information is provided to deduce the effect of adding "support columns" to the piers. Lastly they conclude that the mischaracterization of the stream as intermittent is contrary to the definition adopted by the authoritative agency.

Response WS-30

The steam was categorized as intermittent due to the classification in the National Wetlands Inventory (NWI) Database. This database classifies the reach of San Anselmo Creek within the vicinity of Meadow Way Bridge as R4SBC, which is (R) riverine, (4) intermittent, (SB) streambed, (C) seasonally flooded. The NWI describes an intermittent stream as a "Subsystem [that] includes channels that contain flowing water only part of the year. When the water is not flowing, it may remain in isolated pools or surface water may be absent." This classification is supported by the visits by biologists to the Project Area documenting that the stream does seasonally dry. Further

the commenters own descriptions of the hydrology within the Project Area support the intermittent classification by describing “rearing or stranding of species in in isolated pools at or near the project site.” Therefore, the creek is classified as intermittent, verified by biologists and local residents, and the commenter describes the area as isolated pools at the Project Area, further supporting the intermittent classification. This classification as intermittent debunks the statement that the MND relies on drought conditions to dry the stream as the isolated pools described in this comment section describe a defining characteristic of an intermittent stream. The commenter is completely misinformed on the subject of a grade control structure. The proposed project would not install a grade control structure. All of the comments implying that the MND is inadequate because it fails to analyze the effects of the “grade control structure” on upstream and downstream stream bed elevation profile and habitats are simply incorrect. Further removal of creosote piles from the center of the stream channel will not alter geometry in a deleterious fashion by removing an anthropogenic object from the natural stream flow. Additionally the bridge is a free span and does not contact the channel bed except via the abutments (page 18 MND), therefore no potential impacts can be inferred from “support columns” described by the reviewer. Therefore, not only does the commenter support categorization of the stream as intermittent, they also fail to produce evidence to support that removing obstacles from the stream channel would be deleterious to fish, or flows.

Comment WS-31

The failure to characterize San Anselmo Creek properly is exacerbated by other information gaps with regards to the environmental setting. For example, the MND states that final grading in the creek bed will conform to the existing creek channel both downstream and upstream and existing bed materials will be replaced with similar sized materials. However, the MND does not describe the depth of bedrock at the site or the frequency for the distribution of pools and riffles over the 300- foot grading stretch, or immediately downstream. In my opinion, this must be a design parameter based upon local stream data and not done haphazardly, yet no data has been presented or apparently evaluated. In my opinion, the MND is fundamentally flawed in providing no information for how the design for the final creek grading will create stream stability or prepare for changes in discharge or sediment supply associated with climate change. Grading a 300 foot long stretch of creek without specific channel design guidelines can result in permanent negative impacts at the site and downstream.

Response WS-31

Refer to Responses WS-1, WS-9, WS-13, WS-4, WS-17, WS-18, and WS-22.

Comment WS-32

In conclusion, it is my opinion that an EIR is imperative to 1) avoid potential and unnecessary negative impacts to the project itself from both on and off-site geologic hazards and 2) to prevent local and cumulative downstream negative impacts to San Anselmo Creek that will increase rates of erosion and subsequent sediment supply and sedimentation, increase downstream flood frequency in areas already prone to flooding in the Town of Fairfax, and deteriorate remaining essential aquatic habitat in this urbanized stream that still supports populations of steelhead and yellow-legged frogs. There are published available scientific documents that I believe support my concerns over lacking information in the MND. Their online links have been provided as a convenience to the reader. For all the reasons stated above, I believe this project should not proceed as proposed in the MND without further evaluation of the conditions described and documented.

Response WS-32

All comments presented by the commenter are addressed within the Final IS/MND and supporting documents. The commenter presents no new or previously unexamined topics that might require further analysis. The commenter does not provide any expert substantial evidence that contradicts the findings of the Final IS/MND and supporting documents. The Project has no impacts that would be considered significant on the environment under CEQA which cannot be reduced to less than significant when using mitigation.